

SAFE DRINKING WATER



Safe water is critical to the welfare of individuals, families, and the US economy. Sadly, two out of every five Americans rate their quality of water as poor. Within the next decade, at least 36 states will face water shortages. At the same time, contaminated water is a source of illness and premature death in the United States. About one in nine US residents gets his or her drinking water from a private well,^{1,3} and about a quarter of the roughly 2,100 private wells sampled by the US Geological Survey between 1991 and 2004 were found to have at least one contaminant exceeding federal maximum contaminant levels for regulated substances or health-based screening levels for unregulated substances.⁴ Over the past 45 years, the proportion of outbreaks associated with private water sources has increased.⁵ Five waterborne illnesses—giardiasis, cryptosporidiosis, Legionnaire’s disease, otitis externa (inflammation of the ear canal), and non-tuberculous mycobacterial infection—cause an estimated 40,000 hospitalizations each year at a cost of \$970 million annually.⁶ Altogether, researchers estimate that up to 900,000 people fall ill and up to 900 die annually from waterborne infectious diseases.⁷

The Problem

Approximately 78 percent of fresh water consumed in the US is derived from surface waters, such as reservoirs, lakes, and streams.⁸ These waters are susceptible to nonpoint pollution sources, such as heavy storms that wash fertilizers and other contaminants from watersheds to waterways. Some persistent chemicals (which resist decay) have been linked to human health problems. For example, perfluoroalkyl and polyfluoroalkyl substances—manmade chemicals used in a variety of industrial applications—have been associated with high blood cholesterol, obesity, hormone suppression, and cancer. Other pollutants, including nitrogen- and phosphorus-containing fertilizers and sewage effluent, can lead to harmful algal blooms. In the worst cases, toxic contaminants can make water unusable for fishing, recreation, and drinking.

Overall, approximately 85 percent of all water contaminants are nonpoint pollutants coming from diffuse sources.⁹ Many of these are difficult to remove during conventional water treatment. In addition to drinking water, non-point pollutants can affect recreational waters and make the public sick either through direct contact or through consumption of fish or other tainted seafood.

Point-source pollutants enter the water supply in defined locations, such as chemical waste sites or lead water pipes. Cross contamination occurs when sewer lines and drinking water systems co-mingle as a result of antiquated water and sewage systems or natural disasters. Additionally, there are an estimated 240,000 water main breaks per year in the US,¹⁰ each representing an opportunity for pollutants to enter the water supply. This source of contamination often occurs downstream of water treatment plants and is virtually undetectable by the consuming public, until people fall ill. The American Society of Civil Engineers' 2013 *Report Card for America's Infrastructure* rates our current drinking water infrastructure a D (poor-at risk) on the standard A (exceptional) to F (failing) scale.¹⁰

Yet drinking water is not the only risk for consumers: recreational waters can cause illness as well. US residents make 300 million trips to pools¹¹ and other swimming locales every year; however, recent CDC studies found that one in eight public pools are closed during routine inspections because of health hazards.¹² In addition to infectious disease threats, public pools, hot tubs, water parks, and community water features may pose the risk of drownings and pool-chemical poisonings or chemical injuries.

Opportunities for Action

- 1) Ensure the major federal agencies responsible for water quality—EPA, CDC, US Corps of Engineers, US Department of Agriculture, and US Department of the Interior—develop a national action plan.
- 2) Encourage adoption of CDC's Model Aquatic Health Code.¹³
- 3) Review, update, and systematically enforce primary drinking water standards.
- 4) Upgrade community water and wastewater treatment systems. Prioritize investments in remediation where the water or wastewater infrastructure poses health risks.
- 5) Identify and promote innovative water efficiency programs.
- 6) Ensure CDC provides necessary capacity-building support to local environmental agencies in order to anticipate, recognize, evaluate, and remediate high-risk infrastructure and contamination sources.
- 7) Develop a federal interagency plan to eliminate lead exposure, including water exposure to lead.

For more information, visit:

American Society for Civil Engineers

- *Report Card for America's Infrastructure*: <http://www.infrastructurereportcard.org>

Association of Public Health Laboratories

- National Water Laboratory Alliance:
http://forms.dev.aphl.org/AboutAPHL/success/Success_Stories_Archive/Safe-to-Drink.aspx

Centers for Disease Control and Prevention, National Center for Environmental Health

- Water protection tools and resources for states and localities:
<http://www.cdc.gov/nceh/ehs/activities/water.html>
- Water and lead website: <http://www.cdc.gov/nceh/lead/tips/water.htm>
- Model Aquatic Health Code: <http://www.cdc.gov/mahc/index.html>
- Harmful algal bloom website: http://www.cdc.gov/habs/pdf/cyanobacteria_faq.pdf
- Water sanitation & hygiene-related emergencies and outbreak resources:
<https://www.cdc.gov/healthywater/emergency/index.html>
- Environmental Health Tracking Network
 - Water Data: <https://ephtracking.cdc.gov/showWaterLanding.action>
 - Pesticide Exposure Data:
<https://ephtracking.cdc.gov/showPesticidesExposuresLanding.action>

Position papers on drinking water quality:

- American Public Health Association: <https://www.apha.org/policies-and-advocacy/public-health-policy-statements/policy-database/2014/07/14/13/22/drinking-water-quality-and-public-health-position-paper>
- Association of State and Territorial Health Officials: <http://www.astho.org/Policy-and-Position-Statements/Safe-and-Reliable-Drinking-Water-Position-Statement/>
- National Association of County and City Health Officials:
<http://www.naccho.org/programs/environmental-health/hazards/water>

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12. Michele C. Hlavsa. Immediate closures and violations identified during routine inspections of public aquatic facilities—network for aquatic facility inspection surveillance, five states, 2013. *MMWR Surveillance Summaries*. 2016;65.
13. U.S. Centers for Disease Control and Prevention. The Model Aquatic Health Code (MAHC): An All-inclusive Model Public Swimming Pool and Spa Code. 2017. Retrieved from: <https://www.cdc.gov/mahc/editions/index.html> on April 11, 2017.