

A New Vision for Drinking Water Protection

By Kelly A. Reynolds, MSPH, Ph.D.

In an effort to improve public health and increase consumer confidence in drinking water quality, the US EPA has introduced, *A New Approach to Protecting Drinking Water and Public Health*.¹ This new process aims to address groups of drinking water contaminants rather than detailed individual contaminant assessments. The current strategy is expected to address a wider range of contaminants, drive the development of novel procedural and technological controls, and improve communications among stakeholders and the public, relative to drinking water quality. A national discussion is now underway on how the US EPA can best achieve these goals.

Looking back at landmark drinking water legislation

Safe Drinking Water Act, 1974

Historical writings from US EPA officials mirror today's conversations that typically begin with a statement identifying the US water supply as one of the safest in the world, even though up to 90 percent of water systems (even in 1974) were not monitoring for harmful contaminants, and many were not even equipped to treat the primary contaminants. In December 1974, President Gerald Ford signed the *Safe Drinking Water Act (SDWA)* after a barrage of media headlines claiming US drinking water was contaminated with chemical carcinogens, toxic lead and disease-causing microbes.² Taste and odor issues were also problematic. Under the *SDWA*, a list of standards (known as the *National Interim Primary Drinking Water Regulations*) specified monitoring requirements and set limits on the maximum acceptable levels of specific contaminants allowed in drinking water supplied by all public systems (i.e., not including private wells serving fewer than 25 persons). Secondary standards were also introduced for the prevention of foul tastes and odors in the public water supply. Essentially two lists were generated: 1) a list of ideal drinking water standards, or maximum contaminant level goals, irrespective of economic costs or technical limits and 2) a list of generally achievable, enforceable regulations. The act required routine monitoring but allowed for temporary compliance waivers for public water systems that were unable to meet the standard, often due to economic burdens. In this early legislation, US EPA planned to address "the worst problems first after assessing hazard of the contaminant and the size of the affected population."² Initially, monitoring requirements only included coliform bacteria and turbidity, but chemical monitoring was eventually phased in. A total of 10 inorganic chemicals,

six organic pesticides, microbial contaminants, turbidity and radiological contaminants were all targeted.

1986 amendments

In 1986, President Ronald Reagan signed a major amendment to the *SDWA*, increasing the responsibility of the US EPA in the protection of drinking water. These additions to previous legislation required the regulation of 83 new contaminants (and another 25 by 1991), mandated filtration or disinfection for certain surface and groundwater sources, respectively, and called for new monitoring requirements for not-yet-regulated contaminants, among other things. A ban on lead pipes and protection of underground wells from disposed wastes were major steps forward in the 1986 amendments.

1996 updates: Americans ensured safe drinking water

Other *SDWA* modifications would follow until the 1996 amendment, signed by President William Clinton, aimed at ensuring American families that their tap water would be clean and safe. This new law outlined the right of the American people to know about contaminants in water and required that reports on their water supply be included with utility bills. Microbes, disinfection byproducts and sensitive populations (i.e., the elderly, children and immunocompromised individuals) were specifically targeted due to greater risk potentials, and protection of source waters was an emphasized priority. Billions of dollars were appropriated to help with upgrades in municipal treatment systems.

Evolving approaches to drinking water protection

When the *SDWA* was originally drafted (circa 1974), the primary focus was on the provision of safe water at the tap through available treatment technologies. The 1996 amendments stressed the importance of source water protection and transparency in the process of monitoring, treatment and water delivery. Transparency has always been a stated goal of the *SDWA*, with the intent that consumers will drive the enforcement and improvement of their drinking water quality.

A recognized flaw was the in the process of setting a primary drinking water standard, which involves:

- Identification of a contaminant thought to adversely affect public health
- Determining the frequency and concentration of the contaminant in drinking water
- Initiation of further studies on the contaminant followed

by a determination to regulate

- Evaluation of a maximum contaminant level goal and setting of the maximum contamination level in relation to feasibility and cost-benefit analyses

In other words, setting a primary drinking water standard is a lengthy process. With more than 80,000 chemicals identified in the *Toxic Substances Control Act*, the need to identify better ways to address multiple contaminants in groups is obvious. Therefore, the US EPA is now proposing a new strategy in drinking water and public health protection that deviates from the traditional framework of single-contaminant evaluation.

US EPA's new strategy for drinking water

A March speech from Lisa P. Jackson, US EPA Administrator, included the following, poignant comments:

*"In the vast majority of communities, we've met the goals for safe water set in the 1970s. But we still face daunting challenges. While we've cut the flow of many conventional pollutants into our tap water sources, we now face challenges from other pollutants from less conventional sources. Not the visible oil slicks and industrial waste of the past, but the invisible pollutants that we've only recently had the science to detect. There are a range of chemicals that have become more prevalent in our products, our water, and our bodies in the last 50 years. Those many thousands of chemicals are the great unfinished business of the 1974 Act."*³

Ms. Jackson further outlined the vision of the US EPA to focus on greater collaboration among government, communities and industry and the reliance on accelerated innovation in drinking water management and technologies employed. The agency describes their new strategy for drinking water protection as a four-pronged approach:¹

- 1) Address drinking water contaminants as groups rather than one at a time, for enhanced protection and cost-effectiveness.
- 2) Foster development of new drinking water technologies to address health risks posed by a broad array of contaminants—utilize private innovators, entrepreneurs and small business to improve drinking water treatment technology.
- 3) Use the authority of multiple statutes (i.e., current chemical and pesticide control regulations) to help protect drinking water—use existing laws to preempt drinking water contamination.
- 4) Partner with states to develop shared access to all public water systems monitoring data—create a transparent database with up-to-date information sharing, monitoring and analysis.

As a start to the new strategic approach, the agency is asking for input from the public and other stakeholders (i.e., utilities, rural communities, states, advocacy groups, researchers, consultants, etc.). A series of public meetings, web casts and website postings are expected in the upcoming months (which started in late July), so that stakeholders and the public can share their ideas about how to develop a framework for dealing with groups of drinking water contaminants in the future. Anyone interested in safe drinking water is invited to take part in those upcoming conversations regarding the new US EPA approaches to drinking water protection.

Conclusions

Although our drinking water supply is exemplary, it can be better. Looking back to the 1970s, it is shocking to read about the contaminants that were in our water supply, then touted as one of the world's safest. By 2050, we may again be shocked to look back at the accepted quality of drinking water today, considering the many industrial chemicals, endocrine disruptors, disinfection byproducts, distribution system biofilms and other emerging contaminants of concern. The new strategy of the US EPA, however, is a step forward in promoting action and innovation against contaminant groups rather than expending valuable time focused on only a few known individual hazards. Ms. Jackson summed up the issue well in her March speech: "I've seen how far we've come—and I know how far we still have to go."

References

1. US EPA (2010). *A New Approach to Protecting Drinking Water and Public Health*. Office of Water. EPA 815F10001. March 2010. http://www.epa.gov/safewater/sdwa/pdfs/Drinking_Water_Strategyfs.pdf
2. Agee, J. L. (1975). Protecting America's Drinking Water: Our Responsibilities Under the Safe Drinking Water Act. *EPA Journal*. March 1975. <http://www.epa.gov/history/topics/sdwa/07.htm>
3. US EPA (2010a). Administrator Lisa P. Jackson, Remarks to the Association of Metropolitan Water Agencies, As Prepared. March 22, 2010. <http://yosemite.epa.gov/opa/admpress.nsf/8d49f7ad4bbcf4ef852573590040b7f6/6bfef816f3107ea9852576ee004df76e!OpenDocument>

About the author

◆ Dr. Kelly A. Reynolds is an Associate Professor at the University of Arizona College of Public Health. She holds a Master of Science Degree in public health (MSPH) from the University of South Florida and a doctorate in microbiology from the University of Arizona. Reynolds has been a member of the WC&P Technical Review Committee since 1997. She can be reached via email at reynolds@u.arizona.edu

