

HEALTH LAW

The Safe Drinking Water Act of 1974 and Its Role in Providing Access to Safe Drinking Water in the United States

Richard Weinmeyer, JD, MA, MPhil, Annalise Norling, Margaret Kawarski, and Estelle Higgins

Abstract

In 1974, President Gerald Ford signed into law the Safe Drinking Water Act, the first piece of legislation of its kind to provide a comprehensive regulatory framework for overseeing the nation's drinking water supply. The law has proven instrumental in setting standards for ensuring that the US population can access drinking water that is safe. However, the law delegates much of its monitoring requirements to states, creating, at times, a confusing and complicated system of standards that must be adhered to and enforced. Although it has proven valuable in the safety standards it specifies, the law's administration and enforcement poses tremendous challenges.

Many people in the United States consume tap water without giving it a second thought. When you add a cup of tap water to a recipe, gulp it down during an intense workout, or bathe an anxious dog in the bathtub, you rarely consider the water's source and what is undertaken to ensure it is accessible and safe. Yet up until the latter half of the twentieth century, there was no federal regulation protecting drinking water. Instead, what existed was a patchwork of state- and local-level water regulations created to deal with providing adequate *quantities* of drinking water to growing communities, with little thought given to the *safety* of the water itself [1].

Following the establishment of the Environmental Protection Agency (EPA) in 1970 [2], and in the midst of the environmentalism movement gripping the United States during the 1960s and 1970s [3], Congress enacted a vital federal law for protecting much of the nation's public water supplies from harmful agents: the Safe Drinking Water Act (SDWA). Signed into law in 1974, the SDWA grants the EPA the power to set national health standards for drinking water "to protect against both naturally-occurring and man-made contaminants that may be found in drinking water" [4]. At its outset, the law served as an invaluable regulatory framework for adding uniformity to safe drinking water standards and provided many mechanisms to update the law and enhance its oversight. But in the years since its passage, serious questions and concerns have been raised about its enforcement and the government's inability, at both the federal and the state

level, to implement monitoring and adopt methods for measuring known contaminants and to identify new contaminants that threaten the health and well-being of millions of Americans.

This article examines the history, operation, and evolution of the SDWA as a novel vehicle for increasing the citizenry's access to safe drinking water. We argue that though the SDWA is noble in its intent, it is faulty in its implementation.

History of Safe Drinking Water in the United States before 1974

The United States' first steps in drinking water governance began in the earliest years of the twentieth century. Since the Republic's founding, water management had been largely treatment focused and locally enforced [5]. Things began to change after the passage of the 1912 US Public Health Service Act [1], whereby Congress sought to prevent communicable diseases from being introduced into and transmitted via water by, for example, eradicating waterborne typhoid through chlorination treatment [6]. Additional federal oversight of interstate transportation waters would be launched in the following decades to limit microbes and chemical, organic, and radioactive materials in water and to monitor and test water supply systems [1, 7, 8]. Despite this work, widespread alarm over the nation's drinking water would not capture the American public's collective attention for some time.

Mounting concern during the 1960s over the environmental harms posed by industrial runoff and [synthetic chemicals](#) leaching into the water supply triggered several federal studies of the country's water sources [5, 9]. One such study conducted by the US Public Health Service in 1969 found that only 60 percent of surveyed water systems providing drinking water to interstate carriers met current federal guidelines, with more than half exhibiting deficiencies in disinfection, clarification, and water pressure [5]. Between 1961 and 1970, officials documented over 46,000 cases of waterborne hepatitis, salmonellosis, and gastroenteritis—diseases caused by chlorine-resistant pathogens [10]. Furthermore, the "Community Water Supply Study," published in 1970, concluded that 90 percent of surveyed drinking water systems exceeded permissible microbe levels [7], while a 1974 Environmental Defense Fund report attributed cancer deaths in New Orleans to consumption of contaminated drinking water from the lower Mississippi River that had been exposed to sewage and industrial waste [1, 11].

The Safe Drinking Water Act of 1974

Amid growing concerns over the impact that human activity could have on the environment, President Richard Nixon oversaw the consolidation of the federal government's environmental responsibilities through the creation of the EPA as well as the pursuit of signature legislation to protect the environment. This would include the SDWA.

Legislative process. Tension ran high throughout the legislative process to pass the SDWA, however. Although there was broad national support and widespread recognition that current water oversight had been lacking, it took nearly four years to pass legislation for the federal regulation of public drinking water systems [10]. As public pressure mounted, water industry associations vied for strong federal standards while resistance from some congressmen and oil company lobbyists impeded the act's progress [7]. Hostility towards the SDWA centered on scientific uncertainties and administrative and enforcement responsibilities, and many criticized the EPA for excessive spending, inexperience, and insufficient coordination [10]. In particular, scientific uncertainties remained as to which substances were to be legislated and with what methods they were to be measured, while administration and enforcement questions led some to maintain that state and local governments should retain primary responsibility for safe drinking water [10].

Political turmoil notwithstanding, in 1973 the Senate passed its bill calling for the federal supervision and control of drinking water, and in 1974 the bill was further revised with amendments from both the House and the Senate [12, 13]. Once the bill passed both the House and the Senate, the SDWA was signed into law by President Gerald Ford on December 16, 1974 [1].

Legal power. Under the SDWA, the EPA has been granted the federal power to regulate drinking water, which includes water that is used for bathing, cooking, dishwashing, and maintenance of oral hygiene, to protect public health [1, 14]. These national drinking water regulations apply to privately- and publicly-owned "public water systems" that have at least 15 service connections or regularly serve at minimum 25 people [15].

Responsibility to implement the SDWA lies at both the federal and the state level [9]. The EPA sets the national drinking water standards by imposing regulations on contaminants that are detrimental to public health [4]. The administrator of the EPA is then responsible for oversight and enforcement of these standards [16]. In accordance with the SDWA, the EPA regulates contaminants if the following three criteria are met: (1) the contaminant might have adverse health effects; (2) there is substantial likelihood that the contaminant will occur in public water systems at levels of public health concern; and (3) its regulation will reduce public health risk [15]. To ensure adequate contaminant regulation, every five years the EPA must announce unregulated contaminants to be monitored by public water systems and make regulatory determination regarding at least five of the contaminants that were on the list [15]. Once this benchmark is set, states are responsible for primary implementation and enforcement of the drinking water program [15].

At present, 49 states have assumed primary authority over the Public Water Supply Supervision (PWSS) Program. This program requires that the states and territories do the

following: adopt regulations as stringent as the national requirements; develop procedures to purify water and monitor its contaminant levels; assume authority for administrative penalties; conduct inventories of the purification and monitoring systems; maintain records and compliance data; provide the EPA with any required reports; and construct a plan for safe drinking water during emergencies [15]. To ensure compliance, public water systems must report monitoring results to the states, which review the results and conduct their own monitoring, with the EPA monitoring compliance chiefly by reviewing reports of violations submitted by states [15]. If it is found that a public water system does not comply with regulations, the EPA must assist the system in order to bring it into compliance [15]. Furthermore, in the event of a violation that poses a threat to public health, such as an exceedance of the [lead action level](#), water systems must notify the public of a violation within 24 hours [15]. And should there be an imminent and substantial endangerment, with no action from state or local authorities, the EPA has authority to act [17]. In order to support state costs in administering the PWSS program, Congress distributes approximately \$100 million annually to the EPA for grants, although the EPA requested a smaller amount for fiscal year 2018 [15, 18]. When appropriating these funds among states, the EPA considers a number of factors such as state population, geographic area, and number of public water systems [15].

There are several legal avenues for holding the EPA and individual states accountable under the SDWA. Through the enforcement powers granted to the EPA by the SDWA, if the EPA brings a civil suit against a negligent water system, courts may make judgments to protect public health and impose civil penalties based on the seriousness of the violation, the population at risk, and other appropriate factors [1]. Moreover, the EPA can obtain injunctive relief to stop the actions of noncompliant water systems, although courts have noted that they have discretion in SDWA cases and do not necessarily have to order the requested remedies for violations. In addition to civil suits, criminal violations may be sought against individual employees of federal agencies [17]. To ensure accountability, the SDWA contains a citizen suit provision that allows citizens to take civil action against any federal agency or the EPA administrator if they are alleged to be violating the SDWA [4]. There is an exception, however: citizens may not file a suit if the EPA, the attorney general, or a state has already filed and is prosecuting a civil action against a water system that is not in compliance with the law [17].

Effectiveness of the SDWA

In large part, thanks to the SDWA and other regulatory actions by the EPA, the quality of drinking water in the United States has improved steadily throughout the last 40 years. Before the passage of the SDWA, many parts of the country did not have safe drinking water whereas now Americans enjoy some of the safest drinking water in the world, and, according to a former EPA administrator, “more than 90 percent of water customers enjoy drinking water that meets all standards all the time” [19]. In March 2010, the EPA completed a six-year-long review of the National Primary Drinking Water Regulations

(NPDWRs) in order to identify NPDWRs for which current health effects assessments, changes in technology, and other factors provide a health or technical basis for supporting revisions that would support and strengthen public health systems [1].

The SDWA's effectiveness is also attested by recent research, additional regulated contaminants, and transparency requirements. The EPA is currently evaluating risks of specific health concerns associated with drinking water, including microbial contaminants (e.g., *Cryptosporidium*), byproducts of drinking water disinfection, radon, arsenic, and water from likely vulnerable groundwater sources [3]. Amendments made to the SDWA have sought to reduce risks from numerous naturally occurring chemicals including arsenic and radionuclides, from manmade chemicals and pesticides, and from pathogens including *Giardia lamblia* and *Escherichia coli* [20]. The result has been a threefold increase in the number of contaminants regulated under the SDWA since its introduction in 1974 [5]. Additionally, the SDWA mandates public notification, which provides information about the suppliers of drinking water, the level of pollution in particular drinking water sources, and potential sources of pollution near drinking water sources [1]. Since 1971, the EPA and the Centers for Disease Control and Prevention (CDC) have collaborated to gather information and minimize waterborne disease outbreaks across the country. According to this data, the highest incidence of outbreaks since 1974 occurred in the early 1980s and the incidence of outbreaks has generally declined since then [5]. Even with the persistent challenge of waterborne disease outbreaks, US drinking water quality has gradually but consistently improved, in part due to the SDWA and other regulatory actions of the EPA, including the Total Coliform Rule (1989) and the Surface Water Treatment Rule (1989) [5].

Challenges Facing the SDWA

Despite its effectiveness in reducing water contaminants to safe levels and protecting the public's health, the SDWA still faces obstacles to more effective implementation. Up to half of the US population drinks unregulated water from small systems that have fallen through the cracks of the regulatory protections imposed by the SDWA and other laws [21]. In California, for example, small service providers and private well owners are not regulated by the SDWA, resulting in consumption of contaminated water in schools and homes [22].

Another challenge comes in the form of inadequate funding, which continues to hamper the supply of safe drinking water especially in cases involving expensive treatment techniques [9]. As seen in the example of California, the water crisis is exacerbated by the water systems' lack of funding for maintenance and regulation [22]. Current estimates indicate that nearly one trillion dollars' worth of upgrades and maintenance is needed to update the drinking water infrastructure in the United States [23]. As reported by the National Resources Defense Council:

Under the SDWA, the Drinking Water State Revolving Fund (DWSRF) allocates congressional funds for utilities to use to achieve or maintain SDWA compliance.... From 1998 to 2016, the federal government invested about \$19 billion in the DWSRF, which has translated to more than \$32.5 billion in total allocations to water system projects across the United States [24].

But even with efforts to provide states with greater financial assistance to maintain safe drinking water standards, grants continue to fall short of states and cities' needs [9].

Moreover, local governments have accused the EPA of not always acting effectively and efficiently, particularly in situations in which compliance can be achieved through less costly alternatives [9]. In the early 1990s, a city in Maine was told by the EPA to install a filtration system that would cost \$20 million even though there was a more cost-efficient solution: a pipe replacement system that cost half that amount [9]. And as a result of smaller water systems being unable to shoulder the financial burdens that come from SDWA regulatory requirements, states have delayed implementing new monitoring schedules, installing new treatment devices, and making improvements to their existing systems [5]. Water systems' limited "breathing room" in implementing the SDWA is compounded by consequent compliance violations [5].

An especially salient problem facing the SDWA has been the ever-increasing scientific knowledge about novel contaminants found in water as well as growing evidence that smaller amounts of chemical exposure can have serious health consequences. While more than 60,000 chemicals are in use in the United States, thousands of which have been studied by government and independent scientists, only 97 chemicals or chemical groups and 12 microbial contaminants are currently regulated by the SDWA [25, 26]. And government scientists generally agree that many chemicals commonly found in drinking water pose health risks at lower concentrations than previously thought, whereby "millions of Americans become sick each year from drinking contaminated water, with maladies from upset stomachs to cancer and birth defects" [25]. Even with these revelations, the SDWA has proven rather limited in that nothing in the law addresses the cumulative risks of multiple pollutants in a single glass of water [25].

Enforcement of the act has also been heavily criticized. In 2015, close to 77 million Americans lived in parts of the country covered by the SDWA where their water systems were in violation of the SDWA's safety regulations [27]. But because of a lack of reporting by states and local water systems about such violations, many of these people remained in the dark as to whether their drinking water was or was not contaminated [23]. Approximately nine out of ten violations of the SDWA are not subject to disciplinary or corrective action, often, according to public health and safety officials, because drinking water infrastructure is considered a problem that is "out of sight, out of mind"

and part of a complicated regulatory system wherein adherence to federal law rests largely on the monitoring actions of states [27].

Conclusion

There is no doubt that the availability and accessibility of safe drinking water in the United States is in large part due to the Safe Drinking Water Act of 1974. The SDWA established a uniform set of regulations that continues to provide a baseline level of safe water. Its existence is complicated, however. Scientific, bureaucratic, and enforcement problems have hampered its ability to protect far too many people in the United States, and its inefficiencies raise serious doubts about its resiliency in an environmental health landscape marked by political recalcitrance when it comes to regulatory change.

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Richard Weinmeyer, JD, MA, MPhil, is a senior research associate for the American Medical Association Council on Ethical and Judicial Affairs in Chicago. Mr. Weinmeyer received a master's degree in bioethics and a law degree with a concentration in health law and bioethics from the University of Minnesota, where he served as editor in chief for volume 31 of *Law and Inequality: A Journal of Theory and Practice*. He obtained his first master's degree in sociology from Cambridge University. Previously, Mr. Weinmeyer served as a project coordinator at the University of Minnesota Division of Epidemiology and Community Health. His research interests are in public health law, bioethics, and biomedical research regulation.

Annalise Norling is a fourth-year undergraduate at Loyola University Chicago, where she studies philosophy and biology with a concentration in bioethics. During the summer of 2017, she was an intern for the American Medical Association's Ethics Group.

Margaret Kawarski is a second-year law student at the DePaul University College of Law in Chicago, where she is concentrating in the area of health law. She received her BS in health sciences (biosciences) from DePaul University in 2016. During the summer of 2017, Margaret was the DePaul Summer Scholar in the American Medical Association's Ethics Group.

Estelle Higgins is a second-year undergraduate at the University of Chicago. During the summer of 2017, she was an intern at the American Medical Association Council on Ethical and Judicial Affairs. She studies comparative human development and psychology and works as a research assistant at the University of Chicago's Impression Formation Neuroscience Lab. Her interests include public health and the intersection of cognitive neuroscience, behavior, and law.

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