The National Environmental Health Association (NEHA) represents more than 7,000 governmental, private, academic, and uniformed services sector environmental health professionals in the U.S., its territories, and internationally. NEHA is the profession's strongest advocate for excellence in the practice of environmental health as it delivers on its mission to build, sustain, and empower an effective environmental health workforce.

Policy Statement on On-Site Waste Water

Adopted: October 2020
Policy Sunset: October 2023

NEHA's Policy Statement

NEHA supports the following policies and actions:

- Invest greater resources into research on onsite wastewater systems construction, operation, and maintenance regulations.
- Implement state or local policy standards on onsite wastewater systems construction, operation, and maintenance.

Analysis

While 1 in 5 households in the U.S. relies on an onsite wastewater system to treat their wastewater, if these systems are not properly installed and maintained they can pose a serious risk to the environment and public health. Improperly managed or failing onsite wastewater systems can contaminate nearby water sources with harmful contaminants. Nitrogen and fecal matter contamination of surface waters from nearby onsite wastewater systems has been documented with harmful consequences. High nitrogen contamination can cause excessive growth of algae called algal blooms, which can harm water quality and habitats, leading to illness and death in large numbers of fish due to a lack of oxygen. Some algal blooms are harmful to humans and can make people sick if they come into contact with or drink the water (U.S. Environmental Protection Agency [U.S. EPA], 2019). Fecal run off from poorly performing onsite wastewater systems in coastal areas and estuaries have impacted local fishing industries, sometimes harming the health of consumers and even closing entire areas, damaging the economic well-being of the region (Cahoon et al., 2006; Geary & Lucas, 2019; Ye, Sun, & Hallas, 2017).

Malfunctioning onsite wastewater systems can also impact streams, rivers, and other watersheds away from coastal areas (Sowah, Habteselassie, Radcliffe, Bauske, & Risse, 2017). Existing systems that are improperly designed for their given area or are exceeding their design life might treat wastewater less effectively and contribute to greater contamination of nearby water sources than functioning systems (Day, 2004). Additionally, consumers with malfunctioning systems might be more likely to use synthetic chemicals meant for system cleaning, which can further contaminate the environment (Canter & Knox, 1985).

Environmental contamination from malfunctioning onsite wastewater systems can impact public health at the household level in addition to the community and environmental impacts outlined above. Many households relying on an onsite wastewater system also use a private well (i.e., a well serving a single- family home) to obtain their drinking water (U.S. EPA, 2020). Most states do not regulate water quality for private wells and there are no federal regulations, which makes it the responsibility of the homeowner to test the water and make sure it is safe to drink (Schneider, 2019). If an onsite wastewater system is located too close to a private well or it isn't functioning correctly, wastewater from the onsite wastewater system can contaminate the private well and cause a range of health issues in family members consuming the drinking water (U.S. EPA, 2020). For instance, water contaminated from onsite wastewater systems can have higher nitrate concentrations, which can be especially harmful to infants and young children and has been connected to colorectal cancer risk in adults (Mathewson, Evans, Byrnes, Joos, & Naidenko, 2020; Schullehner, Hansen, Thygesen, Pedersen, & Sigsgaard, 2018). If onsite wastewater systems are not operating correctly, private wells can also be contaminated with organic wastewater compounds, which can include pharmaceuticals, per- and polyfluoroalkyl substances, flame retardants, and artificial sweeteners (Schaider, Ackerman, & Rudel, 2016). Additionally, well water contaminated with fecal matter can lead to a variety of health issues, including endemic diarrheal illness, norovirus, *Campylobacter*, and *Salmonella* (Alexander, Alexander, Green, Schuster, & Forest, 2008; Borchardt, Chyou, DeVries, & Belongia, 2003).

Justification

Despite the range of potential environmental and public health impacts from malfunctioning onsite wastewater systems, there are few regulations beyond those related to the initial construction of onsite wastewater systems (U.S. EPA, 2018). Additionally, recent research has shown that more information is needed to better formulate guidance and regulations for all stages of an onsite wastewater system's life cycle, including construction, operation, and maintenance. While many states and local jurisdictions have construction and siting requirements for new onsite wastewater systems, further research is needed to ensure onsite wastewater system design matches the given environment. Onsite wastewater systems might contribute to greater contamination of nearby water sources if they are unsuitable for the surrounding environmental factors, such as climate and soil moisture, in addition to proximity to nearby bodies of water (Jayarathne, Connor, Yuen, & Pivonka, 2010). Additionally, large onsite wastewater systems, such as those for restaurants or small office buildings, must be constructed taking into account the increased effluent load to avoid the potential contamination of drinking water sources used by larger scale facilities (Alexander et al., 2008).

Years of inadequate onsite wastewater system management and regulation can give rise to significant problems in nearby watersheds, becoming chronic sources of nutrient pollution. A lack of uniformity in regulations on onsite wastewater system registration, in addition to a lack of data on siting, design, age, and maintenance practices, makes it more difficult to measure the impact of onsite wastewater systems on nearby bodies of water. Including this type of data collection and maintenance practices in local and state regulations can aid environmental health professionals in evaluating contamination risk in nearby ecosystems and protecting the health of their communities (Withers, Jordan, May, Jarvie, & Deal, N.E., 2014; Withers et al., 2012).

Finally, residents who receive education on their onsite wastewater systems could learn more about their systems and some might change how the maintain their onsite wastewater systems. Despite increased access to educational materials, many do not change their maintenance practices, which can lead to increased rates of onsite wastewater system failure and greater contamination of surrounding areas (Silverman, 2005). Creating and implementing local operation and maintenance regulations will ensure that onsite wastewater systems operate more efficiently for longer periods of time, protecting the surrounding environment and the public health of nearby communities.

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