Privatization
When Public GOES PRIVATE
Small town life may be simple, but there's nothing simple about keeping clean water running in a community. Responsibilities, regulations, finances, and work skills continue to increase for those working with small community water and wastewater services. The National Environmental Training Center for Small Communities (NETCSC) may have the information you need. NETCSC will hold its fourth annual Environmental Training Institute for Small Communities at West Virginia University (WVU) in Morgantown, West Virginia, July 29 through August 1, 2003.

NETCSC’s Institute, an intensive four-day training conference, offers assistance providers, local officials, and environmental trainers an opportunity to learn about alternative onsite wastewater system technologies, financing and the Government Accounting Standards Board (GASB) 34, assessing wastewater options for small communities, capacity building, and hot topics, such as security for small drinking water systems. Past participants have noted the relaxed and interactive classroom atmosphere at the Institute, as well as high-caliber trainers, networking, and an abundance of good information.

In addition, the Institute includes a trip to a wastewater plant, onsite wastewater demonstration sites, a cook-out at scenic Coopers Rock State Park, an exhibit hall, and breaks so that participants can meet with other professionals.

For more information contact MaryAlice Dunn, training specialist, at (800) 624-8301, ext. 5538 or via e-mail at mdunn@wvu.edu. If your organization is interested in exhibiting at the Institute, please contact Jason Hutchens at the above number, ext. 5581 or via e-mail at shutchen@mix.wvu.edu.

**Registration fees for the Institute:**

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<tr>
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<th>Early Bird Fee (June 30)</th>
<th>Regular Fee (After June 30)</th>
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<tr>
<td>Full-week participation (4 days)</td>
<td>$319</td>
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<td>One-day participation</td>
<td>$98</td>
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To request a program brochure or to register for the Institute, contact Sandy Miller, ext. 5536, or e-mail smiller2@mail.wvu.edu.

**Fee Waivers Available**: Local officials from communities serving fewer than 10,000 people may apply for a limited number of fee waivers.

For Institute updates, bookmark our Web site at [www.netc.wvu.edu](http://www.netc.wvu.edu).
Numerous households use point-of-use/point-of-entry (POU/POE) systems primarily to deal with aesthetic concerns, such as taste and odor. These treatment devices are installed—just as their name implies—at the point where water enters a household or where it is used, such as a faucet. In certain situations, however, using POU/POE systems to provide safe drinking water to a system’s customers is not an individual’s choice, but that of the water system cooperating with regulatory authorities.
Hello, and welcome to the spring issue of *On Tap*. We hope that you find it interesting and educational.

We’re still accepting responses to the survey that was in the Winter 2003 *On Tap*. It’s been two years since we changed the format from a newsletter to a magazine, and we want to know what you think. Your thoughts and suggestions are important to us. We’ll continue to accept surveys as long as you continue to send them. If you’d like a survey but don’t have one, please call us at (800) 624-8301, and we’ll send you one.

After the issue hit the streets, we received a lot of kudos about the endocrine disruptor article and the cover art. We usually try not to brag, but one of our favorite reviews was from safedrinking.com. It said: “the National Drinking Water Clearinghouse’s Winter 2003 *On Tap* magazine features a comprehensive ‘understandable’ article on endocrine disruptors. **Commentary**: The picture on the cover of the report is worth way more than the proverbial ‘thousand words.’”

We thank you. We hope to continue supplying our readers with understandable information that they can use—as well as some interesting artwork.

If there’s a topic you’d like to see covered in *On Tap*, please let us know. You may call us at the 800 number listed above or e-mail me at kjespers@wvu.edu or Mark Kemp-Rye at mkemp@wvu.edu.

We hope you enjoy this issue, and don’t forget to stay in touch. We love hearing from you.

Kathy Jesperson
*On Tap* Editor

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**From the Editor’s Desk**

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**Now Hiring @ NDWC**

The National Drinking Water Clearinghouse (NDWC), located at West Virginia University, invites applications for two engineering scientist positions, which are responsible for the NDWC’s technical assistance program. For more information about a career with the NDWC, please visit our Web site at: www.ndwc.wvu.edu.
Calendar of Events

June
National Environmental Health Association
67th Annual Conference
June 8–11, 2003
Reno Hilton Hotel
Reno/Lake Tahoe, NV
Contact: Kim Brandow
Phone: (303) 756-9090
Fax: (303) 795-2114
www.neha.org

American Water Works Association
Annual Conference and Exposition
June 15–19, 2003
Anaheim Convention Center
Anaheim, CA
Contact: Lisa Star
Phone: (800) 926-7337
Fax: (303) 794-3951
www.awwa.org/ace2003

National Association of Environmental Professionals
28th Annual Conference
June 22–25, 2003
Adams Mark on the Riverwalk
San Antonio, TX
Phone: (888) 251-9902
Fax: (301) 860-1141
www.naep.org

July
National Association of Counties Annual Conference
July 11–15, 2003
Midwest Express Center
Milwaukee, WI
Phone: (330) 963-0319
Fax: (330) 425-9330
www.naco.org

National Environmental Training Center for Small Communities
Annual Institute (NETCSC)
July 28–August 1, 2003
Mountainlair, WVU
Downtown Campus
Morgantown, WV
Contact: Sandy Miller
Phone: (800) 624-8301
Fax: (304) 293-3161
www.netc.wvu.edu

September
National Association of Towns and Townships (NATaT)
Annual Conference
September 3–5, 2003
Hyatt Regency Capitol Hill
Washington, DC
Contact: Robert Neidlinger
Phone: (202) 624-3550
Fax: (202) 624-3554
www.smalltowns.org

WV Rural Water Association Annual Conference
September 8–10, 2003
Snowshoe Mountain Resort
Snowshoe, WV
Contact: Debbie Britt
Phone: (304) 562-8585
Fax: (304) 562-7177
www.wvrwa.org

October
Association of State Drinking Water Administrators
Annual Conference and Exposition
October 6–9, 2003
Sheraton Hotel
Boston, MA
Contact: Tom Maves
Phone: (202) 293-7655
Fax: (202) 293-7656
www.asdwa.org

76th Water Environment Federation
WEFTEC ’03
October 11–15, 2003
Los Angeles Convention Center
Los Angeles, CA
Contact: Nannette Tucker
Phone: (800) 666-0206
Fax: (703) 684-2452
www.weftec.org

November
National Ground Water Association Annual Conference
December 9–12, 2003
Orlando Convention Center
Orlando, FL
Contact: Kathy Butcher
Phone: (800) 551-7379
Fax: (614) 898-7786
www.ngwa.org

December
National Association of Towns and Townships (NATaT)
Annual Conference
September 3–5, 2003
Hyatt Regency Capitol Hill
Washington, DC
Contact: Robert Neidlinger
Phone: (202) 624-3550
Fax: (202) 624-3554
www.smalltowns.org

WV Rural Water Association Annual Conference
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www.wvrwa.org

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and you’ll be set to receive our next quarterly issue.
Water Treatment Is Going to the Birds

At a recent conference, a research chemist explained that he has discovered a way to make activated carbon out of chicken manure, according to a story in HealthScoutNews.

Isabel Lima, research chemist at the Commodity Utilization Research Unit at the Agricultural Research Service’s Southern Regional Research Center in New Orleans, said when manure is made into pellets and activated using a special process, it becomes highly porous and has a large surface area.

Studies showed that the pellets adsorbed copper, which means they may be able to filter other metals out of wastewater. The pellets also hold onto the pollutants at a rate that makes them cheaper than other types of activated carbon currently on the market.

Lima, whose agency is part of the U.S. Department of Agriculture, presented her findings recently at a waste management conference in Baltimore.

The results are preliminary, but chicken manure does a better job taking some metals from wastewater than traditional materials, said Armand Pepperman, research leader of the Commodity Utilization Research Unit and Lima’s supervisor.

However, it remains to be seen which material is best over the long haul, Pepperman said.

Ed Bouwer, a professor of environmental engineering at Johns Hopkins University, said that chicken manure may not be durable, but it may be so cheap that using it once and throwing it away may still be cost-effective.

RUS Loans: Poverty Rate Unchanged; Others Down

Interest rates for Rural Utilities Service (RUS) water and wastewater loans have been announced. The market rate is down slightly, while the intermediate and poverty rates are unchanged.

RUS interest rates are issued quarterly at three different levels: the poverty line rate, the intermediate rate, and the market rate. The rate applied to a particular project depends on community income and the type of project being funded.

To qualify for the poverty line rate, two criteria must be met. First, the loan must primarily be used for facilities required to meet health and sanitary standards. Second, the median household income of the area being served must be below 80 percent of the state’s non-metropolitan median income or fall below the federal poverty level. As of April 1, 2003, the federal poverty level was $18,400 for a family of four.

To qualify for the intermediate rate, the service area’s median household income cannot exceed 100 percent of the state’s non-metropolitan median income.

The market rate is applied to projects that don’t qualify for either the poverty or intermediate rates. The market rate is based on the average of the Bond Buyer index.

The rates, which apply to all loans issued from April 1–June 30, 2003, are:

- **poverty line**: 4.5 percent (unchanged from the previous quarter);
- **intermediate**: 4.5 percent (down 0.25 percent from the previous quarter); and
- **market**: 4.625 percent (down 0.375 percent from the previous quarter).

RUS loans are administered through state Rural Development offices, which can provide specific information concerning RUS loan requirements and applications procedures.

For the phone number of your state Rural Development office, contact the National Drinking Water Clearinghouse at (800) 624-8301 or (304) 293-4191. The list is also available on the RUS Web site at www.usda.gov/rus/water/states/usamap.htm.
EPA Fines Drinking Water Polluters in 2002

The U.S. Environmental Protection Agency (EPA) forced polluters to spend $3.9 billion on new controls and cleanups last year—11 percent less than in 2001, but still the second highest amount in its history, according to agency officials.

EPA said it is now measuring:
- gallons of contaminated groundwater to be treated (2.8 billion gallons),
- acres of wetlands that will be restored (40,000), and
- the number of people served by drinking water systems that will be brought into compliance (3.15 million) as a result of enforcement activity in fiscal 2002.

These measures provide a more thorough and accurate profile of the environmental protection results achieved through EPA’s program to enforce the nation’s environmental laws, EPA said.

“The results show millions of pounds of harmful pollutants will be reduced, cleaned up, or treated; thousands of acres of wetlands will be restored; creating cleaner air, water, and soil for the American people,” said the agency.

The Associated Press (AP) reports that $4.4 billion spent on new controls and cleanups in 2001 was the highest ever.

In fiscal year 2002, EPA conducted 17,668 inspections—a one percent increase over the previous year but still below the 20,417 inspections in the last year of the Clinton presidency.

EPA legal actions resulting in civil penalties dropped by almost half to $55.5 million. Criminal penalties dropped by a third to $62.2 million. However, penalties from EPA administrative actions rose eight percent to $25.7 million.

The EPA reported that Superfund cleanups from companies responsible for polluting sites fell by nearly two-thirds, to $627 million, compared with $1.7 billion the previous year.

According to the AP, critics contend that these numbers show that the Bush administration is less vigilant in pursuing environmental wrongdoers than former President Clinton’s administration.

“The numbers show an extremely disturbing trend towards weaker enforcement over the last two years in almost every category of measurement,” said John Dingell, D-Michigan, in a letter to EPA Administrator Christie Whitman.

Whitman said that while enforcement numbers are important, they should not be the sole criteria for judging the agency’s success.

“The way you measure whether or not we’re doing our job is: Is the air cleaner, water purer, land better protected?” said Whitman.

“We need to keep up with enforcement. We need to come down hard on people,” she continued. AP reported that President Bush asked Congress to increase spending on EPA enforcement by $21 million above the $482 million he sought this year, including hiring 100 additional inspectors.

Safe Level of Perchlorate Sought

In spite of the U.S. Senate bill introduced by Senator Barbara Boxer, D-California, demanding a standard for perchlorate by 2004, a U.S. Environmental Protection Agency (EPA) official said there would not be an enforceable standard before 2007.

“We do not believe we can make that deadline [2004],” says Mark Merchant, spokesperson for EPA, Region 9. “We are not dragging our feet. We are doing everything we can as quickly as possible.”

The agency had been planning to issue guidelines for the contaminant in 2006.

Perchlorate, a chemical used in the manufacture of rockets, missiles, and fireworks, among other products, has become a high-profile drinking water contaminant in various parts of the country. EPA researchers believe the chemical poses health threats, particularly to newborns, children, and pregnant women.

EPA researchers are currently considering a risk assessment report issued in January 2002, which states that perchlorate is safe at one part per billion.
NGWA Delivers Groundwater Information  
www.ngwa.org

The National Ground Water Association (NGWA) is headquartered in Westerville, Ohio, and employs groundwater experts from a variety of fields, such as geologists and hydrologists, engineers, groundwater contractors, manufacturers, and suppliers of groundwater-related products and services. The organization’s purpose is to provide guidance to members, government representatives, and the public for sound scientific, economic, and beneficial development, protection, and management of the world’s groundwater resources.

NGWA hosts educational courses and conferences on cutting-edge technology throughout the U.S. They publish three national publications, Water Well Journal, Ground Water Monitoring & Remediation, and Ground Water.

They also conduct two annual series of lectures: the Darcy Hydrogeology Lecture Series and the McEllhiney Distinguished Lecture Series in Water Well Technology. NGWA also maintains Ground Water On-Line, a database containing more than 87,000 groundwater literature citations.

Visit their Web site, or call them at (800) 551-7379 or (614) 898-7791.

Site Provides Practical Research  
www.privatization.org

The Reason Foundation and Reason Public Policy Institute (RPPI) developed RPPI’s Privatization Center in 1992 to help federal, state, and local policymakers evaluate and implement privatization strategies.

The center provides practical research and analysis, how-to guides, case studies, and reports designed to inform elected officials on how to streamline government. The center specializes in government services and infrastructure, such as airports, electric power, highways, transit, and water or wastewater facilities.

The center’s privatization hotline, (310) 391-6525, helps callers to obtain information about privatization, competitive contracting, full-cost accounting, and other reform tools. The center publishes a monthly newsletter, Privatization Watch, and its Annual Privatization Report, a comprehensive overview of the year’s most significant privatization developments in the U.S.

With strong privatization and government reform themes emerging in Washington, D.C., and in state legislatures across the nation, RPPI’s Privatization Center continues to provide practical tools for improving efficiency and accountability in government.

Water Industry News Offers Free Downloads  
www.waterindustry.org

Water Industry News supplies news about a number of areas in the drinking water industry, including privatization, GASB 34, bottled water, water contaminants, and more. The site, sponsored by Environmental Market Analysis, offers free downloads of many of its publications, including the World Water Development Report, Privatization of Water Services in the United States, and case studies of public-private partnerships.
NCPPP Water Institute Maintains Water Resources
www.ncppp.org/councilinstitutes/wi.html

The National Council for Public-Private Partnerships is a nonprofit, nonpartisan organization founded in 1985. The council maintains a growing list of public and private sector members, with experience in a wide variety of public-private partnerships. Its training and public education programs provide resources nationwide. The council’s activities are geared toward enhancing the partnership process from networking events, such as conferences and issue forums, to focused opportunities, such as committees, institutes, speakers’ bureau, and Web site.

One of the council’s most active features is the Water Institute (WI). The WI provides a forum for using public-private partnerships in design, building, and operation and maintenance of water and wastewater systems. The WI conducts seminars and workshops for public officials on topics such as full-cost accounting, best practices to develop public-private partnerships, and related subjects.

The WI has a multitude of resources on water and wastewater issues. Most are accessible through the council’s Web site. The site also includes papers, articles, publications, and other valuable Web resources.

NCPPP also offers information on public-private partnerships through its press kit, including general information, top ten facts about partnerships, and questions and answers from public officials, among other resources.

For more information on NCPPP and the WI, visit www.ncppp.org or call NCPPP at (202) 467-6800.

CPI Demands Government Accountability
www.publicintegrity.org

The Center for Public Integrity (CPI) provides the American people with the findings of investigations and analyses of public service, government accountability, and ethics-related issues, such as privatization.

The center’s books, studies, and newsletters combine political science and investigative reporting. The center aims to produce high-quality, well-documented, investigative research resulting in better-informed citizens who demand a higher level of accountability from government and elected leaders. The center also extends its style of watchdog journalism to public global interest through the International Consortium of Investigative Journalists (ICIJ). Created in 1997, ICIJ includes more than 80 leading investigative reporters and editors in over 40 countries.

Since opening its doors in downtown Washington, D.C., in 1990, the center has released more than 100 investigative studies.

EPA Launches Federal Rulemaking Web Site
Regulations.gov

The U.S. Environmental Protection Agency (EPA) launched a new online rulemaking Web site so that citizens and small businesses can access and comment on rules from a number of federal agencies.

The Office of Management and Budget selected EPA to be the lead agency on the initiative. EPA Deputy Administrator Linda Fisher said Regulations.gov would give citizens a way to be involved in federal rulemaking on their own terms from wherever they choose to log on.

The Groundwater Foundation Informs the Public
www.groundwater.org

The Groundwater Foundation is a nonprofit organization that is dedicated to informing the public about one of our greatest hidden resources, groundwater. Since 1985, the foundation’s programs and publications present the benefits everyone receives from groundwater and the risks that threaten groundwater quality. The foundation makes learning about groundwater fun and understandable for kids and adults.
Let the Seller Beware

This is a question that each individual utility can only answer for itself. However, managers can keep a few key issues in mind when considering a move toward privatization.

As with most things in life, there are positive and negative opinions and stories. I have not had any personal experience with privatization, but I do have some co-workers and know several people who have had experiences with private firms. To be honest, most of their opinions favor the negative side of this argument.

A recent article in the Wall Street Journal documented the nightmare that Atlanta has been through after attempting privatization. They realized only 50 percent of the savings that United Water promised. And the system failed to collect $33 million in unpaid bills. Atlanta then decided to take back the operations of their water utility. I think we are all well aware of what occurred in California when power utilities tried privatizing—skyrocketing customer bills.

This certainly does not mean that all privatization is wrong or that people considering privatizing should abandon their current direction. But it does mean that they should not enter into any contract without first seeking expert legal advice and also searching out feedback from other systems that have moved that way.

For some smaller community water systems that have limited financial resources, privatization may be their only option in meeting federally mandated water quality parameters. Many systems simply cannot afford to put in the necessary equipment, or may lack the expertise, to treat their water to the quality required under new regulations and will have no choice but to seek outside assistance.

I would also point out that there is one other option possible for some utilities: negotiate a tie-in to a neighboring water system. This “dual-system” method of operation is becoming more common today than ever before, and I would bet that this might be a necessary step many systems will have to take in the future. In closing, I would caution anyone considering giving up control of their water utility—in any way, shape, or form—by pointing out an old adage that I would put a new twist on. “Let the seller beware!”

It’s Not Always A Bad Thing

The privatization of public systems is not always a bad thing. Its reputation comes from some of the business practices that have taken place over the last few years in a number of systems that large for-profit companies have bought out.

Privatization offers a way out for small public systems that just cannot afford costs associated with Safe Drinking Water Act compliance, while struggling to repair and replace aging infrastructure. And, while privatization may not be the perfect solution to everyone’s problems, it is one of many tools that should be considered if a system is having financial, managerial, and technical problems.

Privatization’s advantages are usually a much larger customer base over which small rate increases can provide revenue to bring the system up to standards. A large private system usually has larger buying power and can get services and goods at lower cost than a small system. Staffing by a private company that serves many small systems can be shared at significant cost savings.

Privatization’s disadvantages are loss of public control over the utility. The customers no longer have a powerful
voice in the operations of the water system. Rates often rise more quickly under privatization, but this is usually due to a concerted effort to correct existing problems in a short period of time. Loss of direct services can occur when staffing decreases or moves to some distant location.

Privatization is just another tool that can be used to correct a water system that is having significant problems continuing to operate. Like any tool, there is a proper time and place for its use.

**Regionalization and Consolidation May Be an Answer**

Nationally and internationally, the privatization of drinking water systems is occurring with differing opinions on the benefits and problems. Washington’s public water regulations require that a state-approved satellite management agency (SMA) either own or operate any new systems. These SMAs can be either a private or public entity.

In addition, existing water systems, especially smaller systems, elect to use SMA services or turn their systems over to SMAs to have 24/7 coverage and to meet federal- or state-certified operator requirements. Peninsula Light Company is an SMA, although the company is member-owned. Another SMA in our immediate area, Washington Water, is actually part of a larger private company based in southern California. So smaller systems in our area have some choices.

Although privatization or similar arrangements like SMA services can bring economies-of-scale, particularly in cost sharing of more expensive services such as auditing, legalities, and engineering, they can remove local control. Larger companies also may be able to provide more funding opportunities. Initial cost savings associated with privatization may occur with downsizing. But downsizing creates hardships for those who lose their jobs, and management may need to address potential problems, such as bitterness, associated with remaining employees.

Systems may be able to use regionalization or consolidation ideas without privatizing. Workloads can be redistributed, restructured, or picked-up by others for efficiency and cost savings. Peninsula Light Company restructured its workload within the company, used attrition and mutual arrangements, and reduced employee load by 1.5 full-time equivalent positions within the water department. We did this for financial reasons.

Water systems also can form partnerships with other water systems to share in large equipment or project cost expenditures. For instance, the Pierce County Regional Water Association understood and hired a consultant to work on a couple of projects affecting utilities because of state or local mandate. Having the association hire
a consultant saved significant resources (time and money) for the smaller utilities. Other local water utility associations in the state have also teamed up to share expensive equipment.

With privatization or any type of ownership, water systems need to be careful that they are not exchanging short-term cost savings for routine maintenance and capital improvements that either reduces system reliability or defers present cost to future generations.

With privatization or any type of ownership, water systems need to be careful that they are not exchanging short-term cost savings for routine maintenance and capital improvements that either reduces system reliability or defers present cost to future generations.

I received an interesting letter in the mail the other day. My wife and I were asked to surrender the stock we own in American Water Works Company, which owns Lexington’s local water utility, Kentucky American Water, because RWE Aktiengesellschaft, a large German conglomerate, is purchasing the utility. The letter arrived in the midst of an intense debate about whether private or municipal ownership of Lexington’s water supply system is in the best public interest. In that respect, it puts Lexington squarely in the international debate over the privatization of water systems.

Water is a finite resource—potable water even more so—and the United Nations has declared that access to safe and affordable water is a basic human right. The reality is that many developing nations, and many municipalities, do not have the resources to provide an adequate supply of safe water. Private companies, which have resources and technical expertise, can meet that need. But private companies have a profit motive, and the water they supply may not be affordable to those who most need it.

The debate in Lexington is polarized around several issues. The Coalition Against a Government Takeover suggests that municipal ownership of the water utility is a bad idea: purchasing the water system would burden Lexington with debt in financially troubled times; water rates would rise to pay for the purchase and fund unrelated municipal spending (the utility would be a cash cow); and infrastructure would deteriorate and lead to poorer quality water.

On the other hand, Bluegrass FLOW points to the example of Louisville, Kentucky, which successfully owns and operates its own water system, and advocates municipal ownership. This kind of ownership eliminates the profit motive, and decisions about water use occur locally. In addition, financial resources stay local rather than be siphoned off to international corporations.

Lexington’s government recently spent $100,000 to determine an appropriate purchase price for the water system, which ranges anywhere from $150 to $350 million depending on which evaluation method you care to use. They are now proceeding with plans to negotiate a purchase, and I am as ambivalent about the proceedings as is much of Lexington.

The American Water Works Company is in the business of selling water and making a profit; conservation and a social agenda are not a high priority. I hardly expect them to lower rates or develop infrastructure any more than the public service commission requires them to do. Municipal ownership has worked elsewhere, and local control of water supplies hopefully implies a greater conservation ethic. But Lexington’s urban government does not have a stellar record in providing municipal services, like paving the streets, so I have considerable anxiety about how well they can provide safe water.

I have my own profit motive. I stand to get a lot more from my shares of stock if RWE buys them rather than Lexington. I also have friends at the water company, who have a much greater financial stake in this decision than I. But it annoys me (although it’s understandable) that the water company bases its decisions about water from the perspective of expanding its service base and potential profit rather than protecting and preserving the local water resources.

Am I for privatization or public ownership of water systems? Ultimately, it should be decided at a local level. The current owners need to prove that they can treat and deliver safe, affordable water for the long term, and the potential owners need to demonstrate the same. And as far as my water system goes? At this point, I just don’t know.

Lisa Raysby
Water Department Manager
Peninsula [Washington] Light Company

Protect and Preserve Local Resources

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Mark Coyne
Associate Professor of Agronomy
University of Kentucky
Letters to the Editor

Are there endocrine disruptors in bottled water?

Thanks very much for your highly informative article on endocrine disruptors. [“Endocrine Disruptors: What are they doing to you?” On Tap Vol. 2, Issue 4.] My husband and I live on our farm near Shepherdstown, West Virginia, and have for several years been drinking only water provided by West Virginia Spring House in Berkeley Springs. Is there any way to find out whether this or any other bottled water is more or less free of these disruptors? Of course, when we are away from home we drink Dannon, Deer Park, or other so-called spring waters.

We would appreciate your providing us with information on bottled water in general (or specifically).

Frances and Dick Latterell
Jefferson County Watersheds Coalition

Thanks For the Coverage

The cover article in the winter 2003 issue of On Tap [Vol. 2, Issue 4.] pleased me very much. Thank you for having the courage to write and publish this. Through the services of my informed friends, I have been aware of this phenomenon for many years. Back in 1991, when I tried to bring this argument into a facility planning process we were doing here on Washington Island, I was advised by people in the know that I should leave that argument in the drawer, lest I be laughed at. Now we know it is no laughing matter. Thank you very, very much for your work.

Donna L. Briesemeister
Chairperson Wastewater Advisory Committee, Washington Island, Wisconsin

Disinfectant May Release Endocrine Disruptors from Plastic

As a note of possible interest, I believe another source of endocrine disruptors is bottled water. At one time, there was an article about the ozone (treatment of choice in that industry) reacting with the plastic in the bottles, with the disruptors being a byproduct. I’m not sure whether or not that was corrected. It seems that ozone in the free state, added to the water, immediately bottled, and capped, leaves a very aggressive disinfectant, even though it has a relatively short half-life in contact with the inside of the bottle, and thus the problem.

Bruce W. Lewis, P.E.
Lewis Companies
Litchfield, New Hampshire

Editor’s Note: For more on bottled water, see Michelle Moore’s article “Can Public Water Utilities Compete with Bottled Water?” on page 20 inside this issue.

Water Board Article Hits Mark

I just finished reading your article on water boards [On Tap Vol. 2, Issue 4.], very good—straightforward, honest, and brief. You hit the nail right on the head in describing frequent problems with board members, especially new ones that don’t care to get informed before making decisions.

I am making copies for all of my board members to read. I’m sure your article will help in their board meetings.

Marc Longley
Manager, Hulen Meadows
Ketchum, Idaho

Feedback
Don’t be shy. Drop us a line!
Whether you’ve got a gripe or a great idea for an article, On Tap editors are eager to hear from you.
Let us know how we’re doing.
E-mail the On Tap editors:
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Privatization
When Public Goes Private

by Jamie Knotts
On Tap Assistant Editor

Someone is knocking at your utility’s door, and it looks like representatives from a private water company. Maybe they want to strike a management agreement for billing and collection. Maybe they want you to contract out your operation and maintenance to them. Then again, maybe they want to buy out your utility entirely.

That’s unlikely, you say. Not in a million years would they want this water plant. Why would they want to talk to us?

The answer is simple: money. More and more, private, multi-national corporations are taking over public water systems because they see them as good investments. With a consistent customer base, private companies see a cash flow waiting to be tapped. Opponents say private companies seek out struggling water utilities that have problems meeting regulatory health standards, maintaining a consistent supply, or operating a deteriorating infrastructure. With added pressure from Washington, the time looks ripe for the word “private” to replace the word “public” in identifying your water system.

A recent article in U.S. News & World Report says that Congress is considering increases for federal infrastructure funding. The Bush Administration, however, encourages privatization, saying that water systems cannot expect to get all the dollars they need from Washington. The article quotes G. Tracy Mehan, U.S. Environmental Protection Agency (EPA) assistant administrator for water, saying, “I think the needs are so great, especially when you see the demands of homeland security and the federal budget. Private capital is one of several options that are going to have to be considered much more than they have been.”

Why privatize?

Advocates cite numerous reasons why a utility should be privatized. In some cases, it’s a matter of a crumbling infrastructure. In other instances, newer systems need updates because of increases in stress due to growing populations.
A recent EPA report cites a $265 billion need over 20 years for both capital and operations and maintenance for the nation’s 54,000 drinking water systems. Where will these systems find the money?

EPA Administrator Christie Whitman says that for fiscal year 2003, the Bush Administration proposed the largest combined request for state drinking water and clean water revolving loan funds in history—$2.1 billion. Whitman said the country would need to use public and private sector financing to develop new technologies and innovations. Even if $2.1 billion is appropriated to aid ailing water systems, the industry needs billions more.

Water systems also face increasing federal mandates without the corresponding money to pay for them. A recent report from the Public Policy Institute says the federal government has reduced its contributions to local water systems over the past 30 years, while at the same time imposing stricter water quality and effluent standards. Opening the Floodgates: Why Water Privatization Will Continue says that unfunded mandates force municipal systems to meet federal regulations through local revenue sources or state revolving loan funds. Privatization is one strategy municipalities are choosing.

The report also says a lack of political will hampers upgrades and system repairs. “It’s often difficult for local officials to commit to making the necessary investments in community water systems,” the report states. “Water pipes and sewer mains are not visible and not perceived as immediately critical for adequate funding. It is easier for elected officials to ignore them in favor of expenditures for more visible services, such as police and fire. Additionally, water and sewer rates do not adequately cover the actual cost of providing services in many municipalities—but raising water and sewer rates to cover operations and maintenance as well as capital replacement is an unpopular move for elected officials.”

Try Something New

In the last decade, hundreds of U.S. cities and counties have hired private companies to manage their waterworks. Currently, New Orleans; Stockton, California; and Laredo, Texas, are in the process of going private, although opposition has sprung up in all three cities. Indianapolis signed a $1.5 billion agreement with USFilter, the largest U.S. privatization to date, and San Jose, California, voted to consider privatizing.

Private firms have a history of supplying water to cities, dating to as early as 1796. Utilities also have long hired outside contractors to build, but not operate, plants and distribution systems. More firms now manage systems due to an Internal Revenue Service ruling that helps firms obtain longer-term, tax-free water contracts, combined with a political push for deregulation and municipal-system break-downs.

Less than 15 percent of U.S. utilities are investor-owned, but in recent years, a handful of big water corporations, mostly foreign owned, have

### Arguments for and against privatization

**For Privatization:**
- Helps government save money in management and service delivery for the public.
- Is necessary for speed implementation of certain programs.
- Provides high-quality services in some areas.
- Is necessary when government lacks expertise or personnel to carry out certain programs.
- Is useful because private providers use more innovative approaches and technology.
- Helps dissolve unnecessary government monopolies.
- Allows private providers to offer services more effectively due to flexibility and less red tape.
- Slows the growth of government or downsizes government.
- Introduces competition between government employees and private providers.
- Is an alternative to traditional ways of improving government productivity.

**Against Privatization:**
- Does not save government and taxpayer money.
- Often leads to significant rate increases for customers.
- Does not guarantee market competition and can result in “private monopolies.”
- Leads to corruption, including political patronage, kickbacks, and bribes.
- Results in policy makers and managers loosing control over privatized services and functions.
- Diminishes accountability of government officials.
- Leaves some to think that private gain and public good do not always correspond.
- Is not necessary because other productivity improvement approaches are available.
- Leads to privatized services and functions being compromised because of private providers’ profit motives.
- Lowers employee morale and brings fear of displacement to affected workers.
- Destabilizes economically marginal communities and neighborhoods.

Those companies vying for U.S. systems include: Suez and the media-water conglomerate, Vivendi from France and the utility RWE from Germany. One domestic player with giant ambitions was Enron’s water subsidiary, Azurix.

But all is not well with corporate water companies. In Atlanta, the experience has not been positive for residents. Mayor Shirley Franklin notified United Water Resources (UWR), a Suez-owned company, that the city was dissatisfied with its performance under the 20-year contract signed by the city’s previous administration. Franklin said the firm reduced staffing levels, billed the city for work it didn’t do, and failed to perform adequate maintenance.

In Jacksonville, Florida, UWR’s ownership and operation was so poor that citizens bought the system back for $219 million. In its brief, five-year ownership, critics say the company’s chief efficiency was getting rate increases from the Florida Utility Commission. Monthly bills went up by $9.44 in 1997. The company asked for an additional 12.5 percent rate hike a year later. By taking control of the utility, residents are expected to pay nearly 25 percent less for water and sewer services.

In other areas of the country, residents have been fighting a proposed buyout of American Water Works Company by Thames Water, a British subsidiary of Germany’s RWE. Those fighting the sale fear the loss of local control of their water to a large, multi-national corporation that was more interested in the financial bottom line than quality water and service.

Opinions Strong on Both Sides

Many of those working in small and rural water utilities worry that private companies will try to take over their systems. The National Rural Water Association (NRWA), which works closely with small systems by providing them with technical assistance and training, strongly opposes small utility privatization.

“Customers and utilities oppose privatization because it takes control from the public and gives it to a private company,” says Rob Johnson, NRWA chief operating officer. “People lose control of their own utility.” Johnson says that when a private company takes over a utility, they have to make a profit somehow, and if a state public service or utility commission doesn’t allow an increase in rates, something must give.

“It’s either costs going up or services going down,” Johnson says. “If water rates don’t move up, then it must be taken up somewhere and that’s probably going to be services.” Once a system is taken over, private companies often have asked for rate increases ranging from 10 to 25 percent.

Johnson thinks it is odd that EPA actively encourages public to private ventures in small or rural systems. “It greatly amuses me that EPA is pushing for privatization,” he says. “When you consider the water systems that serve customers in metropolitan areas, it is possible for these larger systems to privatize due to population density, but it’s ludicrous for small or rural systems to do so because they are spread out.”

Johnson says he is seeing a trend emerging in the water industry. “The American public wants their water systems back,” he says. “That’s the story we’re hearing now. Back in the early ’90s, we saw a number of systems go private, but now there seems to be a reverse trend with the public buying their systems back.

“Why do you think Atlanta has regained control of their system?” Johnson says. “The assumption that private systems will bring more investment into a utility is just humorous,” Johnson says. “There is no reason that a private company can do as well as a public utility.”

Louis Jenney, senior director of government relations for the National Association of Water Companies (NAWC), a trade association that serves the private- and investor-owned water-utility industry, disagrees with some who say public is good and private is
bad. He says there are benefits for a public utility when it becomes privatized. “The simple answer is private industry offers financial options and experience for local utilities. There have been utilities all across the country who have worked in partnership with private industry to solve their financial problems.”

One of the biggest criticisms of public to private ventures is the issue of rising water rates. Jenney says you must look deeper to understand the issue. “What the customers of municipalities pay for their water is often hidden,” he says. “There is often extensive cross-subsidization between city or town general accounts and the water industry. What you are paying in your water bill doesn’t necessarily reflect how much you are really paying for water, whereas with the public utility, the cost is much more hidden. It’s really an unfair comparison between the two.”

Jenney says customers who oppose privatization don’t understand all the issues. “I think local folks are often given misleading information. The industry has opponents who are trying to limit local utilities’ choices,” he says. “Opponents want to keep the utility business in a very old-fashioned model. They are very reticent about anything new coming along. When people are opposing privatization, they are being misled about the potential benefits, challenges, and the downsides.”

**Types of Privatization**

Privatization can take many forms. Only the most absolute form transfers full ownership of water systems to the private sector. What is much more common is to leave public ownership of water resources unaffected and only transfer some operational responsibilities for water supply or wastewater management from public to private. Privatization also does not, or should not, relieve public officials from their responsibility for environmental protection, public health and safety, or monopoly oversight.

There is also a difference between public and private ownership of water assets. Private ownership involves transferring assets to a private utility. Public ownership involves keeping the assets in the public domain, but integrating the private sector in various utility operations and activities through contract. Public or private-sector employees can perform various functions.

As an example, **Table 1** (on this page) lists several functions that could be assigned to employees, ranging from fully public to fully private operations. The functions can also be performed privately in one geographic area and publicly in another, such as northern and southern halves of an area.

**Split Ownership is An Option**

In this model, water system ownership may be split between private and public shareholders in a corporate utility. The public sector usually maintains majority ownership, while private ownership is often legally restricted, for example, to 20 percent or less of total shares. Such organizations typically have a corporate structure, a managing director to guide operations, and a board of directors with overall responsibility.

A main benefit of this model is that it combines two potentially conflicting goals of water supply—profit versus cost and service. Private owners seek to recover costs and maximize profits. Public owners may also seek to recover costs, but they are more likely to worry about affordability, water quality, equity of access, and service expansion.

**Mixed Management**

In some cases, public water utilities may give private entities responsibility for operation and maintenance activities, general services contracts, or control over management of leased facilities. The public maintains ownership. Such models do not usually address new facility financing or create better access to private capital markets. They do, however, bring in managerial and operational expertise that may not be available locally.

Leasing contracts may include revenue collection responsibilities as well as operation and maintenance. Such contracts may last for 10 to 15 years or more and arrangements sometimes allow

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**Table 1**

**Water System Functions That Can be Privatized**

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<tr>
<th>No.</th>
<th>Function</th>
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<tbody>
<tr>
<td>1</td>
<td>Capital improvement planning and budgeting (including water conservation and wastewater reclamation issues)</td>
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<tr>
<td>2</td>
<td>Capital improvement financing</td>
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<td>3</td>
<td>Capital improvement design</td>
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<td>Pricing decisions</td>
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<td>8</td>
<td>Billing and revenue collection management</td>
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<tr>
<td>9</td>
<td>Managing payments to employees or contractors</td>
</tr>
<tr>
<td>10</td>
<td>Financial and risk management</td>
</tr>
<tr>
<td>11</td>
<td>Establishing, monitoring, and enforcing water quality and other service standards</td>
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the private company to share in the revenue increases gained from better management and bill collection. Service contracts range from smaller, one-time arrangements, such as meter installation or pipeline construction to longer-term comprehensive arrangements. Service contracts tend to be effective for equipment maintenance and repair, water and sewerage networks, and pumping stations; meter installation and maintenance; service payment collection; and data processing.

Concession Models

The full-concession model transfers operation and management responsibility of the entire water-supply system, along with most of the risk and financing responsibility, to the private sector. To recoup heavy initial investments, concessions to private companies are usually long-term, as long as 25 to 50 years. Technical and managerial expertise may be transferred to the local municipality and community over time as local employees gain experience.

Variations on full concessions include:

- build-operate-transfer,
- build-operate-train-transfer,
- build-own-operate-transfer,
- rehabilitate-operate-transfer, and
- build-operate-own.

These arrangements are “partial concessions” that give responsibilities to private companies, but only for a portion of the water-supply system. Companies may transfer ownership to the government at the end of the contract.

For both full and partial concessions, governments and companies find that responsibilities and risks must be clearly defined because such contracts are for lengthy periods, and ultimately govern how the concession will perform. Case-by-case concession contract writing has led to vastly different outcomes. The public benefits most when the government serves as a skilled contract negotiator, but this can’t always be guaranteed.

The True Cost of Water

Critics say privatization leads to higher costs for customers, which may often be true. Advocates say that private companies charge the true cost of water as opposed to public utilities, which often price water artificially lower because of taxpayer subsidies.

“One of the most basic problems of public water systems is their practice of charging prices that are less than the real unit costs of providing water service,” writes David Haarmeyer in Privatization Infrastructure: Options for Municipal Water-Supply Systems. “Underpricing of municipal water services explains the inability of these systems to provide reliable water supplies and to be able to finance the investment needed to meet environmental standards. Moreover, underpricing by public water systems may explain why there are so few privately owned water systems since their (full-cost) rates are often uncompetitive with those of publicly owned facilities.”

Haarmeyer suggests that prices reflecting the full costs of water are important because they inform consumers about the true value of water and thus encourage efficient use. Yet Haarmeyer says, water supply decisions have not historically linked water demand, costing, and pricing.

In addition to not pricing water services to recover cost, publicly owned water systems generally have less incentive to adopt complex rate structures that reflect demand conditions. Economist Steve Hanke notes in Privatization and Development, that “private firms do have more price schedules [than publicly owned water systems] and that these private rate schedules more closely reflect cost and demand conditions than do public schedules.”

Advocates also say that not charging the full cost of providing water services creates a problem of not having enough capital to comply with water quality mandates.

Utility Workers Oppose Privatization

Just mentioning the word privatization is enough to raise some water professionals’ blood pressure. The topic is heated, with many employees and customers alike opposed to any notion of a private company taking over their public system.

Utility workers who face the risk of losing their jobs under private ownership are often the loudest critics. The American Federation of State, County, and Municipal Employees, a union that represents public workers, is strongly opposed to privatization and encourages its membership to fight local privatization efforts.

“Privatization is fueled by an unholy alliance of politicians, private companies, and publicity-conscious conservative think tanks,” the groups notes on its Web site. “In the ultra-competitive, global economy, many companies are driven by the search for new markets and higher profits. For public officials and political candidates, privatization can be an attractive ‘quick fix.’ Government officials can take credit for ‘shrinking government’ by cutting public payrolls. Never mind that the cost to provide the service simply shifts to a different budget line—or the customers.

“They (government officials) seek to cut costs in the short term by selecting companies that drive out unions and drive down wages and benefits. In the long run, the quality of these services suffers from the loss of skilled employees and the failure to attract qualified...
new workers. They think they can escape accountability when the quality and accessibility of public services decline and when costs to the public, through taxes and user fees, increase. They can also raise campaign funds from the private companies that receive lucrative government contracts or that take over public assets.”

Workers and their advocates aren’t the only groups pushing for scrutiny of privatized utilities.

Water utility customers are raising questions about proposed privatization plans due to rising rates and poor service. Municipalities are also closely questioning the contract deals they’re being offered by private companies.

Where do we go from here?

A recent report titled The New Economy of Water: the Risks and Benefits of Globalization and Privatization of Fresh Water cautions against blindly accepting privatization as the best means of producing and supplying our country’s water. The report says that the public’s understanding and oversight of deals is lacking.

“Water privatization must be subject to much stronger public scrutiny,” writes Dr. Peter H. Gleick, lead author and director of the Pacific Institute. “Part of the problem is that there are few formal guidelines and, in most cases, inadequate public oversight.

“We do not think the trend toward globalization and privatization of fresh water can be stopped, nor do we think it has. In some places and in some circumstances, letting private companies take responsibility for some aspects of water provision or management may help millions of poor people receive access to basic water services.”

The report says that the rush toward private markets hasn’t addressed some of the most important issues and concerns about water. Some of the consequences of privatization may be irreversible; thus they deserve special scrutiny and control.

So is privatization on the rise or on the decline as some suggest? The reality is that both are occurring. Faced with growing public displeasure, some public utilities that had gone private faced problems and chose to revert to public ownership and operation. On the other hand, private corporations are working harder than ever to buy out systems or establish management contracts. Your system could be next.

Numerous groups—for and against privatization—offer information about the subject. Contact them directly to learn more.

American Federation of State, County and Municipal Employees, AFL-CIO 1625 L Street, N.W. Washington, DC 20036-5687 (202) 429-1000 www.afscme.org

National Association of Water Companies 1725 K Street, N.S., Suite 1212 Washington, DC 20006 www.nawc.org

National Rural Water Association P.O. Box 1428 2915 South 13th Street Duncan, OK 73543 (580) 252-0629 www.nrwa.org

Public Citizen 1600 20th St. NW Washington, DC. 20009 (202) 588-1000 www.citizen.org/

Reason Public Policy Institute 3415 S. Sepulveda Blvd., Suite 400 Los Angeles, CA 90034 (310) 391-2245 www.rppi.org/

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American Federation of State, County, and Municipal Employees, AFL-CIO. www.afscme.org/


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Can Public Water Utilities Compete with Bottled Water?

by Michelle Moore • On Tap Associate Editor

What would you do if you found out the health department cited your favorite restaurant? Would you stop eating there? If you heard that another restaurant in another state had been cited for a more serious violation, would you vow never to eat out again? Imagine what would happen to the restaurant business if people reacted that way.

That’s exactly what the public drinking water industry is up against. Isolated water contamination incidents have turned people off from turning on their taps to enjoy a drink of water.

Water coolers, once the central station for office gossip, are now found in home kitchens. Joggers, walkers, hikers, and bikers carry plastic bottles, chugging store-bought water instead of water from home.

Recent surveys show that almost 70 percent of Californians, for example, drink bottled water. National market research from 2002 showed that water bottlers’ sales grew more than 13 percent in the last five years, making it a $6 billion-plus industry. At this rate, bottled water is quickly becoming second only to soft drinks in popularity.

Part of the reason we’re drinking all of this water is that many of us have become more health conscious. When people are out, and they’re thirsty, they’d rather buy a bottle of water than a sugary soft drink. In our convenience-oriented culture, grabbing a bottle of water at the store is easier than filling a bottle with water at home.

Besides convenience, the aforementioned mistrust of public water also drives bottled water sales. News of water contaminations hasn’t helped: In the spring of 2000, drinking water supplies for 200,000 residents in New Jersey contained excess radium. Seventeen water companies had to lower the level of the naturally occurring radioactive element.

The gasoline additive methyl-tertiary butyl ether (MTBE) has been found in groundwater and drinking water reserves across the country. Another fuel ingredient, perchlorate, also is polluting groundwater. Studies show that even trace amounts of perchlorate may be a health hazard.

With reports like these, people are afraid the water pouring from the faucet is a toxic cocktail that may cause any number of physical maladies. Water system personnel have a tough time convincing the public that they can, and do, provide safe drinking water.

Not everyone blindly accepts the superiority of bottled water, which is fortunate for public water purveyors. People on limited budgets find the cost of replacing their tap water with bottled
water to be extraordinary—costing over a thousand times more than tap water. Individual servings of bottled water can easily be $1.50 or more.

People have valid questions about bottled water. Is it safe? Is it regulated? Who regulates it, and what are the regulations manufacturers and distributors must follow? And most importantly, is bottled drinking water really any better than tap or has the industry created a very convincing illusion?

**Bottled Water: Myths and Facts**

Whether bought in bulk or as individual servings, bottled water has replaced tap water for a growing number of skeptics. Bottled water is marketed—and marketed very well—as clean and pure. Words such as “premium,” “mountain water,” and “natural” influence consumers.

Bottled water advertisements are commonplace. They show happy, healthy people in pristine outdoor settings where water flows from clear, mountain springs. These images help form the impression that water sold in plastic bottles comes from fresh, fantastic sources—no bugs, sticks, or animal dung soiling the drink. Advertising, plus the increasing aversion to tap water, is helping make bottled water one of the fastest-growing industries in the country.

To be fair, some bottled waters do come from mountain springs. Some come from mountain wells. But others may come from the same source as your community tap water, whatever that may be. And what might be more surprising is that local bottled water could be drawn directly from a municipal water treatment facility. In fact, about a fourth of all bottled water actually does come from municipal suppliers.

When this is the case, the bottle might state “from a community water source” or “from a community water system” on the label. The bottler may use additional treatment processes, but they may not have to, depending on what regulations apply.

Nearly all bottled water undergoes some kind of disinfection or filtration or both. It’s almost never sold straight from the ground. Testing may be done at the source, during production, and as a finished product, according to the International Bottled Water Association (IBWA), the industry’s trade organization.

Chlorination is rarely the disinfection method used because the taste of residual chlorine in public water is one reason people turn to bottled water. Ozonation is a preferred disinfection treatment, but reverse osmosis, ultraviolet light, distillation, activated carbon filtration, cation exchange, and microfiltration are also used.

Safety issues with bottled water, as with tap, are rare. The IBWA says, “the Centers for Disease Control and Prevention has never linked an outbreak of illness or disease in the U.S. to bottled water.” Water bottlers are manufacturers creating a product for profit. They don’t want to risk lawsuits or financial losses, the same as any other business. It’s in the companies’ best interest to produce a product that is safe for consumers.

But, that doesn’t mean that quality problems haven’t occurred. Since so many people are substituting bottled water for their tap water, critics say the industry should have to follow strict rules.

**Regulations Differ for Tap and Bottled Water**

Every time a municipal water system has a contamination incident,
rare as they may be, water bottlers win. No matter the reason or scope of the problem or how distant the town, some people will grow more suspicious of their own tap water.

Bottled water businesses, considering the explosive growth of the industry, thrive on reports of these incidents. Public water’s loss of consumer confidence is bottled water’s gain. Dr. Mel Suffet from the Department of Environmental Health Sciences at UCLA says: “Bad press in the public drinking water industry appears to be good press for the bottled water industry. In fact, the bottled water industry has an ally in the press, as any violation of U.S. Environmental Protection Agency (EPA) drinking water regulations must be reported to the press to inform the public, no matter how minor. The bottled water industry benefits from this free negative advertising.”

Bottled water and publicly supplied drinking water are controlled under different government offices. The EPA regulates water distributed by a community water treatment plant. EPA’s Office of Ground Water and Drinking Water sets regulations on production, distribution, and drinking water quality, plus controls for source water protection and treatment processes.

Public water supplies are tested for about 95 different contaminants. Treatment facilities in West Virginia, for example, have to test their water at two-hour intervals throughout the day, totaling thousands of water quality tests per year. All other states have similar EPA-mandated requirements.

Health concerns are addressed through primary drinking water standards, which set maximum contaminant levels (MCLs) to limit biological and chemical contaminants that may be present. Secondary drinking water standards control aesthetic factors, such as taste and odor.

If a contaminant standard is exceeded or discovered in a drinking water facility, the public must be notified within a set time via television, radio, posting, or hand delivery to customers, depending on the severity of the violation.

The Food and Drug Administration (FDA) is the federal agency that regulates the quality of bottled water sold across state lines. In other words, bottled water is considered a food product, and the FDA’s rules only come into play when that product is sold outside of the state where it is produced. Similar standards to EPA’s govern limits of biological and chemical contaminants that may be present in bottled water, and the FDA ordinarily accepts new MCLs set forth by EPA. But the fact remains that FDA’s jurisdiction only applies with a food’s, in this case bottled water’s, interstate trade.

EPA’s standards are stricter for some microorganisms, such as Giardia, Legionella, and viruses, and for some 22 metals and trace organic chemicals. FDA is stricter than EPA for copper, fluoride, and lead. They have established limits for more than 75 contaminants. States can set their own standards, which may be higher or lower than FDA’s, and IBWA-member bottlers may have further standards they set for themselves.

Regulations always can be updated and amended. The FDA is in the process of establishing a contaminant level for uranium, a previously unregulated element. Also, in 2001, FDA set a limit for bromate, a potentially carcinogenic byproduct created when ozone is added to drinking water containing bromide.

FDA lists several kinds of bottled water (spring, artesian well, mineral, purified, sparkling, etc.), and the type is listed on the bottle. Seltzer water and club soda aren’t bottled water; they are soft drinks. Nutritional information is listed on the label, which in the case of water, means very little. Total calories, calories from fat, sugars, protein, and fiber don’t really apply to water.

FDA also has what are called “current good manufacturing practice” regulations for processing and bottling drinking water. These regulations stipulate that the water must be processed, bottled, stored, and transported under sanitary conditions. The bottlers have to keep records for government inspectors. No one, meaning the general public, is entitled to see these records, and the records can be discarded after a couple of years. Contrast that to the scrutiny public water facilities are under. FDA requires that bottled water plants be subject to random, yearly inspections. When it comes to safety concerns, FDA inspects bottled water plants and their products the same way it does other foods. A report called Bottled Water Regulation and the FDA states that “because FDA’s experience over the years has shown that bottled water has a good safety record, bottled water plants generally...
are assigned low priority for inspection,” noting that violators are inspected more frequently “depending on the number, significance, and recurrence of violations.” Also, FDA field officials “follow up on consumer and trade complaints and other leads, as appropriate.”

Now here’s where things can get a bit tricky. FDA rules don’t apply to a manufacturer who produces bottled water packaged and sold within the same state. Did you get that? FDA’s rules do not apply to in-state sales. States may have their own regulatory systems and standards for production and sales. Or, the bottled water may have no government oversight whatsoever. Bottled water sold in roughly one of five states comes under this category.

Water bottlers in states with regulatory powers are usually controlled through the agriculture or health department. These agencies can enact rules that are stricter than FDA’s, but this isn’t often the case. California is the exception; this state has more control over bottled water production than the federal government’s regulations.

Still question which is better?

The IBWA asserts on its Web site that “tap water can be inconsistent—sometimes it may be okay while other times it is not.” Under the current regulatory system, a bottled water could also be inconsistent, especially the brands that don’t fall under either the FDA’s or the IBWA’s guidance.

Another questionable claim about bottled water’s purity has to do with spring water or artesian well water. As the IBWA says, these waters come from well-protected, underground sources. The processing plants may be sanitary.
Dr. Suffet of UCLA proposes that if soft drinks and beer have bottling and expiration dates, why shouldn’t bottled water?

and secured from intruders, but if the aquifer from which the water is drawn is contaminated, the word pure hardly applies.

Leaking underground fuel storage tanks, widespread use of agricultural fertilizers and pesticides, confined animal feeding operations, industrial pollutants, poorly constructed water wells, and malfunctioning septic systems contribute to groundwater contamination across the country.

Take New Hampshire, for instance, a state that boasts plenty of beautiful mountains, springs, and streams. Approximately 60 percent of the population uses groundwater as their source of drinking water, and about 25 percent use private wells.

New Hampshire also is blessed with 18 federal Superfund sites, 15 of which have contaminated bedrock, meaning aquifers may be polluted. According to the Environmental Research Group at the University of New Hampshire in Durham, the state has “approximately 400 hazardous waste sites, 3,000 petroleum sites, and 197 unlined solid waste landfills, some of which are impacting or have the potential to impact bedrock aquifers.”

Water system personnel can use the tight regulatory control of EPA’s water laws to promote their product. Public water systems are required to test their water several times a day and disinfect accordingly, submitting their test results to the EPA. If any problem with excess contaminants is noted in the water, the situation must be reported and broadcast to consumers. Safety is mandated and is foremost since so many people must rely on public water.

Fort Collins, Colorado, came up with a good strategy to battle the impression that bottled is better than their tap water. Along with their municipal water, personnel tested the bottled waters sold in town, then posted the results on their Web site. They also list the price of their water compared to that of bottled water sold at that time (1997). Their municipal water cost 0.002 cents a gallon compared to some bottled waters that exceeded 85 per gallon.

The price of a gallon jug of water sold in grocery stores is about 89 cents. Consumer Reports says that a typical household spends $214 a year for drinking water at that price. Water is fairly heavy to carry, and one gallon doesn’t last very long. So, to avoid the trouble, a family may want to have their bottled water delivered. This convenience will add around $325 or more per year to the bill.

One drinking water professional put it this way: “How can anybody cry about the price of a gallon of gasoline these days when so many are willing to pay exorbitant prices for a mere pint of water?”

**CCRs Provide Water Snapshot**

Part of a water system’s obligation to its community is to create a consumer confidence report (CCR). These yearly reports outline, among other things,

• the water’s source and its susceptibility to contamination;
• the level of any contaminant found in the water;
• potential health effects of a contaminant detected in violation of an EPA health standard, plus an accounting of the system’s actions to restore the water’s safety;
• the system’s compliance with other drinking water rules;
• an educational statement for vulnerable people about avoiding...
Cryptosporidium, a disinfection-resistant microorganism:
• educational information about nitrate, arsenic, or lead where these contaminants are detected above 50 percent of EPA’s standard; and
• phone numbers for more information, including the water system and EPA’s Safe Drinking Water Hotline at (800) 426-4791.
EPA says this information “provides customers with a snapshot of their drinking water supply.”

In 2000, the FDA recommended that water bottlers provide consumers with water quality information, suggesting that some of the data could be listed on the label and further details could be outlined on a company Web site. FDA is considering future regulation requiring source water, treatment process, and water quality information be available to consumers—something much more helpful than listing water’s nutritional value.

Dr. Suffet of UCLA proposes that if soft drinks and beer have bottling and expiration dates, why shouldn’t bottled water?

“Many people would not drink an out-of-date beverage,” he says. “Why should they drink an aged bottle of water? All beverages that reach the market are subject to potential storage problems, (e.g., hot warehouses). Dates are needed on the shelf life of bottled water to indicate safety.” (The IBWA says that if bottled water is stored unopened in a cool place, it should last indefinitely.)

Self-Regulation Is the Norm

In most states, there is little real federal or state oversight of the bottled water industry; manufacturers voluntarily regulate themselves. Many bottlers belong to the IBWA, a trade organization created for the industry’s benefit, and agree to adhere to its guidelines. Bottlers test their product on their own schedules and member companies voluntarily submit to annual testing by NSF International, an independent testing and certification lab, in addition to FDA’s inspection.

FDA requires bottled water labels to state the manufacturer’s or distributor’s name and address, and IBWA members list the company’s telephone number. The FDA also requires that any contaminant in excess of regulated limits must be listed on the labels, but that sounds kind of counterproductive to marketing. Would you buy a bottle of water that stated it had too much lead in it?

Bottled Water Not Faultless

The notion that all bottled water is safer than tap is no longer taken for granted. In July 2002, the New Hampshire Department of Health and Human Services ordered the recall of a bottled water brand sold in New Hampshire and Massachusetts when coliform bacteria was found in test samples. Coliform is not a pretty thing. It lives in the intestines of warm-blooded animals (including humans), and its presence indicates that the water may contain pathogenic organisms.

Another report in the journal Nature told about contamination of several brands of European bottled water with...
a virus caused by human feces. In April 2002 they stated that these bottled waters (potential imports to the U.S.) still showed signs of a viral contaminant that “causes more than 90 percent of the world’s stomach upsets” a year after initial testing.

Bulk vended water isn’t without fault either. A study done in late 2002 by the Environmental Working Group and the Environmental Law Foundation in Los Angeles showed that a third of one brand’s vending machines exceeded the state limit for trihalomethanes, a disinfection byproduct. In Florida, Michigan, and Illinois, manufacturers have recalled their bulk bottled waters after tests showed bacterial contamination.

The Natural Resources Defense Council (NRDC), ordinarily a public drinking water critic, produced a report a few years ago that encouraged bottled water regulation more like EPA’s oversight of public drinking water. NRDC tested more than 1,000 bottles of 103 brands of bottled water. Most of the waters were high quality, but some brands showed contamination. A third or so of them contained synthetic organic chemicals and bacteria, and one brand contained arsenic levels that exceeded health limits.

These incidents are rare and the exception rather than the rule, but, then again, so are municipal water contaminations.

The safety of the plastic and the effect plastic has on the water’s taste are being questioned more. The most common plastic used for water bottles is polyethylene terephthalate (PET). Another plastic, polycarbonate, creates a stronger, rigid container and is used for those five-gallon water cooler bottles. A Consumer Reports test of water sold in polycarbonate bottles showed eight of the 10 left residues of bisphenol A, an endocrine disruptor, in the water. Endocrine disruptors are synthetic or naturally occurring chemicals that interfere with the balance of normal hormone functions in animals, including humans. (Read about endocrine disruptors in the winter 2003 On Tap.)

Ozone, as stated earlier, is the disinfection process often used for bottled water. While ozone is a highly effective disinfectant, it is also an aggressive oxidant. Bruce Lewis, an engineer whose firm in Litchfield, New Hampshire, works with small water systems, says that if ozone remains in water that is to be bottled, it can corrode the plastic.

“Depending on where ozone is added to the water during the bottling process,” Lewis says, “if free ozone remains in solution, and this comes in contact with the plastic of the bottle, then a taste may result. This is, in fact, the plastic having been partially dissolved by the ozone and put into solution in the water.”

Lewis said the concentration of the ozone and the contact time for the ozone is critical. “Some companies that manufacture ozone-generating equipment report that greater than 0.2 parts per million (ppm) cause taste. However, at below 0.2 ppm of ozone, disinfection is not assured.”

A bitter taste isn’t necessarily harmful, but many people buy bottled water because they say it tastes better.

As mentioned earlier, bromate, a disinfection byproduct regulated by EPA, is produced when water containing bromide is disinfected using ozone. FDA recently mandated a 10 parts per billion (ppb) limit for bromate in bottled
water. In California, whose laws regarding bottled water are more stringent than many other states, bromate is listed in the Safe Drinking Water and Toxic Enforcement Act of 1986’s Proposition 65, which lists chemicals suspected of causing cancer or reproductive problems.

The Water Quality Association reported that problems could arise for bottlers in California who might have less than EPA’s 10 ppb limit for bromate. Proposition 65 requires that “consumers be warned of any amounts above a ‘no significant risk’ level—and a ‘no significant risk level’ can be less than the MCL.”

Purified water, one of FDA’s identified bottled water types, is considered safe. Prior to ozonation, it is treated with reverse osmosis, distillation, or deionization, any of which remove bromide, eliminating the possibility of bromates forming.

Ozonated spring or mineral water, on the other hand, are less strictly classified and may have a bromate problem that is in violation of the act. Violators can face fines of $2,500 per day until the bromates in tested waters are gone.

Grassroots activists across the country are fighting big bottling companies over ground and surface water supplies. IBWA says bottlers are protective of water resources. They say that the substantial investment needed to process water would make it foolish to deplete water supplies. That logic is questionable, though, when you know a manufacturer is pumping up to 500 gallons per hour and shipping it out of the state or country. When that happens, and it does happen, a heck of a lot of water is leaving the local ecosystem never to return. Compound the issue with a company’s claim that they own the land, and the water under it is theirs to use as they please. No matter that “their” water is part of all the water in the region. It’s easy to see why some folks are concerned for their water’s future.

Other people worry that all those disposable plastic bottles create litter and add to the overflow of solid waste in landfills. The IBWA says bottled water packaging is recyclable. Whether people choose to or have a place to recycle empty bottles is another matter.

**How can water systems compete?**

How can public water treatment systems begin to compete with this fast-growing, profit-driven business? What creative defense will convince people to trust the water they already pay for every day?

Letting people know that system personnel care is important. Public relations campaigns can really help. Press releases give treatment system personnel the opportunity to brag about the water they deliver. The National Rural Water Association has suggestions for ways to get the message to the public through bill inserts, school presentations, and the local media.

Booths at county fairs, festivals, and other local gatherings offer excellent opportunities for touting the quality of the public water. Of course a public water utilities’ best defense is to produce the highest quality product possible. When you think about it, that’s what treatment facilities are already doing—they just need to make more people aware.

**For more information:**

If you want to delve deeper into FDA’s rules for bottled water, read more on their Web site at www.cfsan.fda.gov/~dms/botwatr.html.

The IBWA also offers an overview of bottled water regulations on their Web site at www.bottledwater.org/public/bottled-water-regulation-overview.htm. (The text starts low on the page.)

The National Rural Water Association offers 101 PR Tips, Ideas & Pointers for Small & Rural Water Systems to Get Your Wheels Turning, a book to help convey the “commitment and professionalism of rural water in America.” State rural water organizations can also help put together a public relations plan. Contact the NRWA in Duncan, Oklahoma, at (580) 252-0629 or visit their Web site www.nrwa.org.

To read the Natural Resources Defense Council’s report Bottled Water Pure Drink or Pure Hype? visit www.nrdc.org/water/drinking/bw/bwi4nx.asp.

Michelle Moore lives at the headwaters of the Fish Creek watershed in rural Greene County, Pennsylvania. She drinks filtered spring water that flows out of the hillside behind her house.
Chromium-6 Takes Center Stage

by Arjita Sharma • NDWC Contributing Writer

If a chemical can claim to have had a starring role in an Oscar winning Hollywood production, it is chromium-6, also known as hexavalent chromium. Prior to the movie, Erin Brockovich, most people knew little about chromium. It took a rookie lawyer’s assistant, Erin Brockovich, to bring the villain of Hinkley, California, into the limelight a few years ago.

The Pacific Gas and Electric (PG&E) company used chromium-6 as an anti-corrosion agent in its compressor plant located in the San Bernardino County town of Hinkley. The leachate from the plant ended up contaminating the area’s private groundwater wells.

Hinkley residents reported many health problems, ranging from minor skin irritations to cancer and birth defects. The ensuing legal battle ended in an out-of-court settlement of $333 million for the Hinkley population. Some cases, which might take many years to resolve, are still pending against PG&E in California courts.

Can I be exposed to it?

Chromium is present in trace amounts all around us. In air it can be found in amounts less than 0.1 micrograms per cubic meter. Natural levels in uncontaminated waters range from fractions of one microgram to a few micrograms per litre. Chromium can enter the body when
breathed in contaminated air, ingested through water or food, or absorbed through skin when in soil, water, or air. As mentioned earlier, it exists in its non-toxic, essential form in some foods, too.

Chromium is brittle, hard, and lustrous in its metallic form. That is why it is used in stainless steel, chrome plating, and many alloys that require brittleness. An example is nichrome, an alloy used as a heating element in coffee pots, toasters, etc. Other uses for chemicals containing chromium are leather tanning, dyes, paints, refractory bricks, corrosion inhibitors, printing inks, photographic films, and wood preservatives.

Stringent guidelines exist as to how a sample must be tested for chromium-6. Further, testing is expensive, and very few labs test for chromium-6.

Most individuals, such as factory workers, are exposed to chromium when they come in contact with polluted air in industrial situations. Besides people who work or live near industries that use chromium, tobacco users also are at risk to chromium exposure.

When released in the water stream, chromium attaches itself strongly to soil and only small amounts can leach into groundwater. Most studies indicate that it is unlikely to cause adverse health effects when an individual is exposed to chromium in soil or water.

What can chromium do?

Chromium-3 is thought to play a major role in glucose metabolism. It is called the master regulator of insulin so that the body can use sugar, protein, and fat. People need 50 to 200 micrograms of chromium per day. Most diets do not contain adequate amounts of chromium. A deficiency can lead to an insulin imbalance in the body. Thus, chromium-3 is an essential mineral for physical well being. In fact, chromium is marketed as a supplement or as an ingredient in mineral water. Marketers claim that chromium promotes weight loss.

Hexavalent chromium, on the other hand, is a known carcinogen when breathed in large doses. The body accumulates chromium-6, especially in the lungs. Epidemiological and animal studies show that long-term exposure to amounts of chromium, 100 to 1,000 times greater than those existing naturally in air, seriously increases the risk of lung cancer. Short-term health effects include a runny, itchy nose; nosebleeds; and ulcers in the nasal-passage lining. High dosage, short-term exposure also can trigger asthma in those allergic to chromium.

When swallowed, it can cause stomach ulcers; damage to liver, kidney, circulatory, and nerve tissues; and skin irritation. However, in the stomach, gastric acids convert chromium-6 to its benign chromium-3 form. This nullifies damage it might have caused to the digestive system.

According to EPA, no evidence supports health problems, such as stomach or gastronomical cancer or birth defects, which the plaintiffs in the suit against PG&E attributed to chromium.

Epidemiological studies of contaminated areas in San Bernadino County do not show proof of increased cancer risks or other ill effects.

Testing for Chromium

Currently, EPA maintains a maximum contaminant level (MCL) of 0.1 parts per million (ppm) for total chromium. EPA believes, given present technology and resources, that this is the lowest level to which the agency can require water systems to reasonably remove this contaminant.

California maintains a .05 ppm MCL but has no guidelines for chromium-6. Also, any estimate of how much chromium-6 is in a sample cannot be based on total chromium, as this can vary greatly.

Stringent guidelines exist as to how a sample must be tested for chromium-6. Further, testing is expensive, and very few labs test for chromium-6 in drinking water.

Testing for chromium-6 exposure through ingestion in the human system is not easy either. The amount of chromium occurring naturally in the human body can vary depending upon its occurrence in the environment.

Further, since chromium-6 is converted to chromium-3 in the stomach, it is all the more difficult to reliably arrive at the level of chromium-6 exposure.

What does the government think?

Starting in the early 1990s, the furor over chromium-6 has only increased. However, due to a lack of literature on the subject, any guidelines with regard to chromium are rather arbitrary. The debate on chromium is particularly harsh in California.

The California Environmental Protection Agency’s Office of Environmental Health Hazard Assessment formed a chormate toxicity review committee, which

Continued on page 55

Arijita Sharma is a civil engineer by training, but a writer at heart. She currently lives in California with her family.
"That invisible organisms also thrive and swim around in a watery environment was beyond imagination until a few centuries ago," said James Olsztynski in "Plagues and Epidemics," an article from *Plumbing and Mechanical Magazine*. "And their connection with disease wasn’t established until a scant 100 years ago. People believed divine retribution caused plagues and epidemics—or else bad air, or the conjunction of the planets and stars, or any, or all of these things."

People still had to learn about microbial organisms. And they still needed to learn about disinfection. That didn’t happen until the mid 1800s, according to the Chlorine Chemistry Council. It was 1846 when employees of the Vienna General Hospital in Austria first recognized chlorine’s potential as a disinfectant. Workers started using chlorine in the hospital’s maternity ward to prevent "child bed fever," an infectious affliction. It worked.

Within a few years, researchers deduced that chlorine might work to disinfect drinking water supplies and, thereby, might alleviate many diseases. In 1905, London scientists added chlorine to the city’s water supply and ended a raging typhoid epidemic. In the U.S., the Jersey City Water Works had chlorinated its Boonton Reservoir water supply, and by 1908, large-scale disinfection was launched.

With few exceptions, and with historical evidence to back it, disinfection of drinking water supplies did more to advance public health than practically any other modern discovery. But like all silver clouds, disinfection has a dark lining. Despite their ability to inactivate pathogens, some disinfectants can form disinfection byproducts (DBPs) that may be harmful to human health.

**Disinfectants React with Organic Matter**

DBPs can form when disinfectants react with bromide or natural organic matter, such as decaying vegetation that may be present in source water. Different disinfectants produce different types or amounts of DBPs. They are suspected carcinogens and possible endocrine disruptors.

The DBPs that researchers have identified in drinking water include trihalomethanes, haloacetic acids, bromate, and chlorite.

**Trihalomethanes (THM)** are a group of four chemicals that form, along with other disinfection byproducts, when chlorine or other disinfectants used to control microbial contaminants react with naturally occurring organic and inorganic matter in water. The trihalomethanes are chloroform, bromodichloromethane, dibromochloromethane, and bromoform.

EPA will regulate total trihalomethanes (TTHM) at a maximum...
What are the health effects of chlorine byproducts?

<table>
<thead>
<tr>
<th>By Product</th>
<th>Health Effects</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chloroform</td>
<td>Animal carcinogen which can induce liver tumors in mice and kidney tumors in rats.</td>
</tr>
<tr>
<td>Bromodichloromethane</td>
<td>Produces liver and kidney damage in both mice and rats. Carcinogen in mice and rats, producing renal, liver, and intestinal tumors.</td>
</tr>
<tr>
<td>Chlorodibromomethane</td>
<td>Produces liver and kidney damage in both mice and rats. Induces tumors of the liver in mice.</td>
</tr>
<tr>
<td>Bromoform</td>
<td>Low incidence of intestinal tumors in rats.</td>
</tr>
<tr>
<td>Chloroacetic acid</td>
<td>Neurologic effects in animals. No increased tumors.</td>
</tr>
<tr>
<td>Dichloroacetic acid</td>
<td>Major toxicities cause damage to the nervous system and liver. Induces liver tumors in mice.</td>
</tr>
<tr>
<td>Trichloroacetic acid</td>
<td>Potent inducer of liver tumors in male mice.</td>
</tr>
<tr>
<td>Dichloroacetonitrile</td>
<td>No specific toxicological effects reported, only nonspecific effects on body weight, some organ weights, and some reproductive effects.</td>
</tr>
</tbody>
</table>

Source: Health effects of some byproducts of chlorine disinfection [Bull and Kopfler, 1991]

allowable annual average level of 80 parts per billion. This standard replaces the current standard of a maximum allowable annual average level of 100 parts per billion (ppb) for large surface water public water systems.

Haloacetic acids (HAA5) are a group of chemicals that can form along with other disinfection byproducts when water systems use chlorine or other disinfectants to control microbial contaminants in drinking water. The regulated haloacetic acids, known as HAA5, are: monochloroacetic acid, dichloroacetic acid, trichloroacetic acid, monobromoacetic acid, and dibromoacetic acid. EPA will regulate HAA5 at 60 ppb annually.

During ozone disinfection, bromate forms when ozone reacts with naturally occurring bromide in source water. EPA will regulate bromate at annual average of 10 ppb in drinking water.

Chlorite forms when water systems use chlorine dioxide to disinfect water. EPA will regulate chlorite at a monthly average level of one part per million.

The U.S. Environmental Protection Agency (EPA) began regulating DBPs in 1974, shortly after discovering DBPs existed. Over more recent years, EPA has found that disinfectants other than chlorine, including ozone, can cause DBPs.

To evaluate the potential health effects of DBPs, EPA looked at a number of studies. In the past few years, researchers have conducted studies—known as toxicological studies—that measure how exposure to high doses of DBPs effect health. Scientists typically use laboratory rodents in this kind of research.

Animals Develop Cancer

In several of these studies, the research animals developed cancer. In addition, some of them developed reproductive and developmental disorders. This type of research has never been conducted on humans, causing many in the drinking water industry to question how the results could be translated into a drinking water regulation.

EPA researchers decided to take a look at some epidemiological studies. These kinds of studies measure the factors that influence disease in human populations. A number of these studies revealed a relationship between exposure to chlorinated surface water and cancer. However, some of the studies only showed a slight increase in cancer risk, while others showed no relationship at all.

EPA stated that while it cannot conclude that there is a causal link between chlorinated surface water and cancer, the studies suggest an association. The agency believes that there is enough information to support concern about a potential hazard and to warrant regulatory action. Based on the available data, EPA published its Stage 1 Disinfectants/Disinfection Byproducts Rule. The standard will become effective in December 2003 for small surface water and all groundwater systems.

For more information, visit EPA’s Web site at www.epa.gov/safewater/mdbp/mdbp.html#st1.

References:
Ibid. 2001. Stage 1 Disinfectants and Disinfection Byproducts Rule. EPA 816-F01-014.

On Tap’s Kathy Jesperson offers this advice to anyone wishing to become a writer: Never feel married to your first draft, accept criticism gracefully, and always learn something from the process.
In less than a decade, the World Wide Web (WWW) has gone from little more than a curiosity to a vital information source for millions. According to the Massachusetts Institute of Technology, in 1993, when statistics about the Web were first tracked, fewer than 150 Web sites had been launched; by 2002, more than nine million sites existed worldwide.

Part of this phenomenal growth comes in places you might least expect it: small communities. Although no statistics are readily available, anecdotal evidence suggests that more and more small communities see a presence on the WWW as being an important part of how they do business today.

Small Town Web Sites Proliferate

Why develop a Web site?

Web proponents point to a number of reasons for having a site. A good Web site can:

- communicate information to your customers 24 hours a day, 365 days a year;
- provide more in-depth information, such as reports and studies, that would be prohibitive to mail;
- encourage communication from customers;
- foster a sense of community by seeking input on decisions; and
- be more cost-effective than traditional forms of communication.

It’s also important to recognize that the Internet has become the primary information source for the next generation of customers. “You have to remember that people under about the age of 30 don’t get their news from newspapers,” says Dana Keith, a computer programmer and Web developer who works with clients around the country. “They go online for information. In the very near future all organizations—both public and private—will need to have a Web presence if they want to communicate with people.”

For a small water utility, a Web site may provide a cost-effective way to reach customers. In particular, it may offer an alternative to mailing out hundreds or thousands of the annual consumer confidence report (CCR) required in the Safe Drinking Water Act.

“The CCR rule allows systems serving fewer than 10,000 people to request a waiver from sending out copies of the CCR to each customer,” says Jenny Bielanski, operator certification and capacity development coordinator with the U.S. Environmental Protection Agency. “If a system is granted a waiver from the governor or his/her designee, one way that the system can make the report available to customers is to post it on the Internet.

“The system is still required to inform its customers that the report will not be mailed, but has been prepared and is available for public viewing. By advertising the report’s availability through a
water bill (or other means, such as a newspaper) or publishing the report itself in one or more local newspapers, systems can meet this requirement. Systems that have waivers must make the report available upon request.

“Systems serving 500 people or fewer may forego publishing the report in a newspaper, but must inform their customers at least once a year that the report has been prepared, is available for public viewing, and the location of availability,” she adds. “Any system doing so must obtain a waiver from the governor or his/her designee.” Many small systems have discovered that the costs they save in printing and mailing more than make up for the expense of developing and maintaining a Web site.

Although the benefits of having a Web site may seem great, pitfalls do turn up. Without good planning, a site can become a logistical nightmare and reflect badly on the community. “Nothing is worse than a stale site (one that has outdated information or that never changes),” says Keith. “When you get into this, you should have a clear sense of the money and personnel you’ll need to keep the site interesting and up-to-date. I’ve seen sites that were launched with great fanfare, only to see them languish because no one has been assigned to work on them.” For a modest site, Keith recommends that one person be responsible for updating the site and keeping the content fresh. This person should have adequate training and equipment to perform this task.

**What to Put on Your Site**

If you’ve decided that, yes, a Web site is a good idea for your town, the next step is to decide what to put on the site. “There are many things a town can put on a Web site,” says Steve Wyatt, utility operations consultant with Tennessee’s Municipal Technical Advisory Service. “I specifically recommend a list of elected officials with contact information; dates, times, and agendas for council and board meetings, including information on how to get on the agenda and how the public can participate; economic growth and business data; information about the town in general, such as special interest items, recreation, schools; and the town’s departmental areas (public works, fire, police, utilities) with contact information and rate schedules, if applicable.”

Many small town Web sites incorporate the suggestions Wyatt makes, in one form or another (see the examples beginning on page 35). Others embellish these efforts with more complicated interfaces. One example of this is providing online payment of water and sewer bills. Another is incorporating photos and graphics on the site. Visual information can be particularly effective if the town is constructing a new facility—it lets customers see where their increased rates are going.

**The Web Can Be a Marketing Tool**

While a Web site can be effective in keeping the local community informed, it can be a valuable tool for those outside the community, too. One way small towns increasingly use the Web is in conjunction with economic development activities. A business looking for a new location, for example, should be able to learn all about your community—including data on water and other utilities—from your site. Many industries, especially high-tech manufacturing, need a reliable water supply.

On a smaller scale, individuals considering a move to your area should also be able to get a feel for your town. When Dana Keith was considering a move to a western city, he investigated water quality. In fact, he thinks a well-run water utility could be used as a marketing device. “When I thought about relocating, I spent a lot of time reviewing the usual things: housing market, schools, traffic congestion,” he recalls. “Having heard about water shortages and water quality issues in the West, I also checked out water quality. More and more, as resources are stretched and pollution increases, I think people will want to know about the condition of the local water when they consider moving.”

Fruitland, Maryland, is one place that publicizes their excellent drinking water, both on the WWW and with a series of signs around town. “Fruitland takes the lead in two vitally important areas of environmental quality,” the town Web site states. “In 1996, a wellhead protection plan was established to preserve the quality of
the groundwater in the area of the city’s production wells and treatment plant. The Maryland Rural Water Association recently recognized the city for its dramatic efforts at eliminating potential hazards and making the public aware of the importance of safe drinking water. Around town, one can spot the distinctive blue signs advising they have entered a safe drinking water area.”

For many small communities, a well-planned and well-designed Web site can be a significant benefit. It can provide an invaluable first impression to external audiences and foster communication for residents. As society becomes firmly ensconced in the Information Age, many places find a presence on the WWW to be a necessity.

**Good Examples Abound**

Elsewhere in this article you’ll find suggestions on how to start a Web page and links to additional resources. However, one of the best research methods is to visit small community sites in your area and around the country. Here are five communities from different parts of the U.S. that have developed useful Web sites. A lengthier list of small town Web sites may be found on the National Drinking Water Clearinghouse site at [www.ndwc.wvu.edu](http://www.ndwc.wvu.edu).

**Stinson Beach County, California, Water District [www.stinson-beach-cwd.dst.ca.us](http://www.stinson-beach-cwd.dst.ca.us)**

Located on the Pacific Ocean, 25 miles from downtown San Francisco, Stinson Beach is a small community with a resident population of 1,500. “Stinson Beach is one of the 10 wealthiest communities in America,” says Mark Richardson, rural development specialist with the Rural Community Assistance Corporation. “Not surprisingly, they have one of the best rural water district Web pages that I know.”

The Stinson Beach site is arranged in three main sections, titled “For Our Customers,” “Administrative Information,” and “Codes, Reports, and Technical Information.”

The first section, “For Our Customers,” has information about rates and charges, a flow chart documenting the permit process for new water and wastewater service, a guide to onsite wastewater systems, and a list of frequently asked questions. As you might expect in northern California, information about water conservation and earthquake preparedness is also included.

“Administrative Information” contains information about scheduled board meetings, the agenda for the next meeting, minutes for previous meetings, and a budget for the current fiscal year.

“Codes, Reports, and Technical Information,” includes reports on water quality and a hydrologic survey, as well as policies and regulations related to water and wastewater. A helpful glossary and links to other resources are also provided.

**Fruitland, Maryland [www.cityoffruitland.com](http://www.cityoffruitland.com)**

Fruitland, Maryland, (population 3,500) is another beach community with a useful Internet presence. Their site includes plenty of water-related information including the CCR, current town budget, taxes and fees, permit requirements, and public meetings.

Fruitland’s site is notable for how they incorporate water and wastewater information into a larger public relations and community awareness plan. As previously mentioned, the site publicizes a Maryland Rural Water Association award the town received and also explains how they developed signs around town proclaiming safe drinking water areas.

The site goes on to explain an expansion and upgrade of the wastewater treatment plant, expected to be completed by summer 2003.

**Stagecoach, Nevada [www.stagecoachgid.com](http://www.stagecoachgid.com)**

The Stagecoach General Improvement District (GID) bills itself as “The Best Little GID in the West.” The site, while not as extensive as some of the others cited here, does include an electronic newsletter, CCRs for two different communities in the district, and private well test results.

The most unique feature on the site—in keeping with Nevada’s reputation for games of chance—is the monthly drawing. Any customer who has paid their water bill by the 25th of the
month is entered in a random drawing. The winner receives $35 credit on the next month’s water bill, and the results are posted on the Web site.

Rittman, Ohio  
www.rittman.com/water.htm  
Rittman, Ohio, (population 6,000) is a farm community not far from Akron. The community’s site features a newsletter and other information about local utilities. In addition to the CCR, the site has a summary of ongoing capital improvements (notably a wastewater treatment facility currently being constructed that will create compost for area farmers), and a graphic showing different water leak sizes and how much they cost a customer over time.

The site boasts a “new payment option,” which will allow customers the ability to pay for city services online. However, this feature wasn’t yet working during research for this article.

Gatlinburg (Webb Creek Utility District), Tennessee  
www.wcud.org  
One of the toughest things for a water utility to do is raise rates. The Gatlinburg, Tennessee, Webb Creek Utility District (WCUD) presents this situation in a favorable way on their Web site. In an open letter to customers, the WCUD Board of Commissioners explains how they were approved for a low-interest Rural Utilities Service loan that will allow them to extend service and improve water quality. However, these improvements, the letter explains, come with a cost in the form of a modest monthly increase for service.

A gateway to the Great Smokey Mountains National Park, Gatlinburg (population 3,400) has many customers who live there only during the summer months. The Web site explains how they can disconnect water service while they are away but not the sewer (customers pay for sewer availability, the site explains, not something that can be measured like water). The site also includes a utilities contract, a service application, policies, CCR, and frequently asked questions.

More Information  
Not surprisingly, the Web itself is a great source of information about developing a site. The following sites provide more information:

- webdesign.about.com
- www.useit.com
- www.websitetips.com

For examples of bad Web site design, visit www.webpagethatsuck.com.

The Maryland Municipal League (MML) offers a service called “Total Web Government” that helps member municipalities with developing and maintaining a Web site from scratch. One participating community offers its site under construction as an example of a work in progress on the MML website. You can get to this by following the link from the league’s site www.mdmunicipal.org or by going to www.totalwebgov.com directly for a summary of the service and a view of the example.

The National Center for Small Communities (NCSC) has a 74-page guidebook titled “Getting Online 2.0: A Small-Town Guide to Creating 21st Century Communities” that provides information about using computers and technology. The guidebook is available in single copies ($14.95 for NCSC members; $19.95 for non-members) and in discounted, bulk quantities. The minimum bulk discount order is 80 books, for $120 total ($1.50 per guidebook). For more information and ordering instructions, visit the NCSC Web site at www.natat.org/ncsc/NewResources.htm or call (202) 624-3550.

On Tap’s Mark Kemp-Rye was previously the editor of The Sunspot, a weekly community newspaper available only on the Web. Launched in 1995, The Sunspot was one of West Virginia’s first “papers” to explore this new medium.
Before you begin to develop a Web site, decide what information you want the site to contain. Whether your primary goal is to inform your audience, serve your customers, heighten public interest, or promote your services, defining a goal will keep you focused throughout the Web site development process.

**Getting Online**

To get started you will need an Internet Service Provider (ISP), a company that provides access to the Internet for a fee. Research the ISPs in your area for one you feel comfortable dealing with and that gives you the most for your money. Although it is possible to change ISPs at a later time, it is also likely that if you do, you will need to make other changes as well.

Your Internet address and location on the Internet is your domain name. Domain names always have two or more parts, separated by dots, and it should identify your organization. After you choose your name, contact a domain registration service. You can do this yourself but many ISPs also offer this service for a fee.

A hosting provider will rent space for your domain name and Web site so that you will not need to buy or maintain a Web server. Most ISPs provide this service. Things to consider when searching for a hosting provider are availability of 24-hour customer support, fast servers that provide interruption-free service, server options, additional services such as databases, and whether or not the service requires a contract.

**Web Site Design**

Try to keep the site simple, yet complete. Many of your visitors may have older browsers and be unable to connect to newer technology. Keeping that in mind, use simple graphics and photographs, white space, different colors, and no more than two different font styles.

The site should be easy to navigate and information should be readily accessible. Because visitors are looking for information, make sure to include as much as possible about your organization, including how you can help them and how they can contact you.

The first page of your Web site is your homepage. This page should have an index with individual links that steer surfers right back to it. (Remember that visitors may not enter your site through your home page so they may need to find their way to it.) The text should be divided into sections with hyperlinks (words or pictures in a Web page that act as a link to other Web sites or pages) to access different data. Each section should cover a specific topic of interest.

While graphics and pictures enhance the site, it is still the content that is most important so put extra effort into the writing. Writing should be clear, understandable, and to the point. Take the time to rewrite and reread to be sure the information reflects your organization’s philosophy, targets your audience, relates your message effectively, and enables the visitor to respond accordingly.

Many people begin their Web searches from a search engine, such as Yahoo or Google. Contact as many search engines as possible and submit your site information to each one.

There is no fee to subscribe to a search engine, but you must submit your Web pages to the search engine so they can index your site.

**Do you need help?**

If mechanics or a lack of creative ideas puzzles you, a professional Web designer can help. Fees largely depend on your location, as well as what you need from a designer. Obviously, a plain site will be less expensive than a fancier one with multiple graphics and links. A professional designer may charge hundreds of dollars or more to design a simple homepage with several links, with fees rising for special effects or more involved graphics. If financing is a major concern, you might consider hiring a high school or college student. Also, do not rule out the possibility of volunteers (retirees, students who need to complete a project for course work, etc.) who specialize in this area.

Even if you decide to hire a designer, you will still need to stay in charge of your site. The site should communicate your idea of what your organization is about, not what the designer thinks. At your first meeting, show the designer preliminary sketches illustrating your basic ideas.

During the planning stages, decide if your organization or the designer will update the Web site. Old information on a site is one of the biggest complaints from people searching the Web. If you plan to maintain the site, be sure that you have the software and training to do so.

This article was adapted from “Considerations in Developing a Web Site” in the Winter 2000 E-Train. Published by the National Environmental Training Center for Small Communities (a National Drinking Water Clearinghouse partner), E-Train is a free, quarterly newsletter about environmental training. Call (800) 624-8301 and ask for a copy.
With warm weather months and accompanying increased water demands upon us, now is the time to implement water conservation measures—particularly those focused on seasonal uses, such as lawn watering. Many western and some eastern regions are still experiencing drought or its residual impacts, such as reduced water supplies and lower water quality. Whether your water system is in drought, drought recovery, or simply needs to clamp down on water waste, here are a few conservation steps adapted from my book, *Handbook of Water Use and Conservation*:

1. **Communicate this year’s water budget to the public; talk about conservation early.** Conservation directives are more likely to be heeded if heard early and often. Explain your system’s water supply status to the public and whether or not they need to be on a water budget to trim wasteful use. How much can your system safely stretch to accommodate anticipated demands this summer, and how much does it need in storage to withstand a drought or other emergency? How full are your reservoirs, rivers, and aquifers, and will this season’s demands allow them to continue to provide a sustainable yield? Has your system updated its requirements for supply reserves in light of necessary security steps and contingency planning?

Most adults intuitively understand the need to live on a budget, particularly when it comes to limited resources, such as money and time. In today’s world, the public also can understand that water is a limited liquid asset that treatment systems and their customers must budget. Another benefit of trimming water waste is increased community security. Utilities that maintain stable and reliable supplies are better equipped to meet emergency needs, such as for fire, hazardous material emergencies, and terrorist events. Responsible water managers never want to be caught water short.

2. **Clarify the difference between water “wants” and water “needs.”** This is true particularly when it comes to discretionary uses, such
Unfortunately, too many water managers succumb to the pressures of a demanding public—particularly when they are affluent—whose landscape water use skyrocketed in recent years. Businesses that sell the perfect-looking landscape indirectly tax local water supplies, yet they bear none of its burdens. Herbicide and pesticide residues in drinking water, eutrophication of water bodies from excessive fertilizer use and runoff, and dry rivers are just some of the damaging impacts from over-irrigation and conventional commercial lawn care. Just because some people want a perfect green lawn, no matter how hot and dry it is, does not mean that water managers should accommodate them, even when customers are willing to pay the price excessive use incurs.

Water utilities are a community’s water steward. It is up to water managers—not public whim and landscape contractors—to affirm and enforce a community’s water ethic.

3. Establish sensible lawn watering guidelines or rules. These guidelines should be based on local climate, available water supplies, and your service area’s conservation goals, among other factors. When it comes to conservation-oriented outdoor watering rules, what makes sense will vary by community. Ardent lawn waterers with automatic irrigation systems tend to be among the worst abusive users who drive peak demands. These people are a priority for conservation education. Avoid odd/even watering schedules because they may reduce your peak demands but increase your total demands. (“If this is my day to water, then I better turn on the hose or else I’ll miss my chance.”)

My general view is that watering should be allowed twice per week (at the most), preferably only once a week, with a maximum run time of no more than 30 minutes per irrigated area. That allotment should be sufficient to keep most lawns healthy. If that seems unrealistic because you have a lawn in a desert or other grass-hostile environment, then your problem is not water. Most lawn diseases and pest problems are from over-watering, not under-watering.

Remember, it is normal for many turf grasses to go dormant and turn brown during the summer months. In most instances, brown lawns and patches are not dead; the roots are alive. Grass blades typically green up during the spring and fall growth spurts. I do not agree with the belief that a
long, deep soak via a hose is
good for lawns: the practice
courages shallow roots and
ignores the fact that rainfall
periodically provides deep-root
moisture that grass can access
for survival during drought.
What if a drought does occur?
It’s only nature saying, “Go
with my flow and accommodate
accordingly.”

4. Promote native and drought-
tolerant grasses and plants to
save water and reduce land-
scape chemical loads. A grow-
ing movement among land-
scape and horticultural pro-
fessionals promotes turf
and plant species that are
native or naturally adaptive
(excluding invasives). The
natural landscaping
approach may offer more
profound water savings
| and other benefits than
| the Xeriscape™ principles.
| Organizations, such as
| the Wild Ones Natural
| Landscapers and the
| Ecological Landscaping
| Association, advocate a
| new and closer relationship
| between people and the nat-
| ural world through restora-
| tion of the native plant and
| wildlife environment in your
| own backyard. Further, they
| encourage natural irri-
| gation, less lawn, and less
| mowing. But they discour-
| age synthetic chemical fer-
| tilizers, herbicides, and pes-
| ticides that can harm the
| environment and pose
| health risks. Lawn and
| landscape chemicals are
| finding their way into
| our drinking water
| through pathways,
| such as storm water
| run-off and infiltra-
| tion. Americans apply
| 10 times as much
| chemicals on lawns as
| we do on our agricul-
| tural lands. Reducing
| these burdens while
| saving water offers a
| healthier relationship
| with the environment
| than we’ve had in the
| past. Ultimately, we
| drink what we put
| on our lawns so it
| behooves us to think
| twice before applying
| chemicals that may
| later flow in our
| bloodstream.

5. Sound the water conserva-
tion-pricing signal. At the
least, establish an inclining
block-rate structure that
encourages conservation
among all user groups, par-
ticularly during peak-
demand months. Important
note: water savings from
conservation need not result
in revenue losses. Early on,
estimate the demand reduc-
tions that your system will
realize from its conservation
pricing structure and relat-
ed measures so that rates
can be adjusted accordingly
to avoid revenue losses.
Establishing a reserve rev-
ue account can also
help buffer revenue fluctu-
ations from conserva-
tion. If a conser-
vation rate structure is
designed properly, cus-
tomers who conserve water
should not see an increase
in the cost of their water
bill (i.e., rates go up, but
use goes down so it’s a
wash). Because water sav-
ings result in reduced utili-
ty energy and chemical
operating costs, even with
higher rates, some cus-
tomer water bills may actu-
ally go down slightly due to
marginal cost savings.

6. Reducing your system’s
unaccounted-for water (UFW)
shows the public that you are a
model of water efficiency. The
American Water Works Assoc-
iation’s recommended goal for
water losses and leaks is 10
percent. What’s
yours? Many
U.S. water systems report UFW rates from 15 to 25 percent, an obvious one-stop source for water-waste recovery at every utility’s doorstep. Don’t have the budget to fix your high water loss and leakage problem? Remember, fixing customer meter errors typically results in increased revenues; going after that problem first will boost your income and help pay for the other leaks and waste that need fixing in your system. If your water loss and leakage rate is high, start addressing the problem now before a regulator, community group, or reporter finds out about this neglected problem, and your system becomes the local poster child for water waste.

7. Promote how the whole system benefits from sustainable water use and living. It’s practically impossible to pick up a newspaper or turn on the news without hearing a story about water. More and more people are concerned about water issues because talk of water shortage or scarcity deeply threatens our sense of security: we have a primal need for water that must be satisfied. Water managers and environmental leaders can mobilize that fear and refocus it in productive ways, such as educating people to connect the dots between what’s happening with their water systems (both in terms of quantity and quality) and the ways in which they conduct their lives at home, school, and work.

Do the people living in your community know that reducing chemical use in the home and yard will help keep their drinking water cleaner and safer and thereby promote better personal health? How many businesses and industries in your service area are using water-efficient equipment and practices that will not only save water but also reduce their energy costs and pollution outputs? Are your town’s schools, libraries, and government buildings implementing at least the water efficiency components of the new Leadership in Energy & Environmental Design® (LEED) Program sponsored by the U.S. Green Building Council? Your conservation actions can reach out and transform not only your water system, but also every life that it serves.


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International Drinking Water Regulations

The Developed World Sets the Standards

by Richard Radcliff, President, Radcliff Water Consulting

Editor’s Note: This article examines numerous drinking water standards around the world because the world’s standards will eventually come full circle. As Mr. Radcliff writes, “We live in a global environment, which is a closed system. Environmental contamination affects us all.” To see tables of drinking water standards around the world, view this article in its entirety on the National Drinking Water Clearinghouse’s Web site at www.ndwc.wvu.edu.

Drinking water standards vary around the world, ranging from complex to simple. And water quality runs the gamut from pristine to appalling. With such broad parameters, you might expect a wide range of rules. However, if you take a look, you can clearly see that international drinking water standards are divided into two categories:
• developed nations that have very high standards of water quality, and
• the underdeveloped world that continues to struggle with bacterial and chemical contamination.

Numerous reports convey the drinking water and sanitation problems that the developing world faces. The World Health Organization (WHO) set standards that these countries can use to begin their own safe drinking water programs. However, WHO acknowledges that most developing nations will not be able to meet these drinking water standards. To assist developing nations that may not be able to afford modern treatment technologies, WHO suggests these countries use the standards as guidelines to provide direction about simple filtration and disinfection.

Developed World Makes the Rules

To better understand how the world’s drinking water standards compare with those of the U.S., I investigated drinking water regulations in Australia, Canada, the European Union (E.U.), Germany, and the United Kingdom (U.K.) as well as those that WHO recommends.

The U.S. Environmental Protection Agency (EPA) is responsible for setting drinking water standards in America. Currently standards exist for inorganic (IOCs), volatile organic (VOCs), semi-volatile organic (SOCs), disinfection byproducts, microbials, and radiological contaminants. However, not all countries follow our standards. A review of other developed nations’ standards indicates that, while some countries list far more contaminants for possible monitoring, others consider regulation for some U.S. contaminants unnecessary.

Inorganic Contaminants

No country besides ours has standards for asbestos, beryllium, or thallium. A review of the actual regulatory limits shows that the U.K. has the least stringent standards as compared with the U.S. In the U.K., four contaminants have higher limits. Germany allows higher limits for three contaminants.

The U.S. Environmental Protection Agency (EPA) is responsible for setting drinking water standards in America. This drinking water plant is in the mountain state of West Virginia.

Photo by Julie Black

The U.S. Environmental Protection Agency (EPA) is responsible for setting drinking water standards in America. This drinking water plant is in the mountain state of West Virginia.

Photo by Julie Black
WHO is the only organization without higher regulatory limits for any other contaminants.

**Volatile Organic Compounds**

The countries surveyed take a very different approach to regulating volatile and semi-volatile organic compounds than does EPA.

Australia’s standards are the most similar to ours; however, most of the country’s standards are higher. WHO standards are similar in number to the U.S. But their limits are higher than those accepted in the U.S. for 12 of 19 contaminants. The U.K. and Germany take the greatest deviation from the U.S. approach.

Germany regulates the sum of six individual VOCs at 10 micrograms per liter (ug/L) and a maximum of 100 ug/L for the sum of all others detected. The U.K. only regulates three individual VOCs but also requires an inorganics type measurement for dissolved or emulsified hydrocarbons (measured as total petroleum hydrocarbons extracted in petroleum ether). The standards for semi-volatile organic compounds are even more variable.

**Semi-Volatile Organic Compounds**

We can find the greatest variation in the SOC standards. The potential list of contaminants includes pesticides, polychlorinated and polybrominated biphenyls (PCBs and PBBs), polycyclic aromatic hydrocarbons, phthalates, phenols, dioxin, and water treatment chemicals, such as acrylamide and epichlorohydrin.

**Pesticides**

Australia leads the world when it comes to setting standards for the greatest number of pesticides. This country has set standards for 100 pesticides that are not currently regulated in the U.S. Here, some aboriginal men get a drink of water during a break.

Despite the standards, Australia doesn’t require monitoring for these contaminants unless the water system has reason to believe that they may be present in their watershed. But, Australia can boast that it has set much more stringent standards for 16 of its 17 standards that are comparable to those of the U.S.

Of all the countries or organizations surveyed, the E.U., Germany, and the U.K. have the most stringent pesticide standards. Rather than attempt to regulate each individual pesticide and its metabolites, these countries set a maximum limit of 0.1 ug/L for any individual pesticide or metabolite, as well as a maximum total pesticide concentration of 0.5 ug/L. If these same standards were required in the U.S., many water suppliers would be forced to adopt granular activated carbon or membrane technology, thus significantly increasing the cost of water production.

**Non-Pesticide SOCs**

Significant differences also exist in the non-pesticide SOCs regulated by each country. Phenols, which are part of the “Unregulated Contaminant Monitoring Rule” in the U.S., are regulated in Australia and Canada. WHO also established guidelines for this contaminant.
class. The scope of polycyclic aromatic hydrocarbons (PAHs) is also more elaborate in the E.U. Unlike pesticides, most of the contaminants are not regulated individually but rather the sum of the contaminant concentrations cannot exceed the specified limits.

Interestingly, Germany has also set standards for polybrominated biphenyls and terphenyls. The brominated analogs to chlorinated contaminants can be far more toxic. Polybrominated biphenyls have been implicated as endocrine disruptors. Endocrine disruptors are chemicals that interfere with the normal endocrine function within humans and animals. Germany has been a leader in research into endocrine disruptors, and even acknowledges them in their drinking water laws, but has not set any standards beyond PBBs. As more is learned about endocrine disrupting compounds, it is likely that standards will be developed for brominated compounds and numerous other classes of SOCs, such as pharmaceuticals and personal care products.

**Radiological Contaminants**

In the U.S., increased testing is based on results of gross alpha and gross beta testing. If the standard is exceeded, systems must then test for radium 226 and 228. Based on these results, additional monitoring may be necessary, and water suppliers may need to pursue the primary list of radionuclides. Radiological standards for the U.K. and Germany were not found in the sources.

**Microbial Contaminants**

Each country also has significant differences among microbial monitoring requirements. Australia has put far more extensive monitoring suggestions in their guidelines than other countries. Additionally, Australia is one of the leading investigators of algal toxins. While no standards are currently in place, specifications for cyanobacteria, or blue green algae, do exist. Based on these counts, monitoring for toxins may be suggested. Currently, cyanobacteria and algal toxins are on EPA’s contaminant candidate list (CCL), which is the source for future drinking water regulations in the U.S.

Perhaps the U.K. standards present the most interesting mandate. The U.K. requires continuous monitoring of the entry point to the distribution system for Cryptosporidium. In the U.S., as of the end of the Information Collection Rule, the country has not enacted a requirement for routine Cryptosporidium monitoring. The testing cost for Cryptosporidium and Giardia lamblia is expensive, and the current detection method may indicate false positive or negative results. The daily monitoring rule at each entry point clearly places a heavy cost burden on water suppliers. The benefits of such monitoring may not be worth the costs.

**Costs Versus Benefits**

Completion of sample analyses requires considerable time. Processing and interpretation of the results can be accomplished within a day. Interpreting the results requires a powerful microscope and is very tiring to the analyst. In addition, contaminant misidentification can be a concern. Assuming that a sample was presumed positive for Cryptosporidium, by the time the water supplier was informed of the results, the water would have been in the distribution system and available to the public. Issuing a boil water notice may eliminate some illness, but there would still be some portion of the population that could be affected. Thus, timing of getting the data to the water supplier is an issue. Additionally, the test does not indicate the viability of the Cryptosporidium so the positive result may not reflect a real danger. Another issue that should be considered is the susceptibility of individuals to infection. Some individuals may be able to tolerate low levels of Cryptosporidium without becoming ill. Guidelines for issuing boil water notices would need to be developed to make sure that the water supplier didn’t “cry wolf” and erode the confidence of the consumers. The large number of negative samples and the potential for

Germany has been a leader in research into endocrine disruptors and even acknowledges them in their drinking water laws. This waterfall cascades through the town of Saarburg, Germany.
false positive results due to limitations in the method probably do not justify the large expense. A monitoring program is desirable to catch potential contamination, but the monitoring should probably be based on changes in water quality in the source water or changes in the efficacy of the treatment process.

Many Differences Remain

Significant variations exist among developed countries' drinking water regulations. Other developed nations do not regulate as many contaminants as the U.S., and regulatory limits also vary. Australia developed and codified standards for numerous pesticides, but does not require that water systems monitor for them. Australia also has done significant work on algal toxins and has a standard for cyanobacteria. Canada is reviewing virus data. Depending on the nature of this review, Canada may develop individual standards that could serve as a basis for U.S. standards.

Germany specifically references endocrine disruptors in their drinking water regulation and has been very active in research related to this diverse set of contaminants. Germany also lists standards for polychlorinated biphenyls. Because of their environmental persistence and toxicity, brominated contaminants, especially brominated disinfection byproducts, will likely be among future regulated contaminants in the U.S.

The U.K. requires daily Cryptosporidium monitoring at each entry point to the distribution system. While this approach provides significant data regarding the treatment process’s efficacy, the cost of the testing and the uncertainties of the data, which arise because the testing method is fallible, may outweigh the benefits.

As a result of stringent drinking water standards, people in the developed world enjoy a very high standard of water quality, but much work still needs to be done to optimize treatments that remove disinfection byproducts and endocrine disrupting compounds. In contrast, perhaps the most significant issue among international drinking water standards is the plight of developing nations. Much of the world’s population still live with a lack of access to purified drinking water or adequate sanitation.

WHO has guidance manuals that describe inexpensive approaches to basic-water purification. As developed nations endeavor to attain higher water-quality standards, it is critical for all nations to work together to supply greater access to clean drinking water and to strengthen regulations that will provide superior water quality for the world.

Bibliography


But, one component of the SDWA—capacity development—has, many would say, the potential to be the most far-reaching of any of the act’s many features.

**Capacity Development: A Brief Refresher**

Basically, capacity development asks a water system if it has the ability to provide the public with safe drinking water now and in the future. Capacity development is divided into three components: technical, managerial, and financial.

The 1996 U.S. Environmental Protection Agency (EPA) document *Guidance on Implementing the Capacity Development Provisions of the Safe Drinking Water Act Amendments of 1996* defines water system capacity development as:

... the process of water systems acquiring and maintaining adequate technical, managerial, and financial capabilities to enable them to consistently provide safe drinking water. The SDWA’s capacity development provisions provide a framework for states and water systems to work together to ensure that systems acquire and maintain the technical, managerial, and financial capacity needed to meet the Act’s public health protection objectives.

Technical capacity refers to such things as source water adequacy, infrastructure sufficiency, and technical knowledge and the ability to implement it. Managerial capacity is concerned with ownership accountability, staffing and organization, and external linkages. Financial capacity is about revenue sufficiency, creditworthiness, and fiscal management and controls. For a system to have adequate capacity, it must show that it meets requirements in these three areas.

A state’s overall capacity development program is actually made up of two major parts: the new systems program and the existing systems strategy. The new systems program requires that states have the legal authority (or other means) to ensure that all new community and nontransient, noncommunity water systems beginning operation after October 1, 1999, must demonstrate technical, managerial, and financial capacity with respect
to all national primary drinking water regulations in effect, or likely to be in effect, on the date of operation. For new systems, states often require a financial audit, an engineering report, documentation that a certified operator will run the system, and a business plan. The existing systems strategy requires states to have measures in place that assist all existing public water systems in acquiring and maintaining technical, managerial, and financial capacity necessary in order to comply with SDWA regulations.

“Capacity development is a state effort to help drinking water systems improve their finances, management, infrastructure, and operations so they can provide safe drinking water consistently, reliably, and cost-effectively,” says Jenny Bielanski, operator certification and capacity development coordinator with the EPA’s Office of Ground Water and Drinking Water. “While retaining the best of the previous act, the (1996) amendments create a new and strong focus on preventing contamination and noncompliance. They also greatly increase state flexibility, provide badly needed financial support, and create a new ethic of public awareness and participation.”

Small Systems: Where it all Began

It’s fair to say that capacity development was prompted by the experience of many small systems. Peter Shanaghan, formerly EPA small systems coordinator and now chief of staff with EPA’s Office of Ground Water and Drinking Water, notes this in a 1998 AWWA Journal article: “By the late 1980s and early 1990s, it was clear that small systems were having difficulty keeping up with the rapidly expanding SDWA-mandated regulations. There was also growing recognition of a significant need to repair and replace basic infrastructure, apart from any regulatory mandates.

“A few states were implementing ‘viability’ initiatives, which sought to promote small system compliance and otherwise address small system problems by ensuring that systems had the underlying technical, managerial, and financial capacity,” he continues. “These programs showed great promise, and the concept of small system viability emerged as a major consideration in early discussions about SDWA reauthorization.”

“Capacity development can also be thought of as a tapestry that weaves together all existing state drinking water program activities into a focused effort to help troubled small systems,” says Bielanski. “Because the overwhelming majority of public water systems are classified as small, it then follows that capacity development activities will likely have their greatest effect on small systems and particularly on those small water systems that are currently out of compliance or may likely be in the future.”

SDWA architects also realized that merely mandating more and more requirements wasn’t the most effective way to achieve the results they envisioned. There had to be a carrot to accompany the stick. The drinking water state revolving fund (DWSRF)—modeled after the established clean water state revolving fund—was developed to help fund these new mandates.

Under the DWSRF, EPA provides grants to states, which, in turn, provide loans and other assistance to qualifying communities. The communities repay
the loans at low interest rates, hence the term “revolving.” Each state is given considerable leeway in determining the design of its program and directing funds to its most pressing compliance and public health protection needs. Since the first loans were issued in 1997, Congress has appropriated more than $4 billion toward this program.

“From a small systems perspective, the major components of the tapestry are the DWSRF, capacity development, source water protection, operator certification, consumer confidence, and variances and exemptions,” Bielanski explains. “These provisions are closely interrelated: Capacity development, source water protection, and operator certification are directly linked to the DWSRF. A state may set aside funds from its DWSRF to develop and implement a program that addresses these three provisions.”

What are states doing?

All 50 states and Puerto Rico are successfully implementing capacity development programs. However, the states must document ongoing implementation of their programs on a yearly basis or face a 20 percent DWSRF withholding.

To accommodate capacity development concepts, states may develop and implement a number of different programs. EPA has approved such programs as:

- helping the owners of water systems prepare business plans that identify financial needs for the coming years;
- training system operators on how to detect leaks that may pose a risk to contamination of treated water;
- assisting water systems to set appropriate rates; and
- educating communities about sources of financial assistance.

“States can take advantage of DWSRF set-asides to prepare a capacity development strategy that is focused on a specific group of systems, such as significant noncompliers, or directed broadly towards systems that are out of compliance or will soon be out of compliance,” says Bielanski. “States can use capacity development to efficiently target the technical, financial, and managerial needs of many small systems and then directly address those needs through specific activities that help systems enter and remain in compliance.”

If All Goes Well

If capacity development works as envisioned, water systems—particularly small systems—will be better prepared to adapt to whatever the future holds. By promoting and rewarding self-sufficiency, capacity development provides an opportunity for systems to control their own destinies.

That’s not to say that it will be smooth sailing from here on out. “Small systems, now more than ever, are facing tremendous challenges in providing safe and affordable drinking water,” says Shanaghan. “The SDWA’s capacity development provisions provide the framework within which systems, states, the public, and other stakeholders can work together to meet these challenges.”

For More Information

For information about the capacity development program in your state, contact the agency primarily responsible for developing and administering the program. If you aren’t sure which agency this is, call the National Drinking Water Clearinghouse at (800) 624-8301 or (304) 293-4191 and ask to speak with a technical assistance specialist.

The reports State Programs to Ensure Demonstration of Technical, Managerial, and Financial Capacity of New Water Systems and State Strategies to Assist Public Water Systems in Acquiring and Maintaining Technical, Managerial and Financial Capacity are available from EPA. Write to Jenny Bielanski, EPA/OGWDW (4606M), 1200 Pennsylvania Ave. NW, Ariel Rios Building, Washington DC, 20460 or e-mail bielanski.jenny@epa.gov or call the EPA Safe Drinking Water Hotline at (800) 426-4791. Mention document number EPA 816-R-01-018. The document may also be downloaded from the EPA Web site at www.epa.gov/safewater/small-sys/ssinfo.htm.

Capacity development articles were featured in the NDWC newsletters Water Sense and On Tap. The article “Capacity Development Hits Its Stride” appeared in the fall 1998 issue of Water Sense. The summer 1997 issue of On Tap had several articles about capacity development. To order either of these newsletters, call (800) 624-8301 or (304) 293-4191 or e-mail ndwc_orders@mail.nesc.wvu.edu.
Radionuclides Rule: A Quick Reference Guide
Item # DWFSRG66 June 2001
Radionuclides are a significant health issue in drinking water contamination. Releases from medical facilities and nuclear power plants add to the threat from naturally occurring radionuclides. Water operators can quickly review the requirements for implementing the Radionuclides Rule, which mandates reduction of these chemicals in drinking water, with this fact sheet from the U.S. EPA. Included in the fact sheet are an overview of the rule, a list of the contaminants, critical deadlines and requirements, and monitoring requirements for water systems.

The Class V Rule: A Quick Reference Guide for Regulators
Item # DWFSRG67 January 2000
Class V wells are shallow disposal systems located in every state, especially in unsewered areas where the population is also likely to depend on groundwater as a drinking water source. Revisions to the Class V Rule added new requirements for motor vehicle waste disposal wells and large-capacity cesspools. This fact sheet explains the rule and its revisions and outlines the implementation schedule for states and regions and for owners and operators.

Filter Backwash Recycling Rule: A Quick Reference Guide
Item # DWFSRG68 June 2001
Drinking water plants must periodically clean their filters to remove particles that accumulate. Many systems recycle spent filter backwash water into the treatment plants. This recycling, when performed improperly, may increase the risk of waterborne pathogens entering treated water. This one-page fact sheet from the U.S. EPA outlines the Filter Backwash Recycling Rule (FBRR), its requirements and deadlines, and lists the public health benefits.

NDWC Offers Updated Operator Basics CD
Water system personnel can learn about small facility operations by working through a series of challenging, colorful, and fun activities presented in this easy-to-use training program. Up to 13.6 hours of training can be documented by working through all 11 units of the groundwater training series.

The Operator Basics Training Series is produced by the Montana Water Center and is available free of charge from the National Drinking Water Clearinghouse. The project is funded by EPA’s Office of Ground Water and Drinking Water to provide technical assistance to operators of small public drinking water systems. Trainers may order up to 20 CDs at a time for classes/workshops. Call for availability for larger orders.

New features in the 2003 version allow you to:
• run the program from the CD-ROM, install it to your computer, or print a hardcopy version,
• run, download, or print the program from the Montana Water Center’s Web site: water.montana.edu/training/gwb,
• resume work where you left off,
• password protect your records,
• print a summary certificate and detailed record of activities/hours completed,
• practice more math problems including metric problems,
• earn continuing education credits in approved states, and
• easily find state-specific resources and regional contact information.

Order the Operator Basics CD by calling the NDWC at (800) 624-8301 and ask for item number DWCDTR18. You can also order via e-mail at ndwc_orders@mail.nesc.wvu.edu. Shipping is paid by the NDWC.

Visit the Montana Water Center’s Web site at water.montana.edu/training to learn more about the Operator Basics Training Series.
## Item Number Breakdown

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All of the products listed are free!

Quantities are limited to one each per order. If bulk copies are needed, please call for availability.

To order these free products, please use the product order form on page 54 or call the National Drinking Water Clearinghouse at (800) 624-8301 or (304) 293-4191. You also may send an e-mail to ndwc_orders@mail.nesc.wvu.edu.

### Design

- DWBKDM16 Improved Protection of Water Resources from Long-Term and Cumulative Pollution
- DWBKDM06 Manual of Individual and Non-Public Water Supply Systems
- DWBKDM05 Manual of Small Public Water Supply Systems
- DWBKDM01 Manual of Water Well Construction Practices
- DWBKDM12 Radionuclide Removal for Small Public Water Systems
- DWBLDM02 Rainwater Cisterns: Design, Construction, and Water Treatment
- DWBKDM08 Regionalization Options for Small Water Systems

### Finance

- DWBPFN12 Action Guide for Source Water Funding: Small Town and Rural County Strategies for Protecting Critical Water Supplies
- FDBKFN12 Alternative Financing Mechanisms for Environmental Programs
- DWBPFN08 Alternative Funding Study: Water Quality Fees and Debt Financing Issues
- FDVTFN18 Building Support for Increasing User Fees
- DWBPFN30 Catalog of Federal Funding Sources for Watershed Protection
- DWBPFN15 Catalog of Financial Support Sources for U.S.-Mexico Border Water Infrastructure
- DWBPFN09 Drinking Water Infrastructure Needs Survey: First Report to Congress
- DWBPFN33 Drinking Water Infrastructure Needs Survey: Second Report to Congress
- FDBKFN34 The Drinking Water State Revolving Fund: Financing America’s Drinking Water—A Report of Progress
- DWBPFN31 Drinking Water State Revolving Fund Program Guidelines
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<td>A Field Study to Compare Performance of Stainless Steel Research Monitoring Wells with Existing On-Farm Drinking Water Wells in Measuring Pesticide and Nitrate Concentrations</td>
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<td>Methods for the Determination of Organic and Inorganic Compounds in Drinking Water: Volume 1</td>
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<td>National Pesticide Survey: Update and Summary of Phase II Results</td>
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<td>Occurrence and Distribution of Methyl tert-Butyl Ether and Other Volatile Organic Compounds in Drinking Water in the Northeast and Mid-Atlantic Region of the United States, 1993-98</td>
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<td>Safe Drinking Water Act, Section 1429 Ground Water Report to Congress</td>
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<td>Strengthening the Safety of Our Drinking Water: Report on Progress &amp; Challenges &amp; Agenda for Action</td>
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<td>Ultraviolet Light Disinfection Technology in Drinking Water Application—An Overview</td>
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**Technologies**

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<td>Corrosion in Potable Water Supplies</td>
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<td>Corrosion Manual for Internal Corrosion of Water Distribution Systems</td>
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**Training Guides**

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<td>How to Conduct an Inventory in Your Wellhead Protection Area</td>
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<td>DWBLOM04</td>
<td>Training Guide: Introduction to Water Loss and Leak Detection</td>
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<td>DWBLTR05</td>
<td>Water Rates: Information for Decision Makers</td>
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**To place an order...**

To place an order, call the NDWC at (800) 624-8301 or (304) 293-4191, or use the order form on page 54 and fax your request to (304) 293-3161. You also may send e-mail to ndwc_orders@mail.nesc.wvu.edu. Be prepared to give the item number and title of the product you wish to order.

The NDWC’s Products Catalog provides descriptions of many products. The guide may be downloaded via the NDWC’s Web site at www.ndwc.wvu.edu.

Please indicate the product item number, title, and quantity for each item ordered. Make sure you include your name, affiliation, address, and phone number with each order.

Quantities are limited to one each per order. If bulk copies are needed, please call for availability.
To Order NDWC Products:

Call: (800) 624-8301 or (304) 293-4191
Business hours are 8 a.m. to 5 p.m. Eastern Time

Fax: (304) 293-3161

E-mail: ndwc_orders@mail.nesc.wvu.edu

Mail: National Drinking Water Clearinghouse
West Virginia University
P.O. Box 6064
Morgantown, WV 26506-6064

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Total Number of Products Ordered

Please allow two to four weeks for delivery.

Mailing Information (Please Print)

First Name ___________________ Last Name ___________________

Organization/Company Name ___________________

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NDWC’s Web Site

Log on to the National Drinking Water Clearinghouse Web site at www.ndwc.wvu.edu

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☐ Consultant/Engineer  ☐ International Agency  ☐ Operator
☐ Contractor/Developer ☐ Local Government  ☐ Press/Media
☐ Educational Institution ☐ Manufacturer  ☐ Private Citizen
☐ Federal Agency  ☐ National Organization  ☐ State Agency
☐ Indian Tribe  ☐ Regional Organization  ☐ State Organization

Your Interest/Expertise

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☐ Design  ☐ Outreach  ☐ Research
☐ Enforcement/Compliance  ☐ Planning/Management  ☐ Technology
☐ Finance  ☐ Public Education  ☐ Training
☐ Health
In 1908, Jersey City, New Jersey, and Chicago, Illinois, were the first water supplies to be chlorinated in the U.S. Eighty-seven percent of New Jersey's population obtains its drinking water from a public water system and 13 percent from private residential wells.

Fun Time Puzzle Solutions

A Few Fun Water Facts about New Jersey

In 1908, Jersey City, New Jersey, and Chicago, Illinois, were the first water supplies to be chlorinated in the U.S.

Eighty-seven percent of New Jersey's population obtains its drinking water from a public water system and 13 percent from private residential wells.

NDWC Crossword Puzzle
(Solution on page 55)

**Across**

1. Sixties musical
2. Again
3. Computer symbol
4. Weld again
5. Fond du ____, Wisconsin
6. Sixties musician
7. One time
8. Pixies
9. Footballer ____ Marchetti
10. Director Preminger
11. Country with a heel
12. One time
13. Footballer ____ Marchetti
14. Rapper ____ Doggy Dogg
15. Cat sound
16. Director Preminger
17. Country with a heel
18. Trend in utilities (with 26 across)
19. Meshes
20. Runs easily
21. Spoil
22. Walk like a duck
23. Walk like a duck
24. Trend in utilities (with 26 across)
25. Primate
26. (see 18 across)
27. Sacred oil
28. Gin partner
29. Double curves
30. Primate
31. Venezuelan plains (with “The”)
32. Maintain
33. Bombay bread
34. Years in Madrid
35. Soft minerals
36. French colleague
37. Delivery vehicle
38. Vales
39. Repeat
40. Sexuality
41. Breathe out
42. Prevarication
43. Incur again
44. Vanity Fair Editor ____ Boothe Luce
45. Mediterranean sailing ships
46. Panda favorite
47. Insect
48. Actor Milo _____
49. Hammett’s detective heroine
50. What water usually undergoes prior to drinking
51. Smell
52. What water usually undergoes prior to drinking
53. Singer ____ Fitzgerald
54. Melancholy film genre
55. Deuces
56. Neighbor of Mexico (abbreviation)

**Down**

1. ____ sapien
2. Sacred oil
3. Again
4. Gin partner
5. Computer symbol
5. Double curves
6. Gracefully slender
7. Maintain
8. Chicken house
9. French colleague
10. Those against
11. Secret agent
12. Space between things
13. A unquestionable truth
14. Planet’s path
15. Buns
16. Sacred oil
17. Again
18. Computer symbol
19. Sacred oil
20. Double curves
21. Gracefully slender
22. Space between things
23. A unquestionable truth
24. Planet’s path
25. Buns
26. Sacred oil
27. Again
28. Computer symbol
29. Sacred oil
30. Double curves
31. Gracefully slender
32. Space between things
33. A unquestionable truth
34. Planet’s path
35. Buns
36. Sacred oil
37. Again
38. Computer symbol
39. Sacred oil
40. Double curves
41. Gracefully slender
42. Space between things
43. A unquestionable truth
44. Planet’s path
45. Buns
46. Sacred oil
47. Again
48. Computer symbol
49. Sacred oil
50. Double curves
51. Gracefully slender
52. Space between things
53. A unquestionable truth
54. Planet’s path
55. Buns
56. Sacred oil
Ancient Egyptians treated water by siphoning water out of the top of huge jars after allowing the muddy water from the Nile River to settle.

Hippocrates, known as the father of medicine, directed people in Greece to boil and strain water before drinking it.

The first United States water plant with filters was built in 1872 in Poughkeepsie, New York.

**Fun Water Facts**


**Quiz yourself...**

Q: Does water contract or expand when it freezes?

A: Actually, water expands (gets less dense) when it freezes, which is unusual for liquids. Think of ice—it is one of the few items that floats as a solid. If it didn’t, then lakes would freeze from the bottom up (that would mean we’d have to wear wet suits when ice skating!), and some lakes way up north would be permanent blocks of ice.

Q: Condensation is water coming out of the air. True or False?

A: This is actually true—water that forms on the outside of a cold glass or on the inside of a window in winter is liquid water condensing from water vapor in the air. Air contains water vapor (humidity). In cold air, water vapor condenses faster than it evaporates. So, when the warm air touches the outside of your cold glass, the air next to the glass gets chilled, and some of the water in that air turns from water vapor to tiny liquid water droplets.

Source: USGS Web site, ga.water.usgs.gov/edu-cgi-bin/sc3
Is the CCR really increasing consumer confidence?

by Jude Hutchinson, Environmental Analyst, Massachusetts Department of Environmental Protection

We know that consumer confidence reports (CCR) are supposed to be a tool to boost the public’s impression of their drinking water. But is the CCR doing what it is supposed to do?

In our four regional offices, CCR compliance and technical assistance staff said they do not receive calls from consumers. Most consumers do not call their PWS with questions or comments either. The Springfield Water and Sewer Department serves 43,000 people, but only received four calls in 2001. Kathy Pedersen, CCR coordinator, said she had two calls: one caller complained about the printing and mailing costs and another person thought the CCR should not be printed during financially difficult times. Pedersen said that their CCR costs about 45 cents per copy to produce and still thinks that interested consumers will read it.

Does the CCR provide too much information?

Most people that I spoke with said, “Yes.” But Liz Kotowski, technical assistant in our Worcester office, says that consumers want to know that their water meets federal and state standards. Although they care about treatment and aesthetics, the details are too technical for most people. However, waterworks professionals and staff are better educated about their water systems as a result of preparing CCR.

Eva Tor, technical assistant in our Springfield office, said, “Yes.” She said that suppliers she contacts rarely get any kind of response on their CCR. If they do, it tends to be negative. She encourages PWSs to keep their report to two pages, to use a template, and then spice it up with color and graphics.

What can the PWS do to improve readership?

Joan Sozio, water commissioner in Foxborough, encourages PWSs to state upfront that they meet all the state and federal standards but exceed a few. Explain what the numbers mean. For example, if you detect iron or manganese, mention that the number refers to the aesthetic quality or physical appearance and is not a health threat.

Top 10 Tips to Improve Your CCR

1. Simplify—Keep in mind that the average consumer is not as familiar with water quality data as you are, so keep it simple.

2. Upfront and Online—Highlight the most important information upfront. Remember, customers care about the bottom line. Are you doing a good job and is there anything they need to know about their water quality?

3. Ask for Help—Ask for help from another supplier, state office, or waterworks professional organization. Check out waterworks’ Web sites. One of our regional coordinators found that PWS that asked for help usually produced the best reports.

4. Do Not:
   • Use a type size smaller than 10
   • List contaminants that are not detected
   • Forget to include your PWS identification number and contact information
   • Use the same format every year

5. Do:
   • Highlight the language required for vulnerable populations. A non-profit environmental group that reviewed CCRs in Massachusetts said many PWS did not highlight this important language.

6. Involve the Health Department—Take time to meet with your local health department before you release your CCR. Tell them about specific detected contaminant and how you worked to resolve the problems. Chances are that if someone has a problem with your drinking water, they are more likely to ask the health department or someone other than the water department.

7. Give the Consumer Something—Offer your consumers something to help them lower their water cost, such as tips on water conservation, or how to reduce the chlorine taste of their water.

8. Involve Consumers—Ask for their help in protecting the watershed or for support at a town meeting. Give them an opportunity to help.

9. Network—Use your local health department, senior citizen organizations, conservation or environmental committee, watershed and civic associations, or any large community non-profit group to promote your message. Convene a meeting to discuss your CCR early in the process. Build a coalition of people and get their opinion on your past report and how to make the next one better. At the same time, you can educate them about your water quality and build readership and confidence.

10. Wrap it Up—Use color in your report and use a good quality graphic, especially on the cover, so that it will be picked-up and read. Remember, you provide your consumers with a safe supply of drinking water and want them to read all about it.

Jude Hutchinson is an environmental analyst in the Drinking Water Program at Massachusetts Department of Environmental Protection. She coordinates the CCR program statewide.
“Solid stone is just sand and water...Sand and water and a million years gone by.”

Beth Nielsen Chapman
The National Environmental Services Center
Our business is your community’s environmental and public health.

(800) 624-8301 • (304) 293-4191 • www.nesc.wvu.edu

National Drinking Water Clearinghouse (NDWC)
Helping small communities by collecting, developing, and providing timely information relevant to drinking water issues.

National Small Flows Clearinghouse (NSFC)
Helping America’s small communities solve their wastewater problems.

National Environmental Training Center for Small Communities (NETCSC)
Assists small communities by providing training and training-related information and referral services in the areas of wastewater, drinking water, and solid waste.

National Onsite Demonstration Program (NODP)
Demonstrating integrated onsite wastewater management and technology solutions.

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West Virginia University Research Corporation
West Virginia University
P.O. Box 6064
Morgantown, WV 26506-6064

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