

WATER & HEALTH

Opportunities for Nursing Action



Alliance of Nurses for
Healthy Environments

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As the most trusted profession, nurses can, and should, lead the way to ensuring **clean water for all.**

Here in the United States, most of us take clean water for granted. When we turn on the tap, we assume our water is clean, healthy, and free from pollutants that could have negative health impacts. We expect our water to be safe for drinking, cooking, showering, and washing our hands.

As nurses, we know clean water is vital to health. Unfortunately, too many Americans continue to experience waterborne illnesses every year, costing millions of dollars in healthcare costs. We saw firsthand during the COVID-19 pandemic that millions of Americans do not have access to clean, safe running water that is vital to help prevent disease transmission.

Clean water is also a crucial component for providing safe nursing care. Hospitals and other healthcare facilities are incredibly water intensive and account for seven percent of the water used in industrial and commercial facilities in the United States. Water is essential for tasks such as washing hands, giving newborns their first baths, and the staggering amount of laundry produced every day in healthcare facilities.

While the United States has made great strides in providing clean, drinkable water, water quality and safety remains a major concern for public health. Right now, there is an unprecedented opportunity for nurses to support efforts to replace aging water infrastructure in communities most in need, ensure the U.S. Environmental Protection Agency (EPA) has the ability to protect upstream sources of water that help provide drinking water to 1 in 3 Americans, and address climate change, which is already having a significant impact on water supply in the United States and around the world.

In this report, nurses will find the information they need to support healthier water in all communities and learn more about how nurses across the country are incorporating education, advocacy, and action into nursing practice.



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Clean Water and Health

Access to clean water and adequate sanitation is an essential component of human health. According to the World Health Organization, 5.7% of the global disease burden is due to poor water, sanitation, and hygiene.¹ In the United States, an estimated 7.15 million waterborne illnesses occur annually.² Many more become ill from drinking water contaminated with toxic metals and chemicals. Overall, waterborne illnesses cause an estimated 118,000 hospitalizations each year at an annual cost of \$2.39 billion.³

While the United States and the efforts of the EPA under the Clean Water Act have made great progress to ensure access to clean, drinkable water, water quality and safety still remain a major concern for public health. Communities are experiencing challenges in maintaining access to clean and safe drinking water as a result of aging water infrastructure causing heavy metals, such as lead and copper, to leach into drinking water sources; climate change that contributes to worsening droughts, floods, and overgrowth of water pathogens that all affect water quality; and environmental contamination of water sources from industry and energy production.

Key Federal Water Laws & Regulations

It is important that nurses have a general understanding of the laws that protect water sources in their communities. The Clean Water Act (CWA), significantly updated and expanded in 1972, is the major federal law to restrict discharges of municipal and industrial waste into surface waters.⁴ Prior to that, many waterways were used as dumping grounds for municipal waste from buildings, homes, and industries.

The Clean Water Act made it unlawful to discharge any pollutant from a point source into navigable waters, unless a permit was obtained. Permits are administered under the National Pollutant Discharge Elimination System (NPDES), which requires any municipality, industry, or facility that discharges wastewater from a point source (a pipe or other conveyance) to meet certain criteria for the amount of pollutants discharged into receiving waters.⁵

The EPA determines the allowable amount of pollutants by industry, incorporating different factors, including technology and current water quality standards. The state, tribe, or territory must comply with these limits when issuing permits. The CWA has been effective in significantly reducing the amount of municipal and industrial waste dumped into surface waters but long-standing debate about which waters fall under the Act and which best practices for treatment are required continue.

Clean Water Rule

A significant area of dispute under the Clean Water Act is determining which waters are regulated under federal law. The CWA prohibits the discharge of pollutants into “waters of the United States,” however, no clear definition of “waters of the U.S.” is specified; rather, it was left up to the EPA to determine in regulations. Over the years, numerous disputes and court cases have established varying definitions and guidelines to determine exactly what are the waters of the U.S. and thus, protected under the CWA. You can learn more about the history and court cases here: <https://www.epa.gov/wotus/about-waters-united-states>

In 2015, the EPA, under the Obama administration, adopted the Clean Water Rule. This rule attempted to clarify once and for all exactly which waters could be protected under the CWA and included language on certain wetlands and streams that, based on science, were determined to be vital to other navigable sources. This rule was repealed in 2019 under the Trump Administration, again limiting waters that receive federal protection. The 2019 rule is now under review again and provides an important opportunity for nurses to weigh in on the critical need to protect waters from pollutants.

Nursing Advocacy

DR. ADRIENNE WALD, EDD, MBA, RN, CNE, MCHES, FNYAM

Dr. Adrienne Wald is an Associate Professor of Nursing at Mercy College in New York. As a nurse and educator, Dr. Wald’s awareness of the myriad issues in global, national, and local water protection and water access as public health issues have grown, along with her ongoing advocacy efforts working to ensure that clean and safe water access remains a human right. During the COVID-19 pandemic, Dr. Wald’s concern for access to affordable water services in the state grew as water utility bills became unaffordable for many New Yorkers. “I write LTEs when I read or hear news about an environmental or other public health policy that I feel motivated about and feel knowledgeable about,” Dr. Wald shares ([example LTE](#)). “The issues of water protection and affordability are not always given the attention they deserve. As climate impacts continue to be felt in New York, and across the nation and globe, the urgency of water resource protection is expected to be a high priority for public health and health and environmental equity.”



Safe Drinking Water Act (SDWA)

Passed in 1976, the SDWA authorizes the EPA to set national health standards for drinking water. Millions of Americans receive high quality drinking water every day from their public water systems (which may be publicly or privately owned). Nurses understand that drinking water safety cannot be taken for granted. Threats to safe drinking water include lead and copper from pipes, bacteria from animal waste, algal blooms, chemical contamination like pesticides, hydraulic fracturing, and many other sources. While the EPA sets national standards or “maximum contaminant levels (MCLs)” for drinking water, states can set more health protective standards if they so choose. For example, several states are adopting more health protective MCLs for PFAS (per and polyfluoroalkyl) chemicals in drinking water due to reports of health concerns.⁶

Lead and Copper Rule

In 1991, the EPA adopted the Lead and Copper Rule, a regulation to limit the concentration of lead and copper allowed in public drinking water at the consumer’s tap and limits the amount of corrosion occurring in the water that can cause lead and copper to leach from pipes. The regulation requires monitoring and corrosion control technology.

There is no safe level of lead. Exposures in children can negatively affect neurodevelopment and exposures in adults are associated with high blood pressure and cardiovascular disease. Black and other people of color are more likely to be exposed to lead in water, as well as other sources like paint. A study of lead service lines in Illinois found that Black and Latino neighborhoods were twice as likely to have lead service lines than white neighborhoods.

In 2021, the EPA revised the Lead and Copper Rule for the first time since it was enacted in 1991. Unfortunately, the revised rule left in place the non-health-based action level of 15 parts per billion (ppb) and it extended the time for utilities to replace lead service lines once high levels are found. Under the revised rule it would take 33 years for systems to replace the service lines, compared to 14 years under the previous rule.⁷



In the summer of 2021, the EPA revisited this rule and held a series of roundtable discussions. These discussions allowed an opportunity for stakeholders to provide comments and there was a robust presence by nursing organizations in support of a health-based action level, expedition of full replacement of lead service lines, and strengthening of monitoring requirements.



SELIM ARDA ERVILMAZ/UNSPLASH

Water Infrastructure

Water infrastructure in the United States encompasses drinking water, wastewater, and stormwater systems. These water systems supply a large portion of the public and private water wells with over 99% of the population receiving water from one of the two piped water systems.⁸ There are many challenges that arise in these systems including expanding infrastructure to accommodate a growing population, replacing aging infrastructure, and ensuring a majority of people have clean and affordable drinking water.

A 2015 study by the Natural Resources Defense Council found more than 27 million people in the United States were being served by water systems that had reported health-based violations under the Safe Drinking Water Act.⁹ There are major equity concerns relating to who has access to clean and safe drinking water. Many local water treatment plants, especially

those in poor or rural communities, are not able to afford necessary updates to filter out contaminants such as chemicals from industrial pollution, farm runoff, and naturally occurring elements like arsenic. Further, 9.5% of American Indian and Alaska Native homes lack adequate sanitation facilities and 1.8% lack access to safe drinking water, compared to 1% of the general population.¹⁰

Aging infrastructure adds to this problem as old, deteriorating pipes may break and leak, are more susceptible to bacterial growth, and are more likely to contain lead. Many areas of the U.S. have water infrastructure that is at the end of its operational life, with some areas of the country being served by systems that are more than 100 years old.¹¹ There is a growing concern that as water infrastructure ages, the addition of new lines and updates of existing systems

will not be adequate to ensure reliable and safe access to drinking water. The lifespan of parts used in water systems is anywhere from 15 to 95 years and as systems age, infrastructure can degrade, increasing risk of failing systems.¹² Approximately six billion gallons of clean drinking water are wasted from leaking pipes and water main breaks from aging infrastructure.¹³ This

is a waste of water resources and can contribute to disruptions in necessary water supply for people and communities. The current pace of replacement and level of investments in water infrastructure does not meet the need. Most recent estimates identify a need of \$743 billion dollars for maintenance and repair of our country's water infrastructure.¹⁴

Clean Water Access on the Navajo Nation

COLONEL (RET.) FELICIA FRENCH, RN



Colonel (Ret.) Felicia French is an educator, a sustainability scientist, and nurse in Tuba City, AZ, on the Navajo Nation. A historical legacy of contamination from uranium mining, inadequate indoor

plumbing, and insufficient sewage systems have contributed to a lack of clean water for those living on the Navajo reservation. "Over 30% do not have running water on the Navajo reservation," explains French. She notes this not only limits clean drinking water, but also the amount of water that can be used for cattle, sheep, and growing crops. The Navajo Nation spans parts of New Mexico, Arizona, and Utah, with about 175,000 people living on the reservation. French notes that in rural areas, lack of water infrastructure is a major barrier to accessing clean water. French additionally explains that coal mining and climate change in the area have severely reduced the amount of water in the Navajo aquifer, the main source of potable water for those living on the reservation. For years, the Navajo Generating Station and the Peabody Black Mesa Mine were pumping water from the aquifer to power cities such as Phoenix, Tucson, and Los Angeles.

"The vast majority of people weren't aware of this," French shares. Climate change exacerbates this. "Aquifers are replenished through precipitation and because of climate change we don't have the recharging of the aquifer," French describes.



Lead & Water

Aging and failing water infrastructure also increase the contamination of drinking water with lead. Factors associated with lead contamination of drinking water include aging infrastructure, changing water sources, and changes in water disinfectant practices.¹⁵ There is no safe level of lead exposure, with exposure in children contributing to significant neurological and developmental harm. An estimated 15 to 22 million people in the U.S. are still served by community water systems that contain lead.¹⁶ In 2015, over 18 million people were served by water systems that violated the EPA Lead and Copper Rule, a protection under the Safe Drinking Water Act.¹⁷

Lead in Drinking Water in Schools/Child Care

Given children's increased vulnerability to lead hazards, it is imperative that exposure to lead is eliminated to the greatest extent practicable. Children spend a significant amount of time at school and childcare facilities where they may be exposed to lead in drinking water. For more than 50 million children, public schools are a daily source of water.¹⁸



Testing for lead in drinking water in schools and childcare facilities remains largely voluntary. Over a two-year period (2016 to 2017), an estimated 41% of school districts indicated testing for lead, while 41% did not test, and 16% were unsure whether they tested for lead or not.¹⁹ Of those that did lead testing of drinking water, 37% found elevated levels of lead.²⁰ The current EPA "action level" in water of 15 ppb is not a health-based standard. Therefore, if lead testing in schools or childcare facilities show levels below 15 ppb, there is no recruitment for action to get lead levels as close to 0 ppb as possible. Since there is no safe level of lead exposure, we should be striving for water that is free of any level of lead.

Compounding the problem is the fact that water isn't used just for drinking and washing; it's also used for cooking, where it winds up in foods like rice and pasta, or in infant formula, posing a greater risk to babies, who consume more water proportionate to their size. Lead concentrations increase as water sits in pipes when schools and childcare facilities are vacant overnight, on weekends, and during school holidays. Lead particles can also release sporadically, making lead ingestion less predictable.

Further, existing primary prevention programs usually test babies, not school-aged children, so exposures to lead from water sources in schools may not be identified. Symptoms often don't appear or can go unnoticed until dangerous levels of lead have accumulated. At that point, the damage—lowered IQ, poor impulse control, and developmental delays—has been done.



Water & Climate Change

Climate change creates unique threats to water quality and supply. Rising temperatures, more frequent and severe storm events, drastic changes in precipitation, and sea level rise threaten water resources, and with that, human health. Storm water runoff can contaminate water sources, leading to an increased risk of gastrointestinal illness and other waterborne diseases. In an analysis of fecal bacteria contamination on beaches in the United States, more than 1 in 10 beaches surveyed were found to be potentially unsafe on at least 25 percent of the days sampled.²¹ Sewage overflow and stormwater runoff pollution are the main contributors to the unsafe bacteria found on beaches.

Conversely, drought conditions lead to a limited water supply, reducing access to clean and safe drinking water. Changes that affect water resources impact both infrastructure and water-intensive sectors, such as manufacturing and agriculture,

which can result in threats to livelihoods, mental well-being, and communities. Climate-related impacts on our water infrastructure are costly. The National Association of Clean Water Agencies and the Association of the Metropolitan Water Agencies estimate climate adaptation costs upwards of \$944 billion through 2050.²²

As climate change is a threat multiplier, it is important to consider how existing pollution sources create elevated threats. In the aftermath of Hurricane Harvey in 2017, an analysis by the Union of Concerned Scientists showed that more than 650 energy and industrial facilities were potentially exposed to floodwaters.²³ While most of the health impacts of exposures remain unknown, the health risks from compromised facilities include exposures to toxins in the air and receding floodwaters. As heavy precipitation events and hurricanes are made

worse by climate change, considerations on how to prepare for extreme weather events in areas with existing pollution sources are critical.

Our reliance on fossil fuels for energy not only exacerbates the climate crisis, but it also threatens freshwater resources. Estimates suggest that fossil fuel and nuclear power plants utilize as much water as all the farms in the United States and more than

four times all residences.²⁴ As the country, and the world, increasingly grapples with diminished water supplies, we need to take a close look at how we're using this precious resource in our quest for energy. This is especially important for those involved in the healthcare industry, as healthcare is the second largest user of electricity of any industry and has the most water intensive facilities of any commercial or industrial facility.

Extreme Drought in Nevada

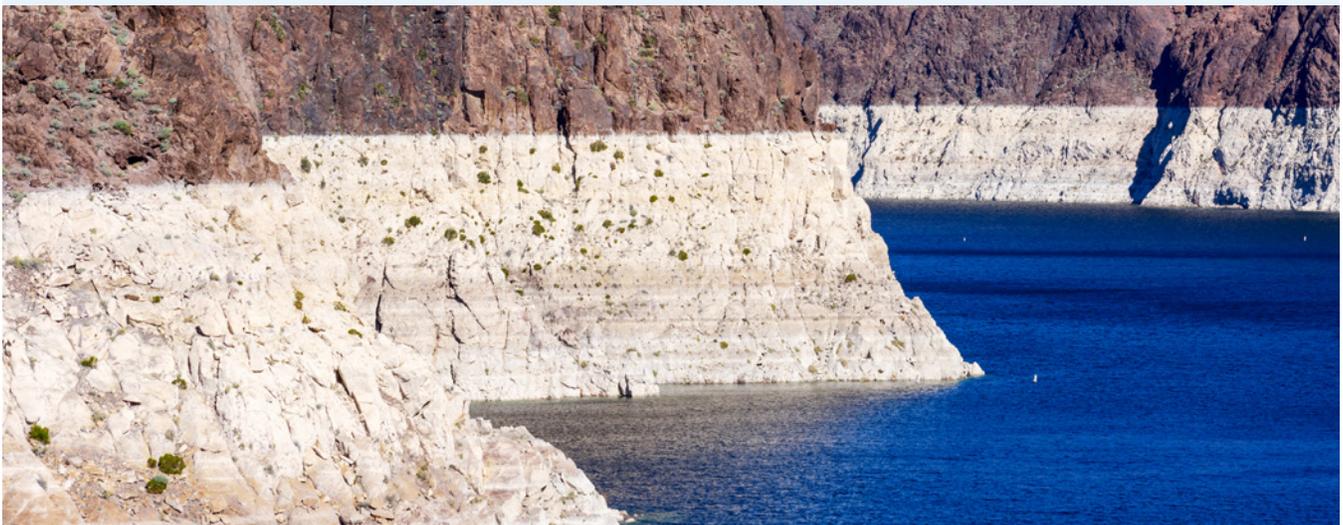
MICHAEL I. COLLINS, BSN, RN



Michael Collins is a retired transplant nurse, Nurse Alliance of SEIU Healthcare member, and long-time Las Vegas, NV, resident. Declining snowpack and extreme drought conditions, both made worse

by climate change, are threatening drinking water sources in Nevada. In Southern Nevada, Lake Meade is the primary water source for residents, however since 2000, the water levels in the reservoir have dropped over 140 ft. "The water levels are so low now that the Federal government for the first time issued a water emergency for Lake Meade," Collins explains. The water shortage declaration announced in 2021 triggers reductions in the amount of water states are allocated. To

combat water shortages, the Southern Nevada Water Authority implemented several water conservation strategies, including providing rebates to residents to convert grass to desert landscaping and mandating the removal of nonfunctional grass in public spaces. "This saves a ton of water," Collins adds, but forewarns, "There are going to be more austere measures coming in the future." The drought not only affects water supply, but also electricity generation. Low water levels in Lake Meade reduce electricity generated by the Hoover Powerplant, which supplies power to more than one million people in Nevada, California, and Arizona. "For the first time here we are beginning to experience brown outs because we don't have enough electricity that is generated by the Lake Meade water," Collins shares.



Emerging Contaminants & Water Impacts

Coronavirus (SARS CoV-2)

Since the start of the COVID-19 pandemic, one of the most effective methods to reduce transmission is frequent handwashing. Unfortunately, there are three billion people worldwide who do not have access to handwashing facilities in their homes.²⁵ This is not just an issue experienced by low- and middle-income countries. Here in the U.S., over two million people do not have access to clean, running water or basic indoor plumbing.²⁶ This lack of access was highlighted by the issues facing those living in the Navajo Nation as the pandemic began to surge amongst Native Americans. Native Americans are 19 times more likely to lack access to indoor plumbing than white Americans, and on the Navajo Nation many residents have to drive over 40 miles every few days to haul water for washing, bathing, and cooking.²⁷ This can be challenging when residents are instructed not to leave their homes to avoid spreading the virus.

COVID-19 has also impacted water access in unexpected ways. For example, as COVID-19 hospitalizations rapidly increased in states like Florida during the summer of 2021, the need for supplemental oxygen for COVID patients also increased substantially. This is an issue for some water utilities, such as one in Orlando that utilizes liquid oxygen to treat their drinking water. As reported by the Orlando Sentinel²⁸, suppliers are prioritizing deliveries to hospitals and the supply to the water utility has decreased by 30–50%. This has led the Orlando Utilities Commission to reduce water pressure and ask residents to conserve water, and they are still barely able to keep up with water demand.

Per- and polyfluoroalkyl substances (PFAS)

An emerging area of concern is per- and polyfluoroalkyl substances (PFAS) in water supplies. PFAS are a large class of chemicals all containing a fluorine carbon bond, the strongest synthetic bond known to man. They are used in a wide variety

Ensuring Nurses Are at the Table

DR. LAURA ANDERKO, PHD, RN



Dr. Laura Anderko is the Co-Director of the Region 3 Pediatric Environmental Health Specialty Unit, The Mid-Atlantic Center for Children's Health and the Environment serving PA, VA, WV, DE, MD, and DC, at the Villanova University M. Louise Fitzpatrick College of Nursing. Dr. Anderko's advocacy journey started when she learned that a children's playground in her community was slated to be built on polluted land. She joined the effort to oppose the development, which prompted the resulting decision that the developer had to remediate all the pollution before they could build. Currently, she focuses her efforts on protecting communities from exposure to PFAS in water. "Over 98% of us have some level of PFAS in our body," Dr. Anderko notes. This has prompted her involvement in a National Academy of Sciences committee to come up with guidelines for clinicians related to exposure, testing, and treatment. Dr. Anderko emphasizes that nurses have a key role to play when it comes to environmental health, "We really are educated in a way that looks at the whole person. We have what it takes to advocate and to be able to communicate to policy makers, who often don't have the science in a way that's meaningful and trusted."

of products including firefighting foam, non-stick cookware, water resistant outdoor wear, anti-stain treatments on textiles, cosmetics, and food packaging. They do not break down in the environment, even during incineration, and have recently been found in surface waters across the U.S. Because they are so widely used, most people in the U.S. have some amount of PFAS in their body.

PFAS chemicals are linked to a number of health impacts including testicular and kidney cancer, liver damage, reproductive disorders, negative pregnancy impacts, ulcerative colitis, high cholesterol, and immunosuppression, including reduced response to vaccinations.²⁹ A recent report by the Environmental Working Group (EWG) shows PFAS in drinking water or ground water sources in 49 states.³⁰ Unfortunately, there are currently no mandated testing requirements for public water systems and the non-enforceable lifetime health advisory for PFAS set by the EPA of 70 parts per trillion (ppt) is much higher than the limit of 1 ppt supported by scientific evidence. EWG has created an [interactive map](#) showing water and military base contamination with PFAS where you can investigate if your community has been impacted.³¹

Due to a lack of a drinking water standards at the federal level, 31 states have passed legislation aimed at reducing exposures to PFAS including prohibiting the use of PFAS in certain products, establishing maximum

contamination levels (MCL) for drinking water supplies, and reporting requirements. The EPA has developed a PFAS action plan that includes creating an MCL for PFAS under the Safe Drinking Water Act, addressing clean up, and may include adding PFAS chemicals to the Toxics Release Inventory. These activities at the EPA provide numerous opportunities for nurses to provide comments and help push the EPA to craft regulations that are as health protective and evidence-based as possible.

Harmful Blue-Green Algae: Cyanobacteria

In addition to impacts of pollution from surface runoff, increasing temperatures due to climate change also threatens water quality in rivers and lakes. As warming increases, surface water temperature increases and affects aquatic life when species are unable to adapt to the rise in temperature.³² Water temperature rise also contributes to proliferation of harmful bacteria and algal blooms, with the algal bloom season projected to be longer and more severe in future droughts.³³ Blue-green algae, which is actually cyanobacteria, produces cyanotoxins that can cause significant health impacts, and even death, if ingested or come into contact with skin through swimming or boating. Boiling water does not impact the toxicity of the cyanotoxins; algae bacteria needs to be filtered out if detected in a drinking water source.



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PAWEL MICHALOWSKI / SHUTTERSTOCK

Water Justice

While all communities are at risk of contaminated drinking water systems, access to clean water and exposure to water pollution disproportionately impact low-income and communities of color.³⁴ Black and Latino communities are more likely to live in homes with incomplete or aging plumbing systems, compared to non-Hispanic white communities, and 12% of Native American and 30% of Alaska Natives live in communities without adequate plumbing.³⁵ Populations in both urban and rural areas may be disproportionately affected by rising water costs and adverse health outcomes from infrastructure damage and reduced water quality.

Individuals who are at an increased risk of illness are also more vulnerable to adverse health outcomes from drinking contaminated water, including older adults, pregnant women, infants and children, those with chronic conditions, and those that are

immunocompromised. For example, children absorb 40% to 50% of lead in water compared to 3% to 10% by adults, with risk most prominent in young children ages one to five years.³⁶ Additionally, those that lack access to health services or resources in the event of a water crisis experience a higher burden of illness and chronic disease.³⁷

Households connected to private water wells as their primary drinking water source are particularly vulnerable to adverse health effects from contaminated water.³⁸ These include American Indian and Alaska Native populations, rural communities, and those living near oil and gas operations. Communities that receive water from systems dependent solely on limited water sources are at risk for water contamination and water shortages during extreme weather events.³⁹ For example, systems that rely exclusively on groundwater sources or single wells

are vulnerable to water shortages during droughts, face vulnerabilities to water contamination, and have limited options when alternate water sources are needed.⁴⁰ The responsibility to ensure that water is safe to drink rests entirely on the well owner. This means that the financial costs associated with testing, purifying, and accessing alternative sources of safe drinking water are an additional burden on communities who are already economically disadvantaged.⁴¹

Since energy extraction and production uses large amounts of water, there are significant environmental justice concerns relating to water contamination and shortages in communities that depend on water sources near industry operations. Worsening climate change poses similar environmental justice issues relating to reductions in water quality and supply. During extreme weather events, low-income populations and communities of color are disproportionately affected due to pre-existing, systemic health inequities. It is essential for nurses to consider water insecurity, particularly in communities that are marginalized, in policy and planning to reduce harm and improve the availability of clean, affordable, and accessible drinking water.

Nurse-Community Partnerships to Address Toxic Contaminants

AZITIA AMIRI, PHD, RN



Dr. Azita Amiri is a nurse researcher and Associate Professor at the University of Alabama in Huntsville. Community members in Uniontown, AL, reached out to Dr. Amiri to express their concerns regarding environmental and health issues of citizens. “The citizens of Uniontown were expecting nurses to help them. They thought nurses had forgotten them,” said Dr. Amiri. Uniontown is a community that sits near a landfill with more than four million pounds of coal ash. A failed sewer system and several reported health concerns among the community were fueling residents’ concerns of contamination of drinking water. With a grant from the National Center for Healthy Housing, Dr. Amiri and her research partner, Dr. Shuang Zhao, worked in partnership with the community to conduct sampling and testing of drinking water in homes. Results of the water testing showed high levels of lead and traces of arsenic in some samples. Dr. Amiri conducted educational sessions to share the findings with the community. “Education was the key in helping these communities to mitigate their exposure to water pollution,” emphasizes Dr. Amiri. In addition, Dr. Amiri and community members contacted local EPA staff, state-elected officials, and the Alabama Department of Public Health, and collaborated with a documentary filmmaker to bring national attention to the issues Uniontown residents are experiencing.



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Water & Health Policy Recommendations

To ensure clean water for all communities, there are key priority actions that can provide immediate and long-term health protections. Nurses can advocate for these priority actions and promote awareness and understanding among decision-makers of how environmental factors influence clean water access and health outcomes. Recommended priority actions include:

- **Strengthen policy and enforcement of water quality regulations:** This includes strengthening environmental protections under authority of the Safe Drinking Water Act, especially the Lead and Copper Rule and the Clean Water Rule.
- **Support funding and upgrades to water infrastructure across the country:** To prevent water contamination associated with aging water infrastructure, funding from federal and state governments is crucial, as many communities cannot afford to upgrade municipal water systems, especially in low-income areas. Policy efforts to support water infrastructure should include building green infrastructure, including rain barrels, rooftop gardens, vegetative buffers, and other techniques that absorb stormwater onsite and prevent runoff pollution and subsequent overflows.
- **Replace lead service lines:** States and localities should utilize a cooperative, community-based approach to identify lead service lines, develop a replacement program, and finance full lead service line removal in an equitable and timely manner.
- **Reduce lead exposure in daycares and childcare facilities:** Schools and childcare facilities can utilize the U.S. EPA's 3Ts (Training, Testing, and Taking Action) Toolkit to build voluntary implementation programs to reduce lead in drinking water. Legislation that aims to reduce lead in water in

these types of facilities should incorporate a Filter First approach, which requires installing lead-removing filtered water stations. This approach is health protective and the most cost-effective option to ensure lead-free water in schools. An example of [model legislation](#) was developed by the Natural Resources Defense Council and has been adapted and introduced in Michigan.

- **Address emerging water contaminants:** Advancing legislation, such as PFAS Action Act of 2021, that establishes requirements and incentives to limit the use of perfluoroalkyl and polyfluoroalkyl substances and remediate forever chemicals in the environment are vital to reducing harms to human health. Additionally, the U.S. EPA should address PFAS in the environment by developing strong and health protective standards that regulate the entire class of these chemicals rather than one at a time.
- **Advance water conservation strategies:** Promote water conservation and encourage innovative new supply options, such as water recycling and groundwater cleanup in communities and healthcare facilities.
- **Support a just transition from fossil fuel and water-intensive energy production to clean energy, such as wind and solar.** Work in collaboration with communities to advocate for cleaner and greener alternative industries in areas that have have relied, historically and financially, on environmentally unsafe and damaging production practices.
- **Identify and address water system vulnerabilities to prevent harm to communities:** This includes developing plans to prevent harm from water contamination, such as routine monitoring and testing of water sources, notification of residents who are at-risk, and regular surveillance of public beaches. In addition, ensure that interventions to address vulnerabilities to water supply are incorporated into climate adaptation planning.

Leadership in Hospital Sustainability

DR. BETH SCHENK, PH.D., RN, FAAN



Dr. Beth Schenk is the Executive Director of Environmental Stewardship for Providence and Assistant Research Professor at Washington State University. As part of her role at Providence, she is working to create a water conservation strategy and plan for 53 hospitals within the health system. Hospitals are some of the biggest users of water—largely for refrigeration or air conditioning, but also for sterilization, regular cleaning, and bathing. “Where we are in the west, there is serious drought and very high fire risk, and we’re in a world now of water restrictions. It’s a valuable, valuable resource. Good clean, potable water is necessary for life, and we can’t go more than a few days without it,” said Dr. Schenk as she summarized the issues her community is facing. She sees nurses as having a key role in water conservation initiatives in healthcare institutions. “We know that hospitals are often some of the largest users of water in a community. When you think of nursing staff asking leadership, ‘Hey, what’s our water conservation strategy,’ that is powerful,” Dr. Schenk shares.

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