

# Addressing the Challenges of Water-related Illnesses in the United States

CONTAMINATED WATER CAN CAUSE MANY DIFFERENT ILLNESSES.

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*Every \$1 invested in treating drinking water has yielded an average return of \$23 in public health benefits.*

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## NEW HEALTH CHALLENGES FROM CONTAMINATED WATER INCLUDE:

- CDC data indicate that pathogens growing inside slimy pipes are the leading cause of severe illnesses and deaths related to water. People who are older or have weakened immune systems are more likely to develop these illnesses.
- Harmful algal blooms might be increasing in frequency and number. These blooms cause illnesses that lead to beach and lake closures, impacting local economies.
- Chlorine-resistant pathogens that survive in pools, hot tubs, and water playgrounds threaten people's health.
- Water main breaks and drinking water advisories are common, and frequently caused by aging water infrastructure. These water emergencies disrupt communities and can make people sick.

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**EVERY YEAR,** ACCORDING TO CDC'S PRELIMINARY ESTIMATES, WATERBORNE PATHOGENS CAUSE

**7,000** deaths

**120,000** hospitalizations

**7 MILLION** illnesses

**\$3 BILLION** in healthcare costs



U.S. Department of  
Health and Human Services  
Centers for Disease  
Control and Prevention

# Water Challenges in the 21st Century



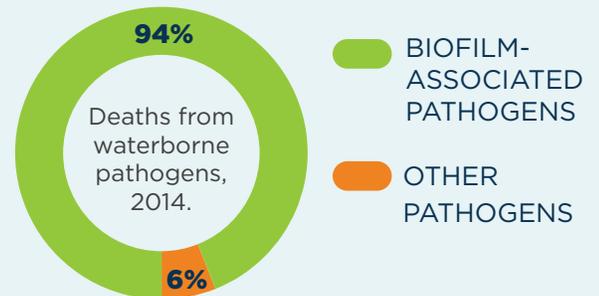
*Despite the tremendous progress made in waterborne disease prevention over the last century, the water we use every day could be safer.*

## SLIME-LOVING PATHOGENS AND AGING INFRASTRUCTURE PLACE THE SAFETY OF TAP WATER AT RISK

Slime (biofilm) inside the millions of miles of pipes that deliver water to homes, workplaces, schools, and hospitals can grow harmful pathogens.

Each year, an estimated **240,000** water main breaks can cause health and economic impacts. Aging water infrastructure exacerbates these problems.

Harmful pathogens that grow inside pipe slime (biofilm) cause the most deaths.

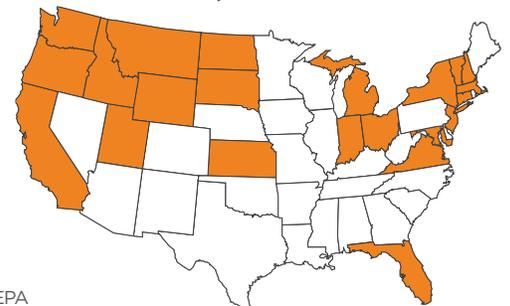


## HARMFUL ALGAL BLOOMS (HABs) THREATEN OUR LAKES, RIVERS, OCEANS, AND DRINKING WATER

HABs have significant public health and economic impacts:

- In fresh water, HABs cause the US tourism industry up to \$1 billion in lost revenue.
- In oceans, red tide events cost an average of \$50 million, including \$22 million in public health costs.

HABs, Beach Closures, and Health Advisories, 2018



Source: EPA

## PATHOGENS IN POOLS AND OTHER TREATED RECREATIONAL WATER VENUES CAUSE OVER 1 MILLION ILLNESSES EACH YEAR

Pathogens that aren't easily killed by chlorine and those that can survive in biofilm are the leading causes of outbreaks and severe illnesses linked to treated recreational water (pools).

No comprehensive federal health regulations exist on how to build, operate, and maintain aquatic venues, resulting in widely varying state and local pool codes. In 2014, CDC developed the Model Aquatic Health Code, a set of science-based recommendations to standardize these processes and make swimming in pools healthier, but voluntary adoption has been slow.



# Water systems are complex and water can become contaminated in many ways



Biofilm pathogens can grow in pipes and equipment inside cooling towers, large buildings, recreational water facilities, and even homes



45 million private well owners are responsible for the safety of their drinking water.



Pools and water playgrounds can spread pathogens if not well designed and maintained.



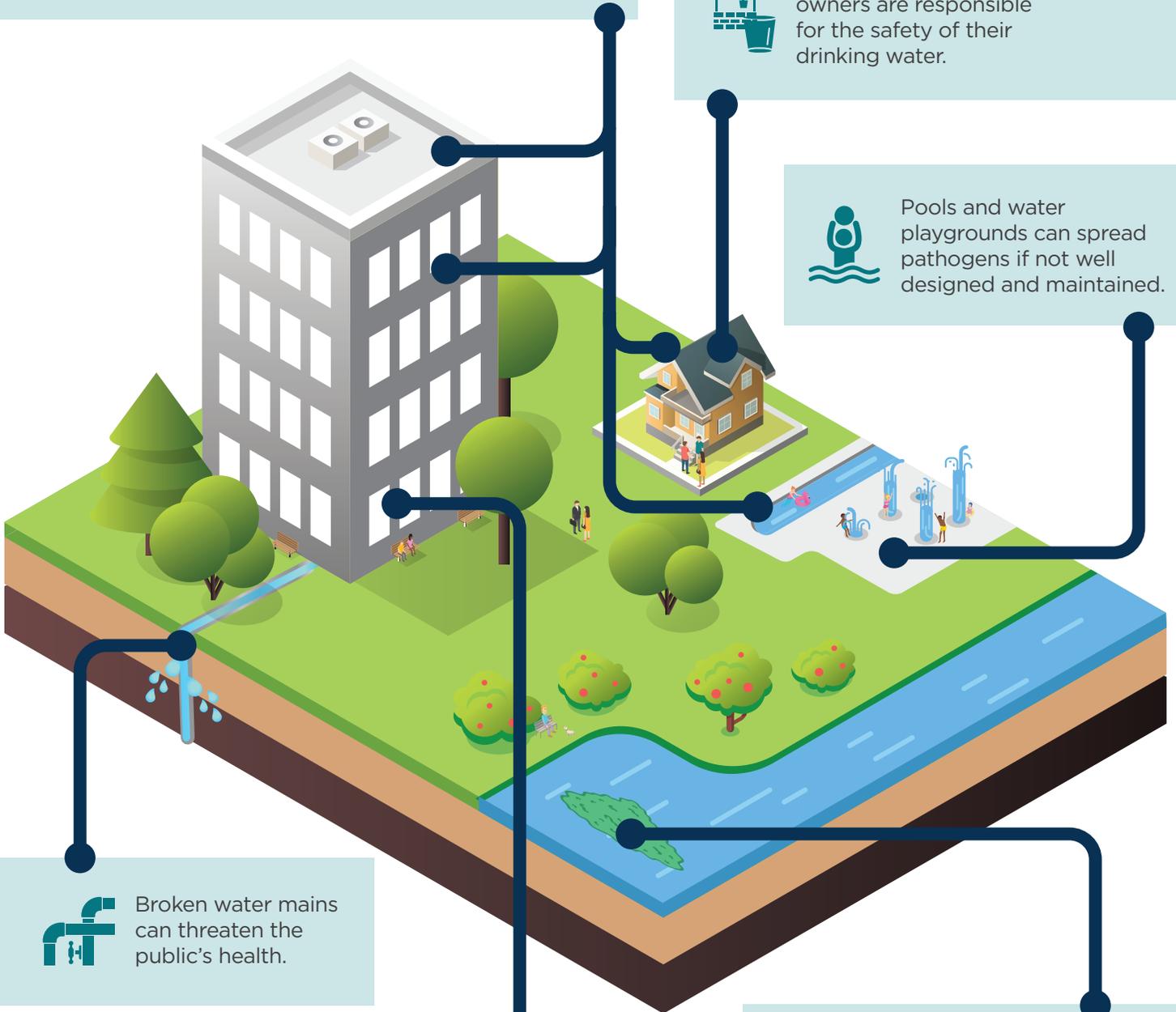
Broken water mains can threaten the public's health.



People can get sick when they drink or breathe in droplets from contaminated water.



Excess nutrients and warm waters can lead to harmful algal blooms.



# What Can Be Done



*CDC works to detect, investigate, and control water-related illnesses and outbreaks. Understanding the causes of these illnesses and the effectiveness of solutions is critical to developing science-based interventions and addressing pressing public health issues.*

## WHAT CDC IS DOING

- Supporting state and local health departments to detect, investigate, and control waterborne infections and outbreaks.
- Supporting uptake of water management programs that help building managers and owners address biofilm-related pathogens in buildings, including healthcare facilities.
- Providing national leadership for prevention of recreational water illness through the Model Aquatic Health Code.
- Responding to water-related emergencies and outbreaks.
- Using new technologies, such as whole genome sequencing, to detect and analyze pathogens.
- Educating the public on how to prevent waterborne diseases.

## WHAT MORE CAN BE DONE?

- Support improvements for aging drinking water and sewer infrastructure.
- Increase awareness of biofilm threats in building water systems and implement water management programs.
- Improve design, construction, operation, and management of treated recreational water facilities.
- Improve public health capacity to detect, investigate, and prevent infections and outbreaks.
- Research emerging issues to provide recommendations for water management programs.

[WWW.CDC.GOV/HEALTHYWATER](http://WWW.CDC.GOV/HEALTHYWATER)