

Can You Get Coronavirus from Wastewater or Drinking Water?

By Chris Wiant, MPH, PhD

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In a nutshell...

Maintaining water safety and hygiene is critically important during the COVID-19 pandemic. This article discusses recent statements from public health agencies about how properly treating and disinfecting wastewater and drinking water inactivates the COVID-19 virus.

As the world adapts to the growing coronavirus (COVID-19) pandemic, so too has the Water Quality & Health Council. This is reflected by our series of articles on COVID-19, the virus, and prevention, including recent articles on [killing coronavirus on surfaces](#) by disinfecting with bleach and preparing to [shelter in place](#).

In this changing environment, where daily bad news, closures, and restrictions seem to be the new norm, it is comforting to know that conventional drinking water and wastewater (sewage) disinfection remain effective and inactivate the COVID-19 virus. But don't just take our word for it.

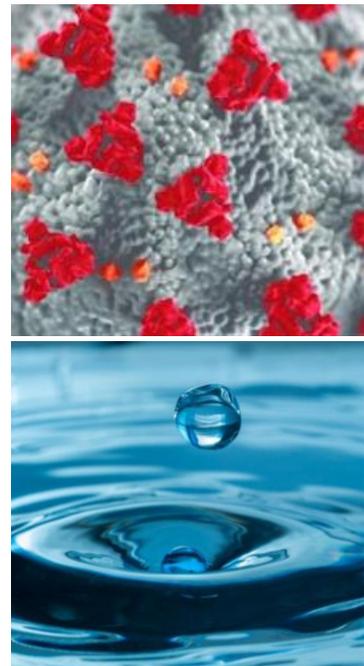
Drinking Water Disinfection

Safe drinking water is essential for protecting public health. The World Health Organization (WHO), U.S. Centers for Disease Control and Prevention (CDC), and the U.S. Environmental Protection Agency (EPA), all recently released statements that properly treated and disinfected water is safe to drink and for normal household uses, such as cooking, during the current pandemic.

WHO's [technical brief](#) states "The COVID-19 virus has not been detected in drinking-water supplies, and based on current evidence, the risk to water supplies is low...Conventional, centralized water treatment methods that use filtration and disinfection should inactivate the COVID-19 virus."

According to [CDC's statement](#), "The COVID-19 virus has not been detected in drinking water. Conventional water treatment methods that use filtration and disinfection, such as those in most municipal drinking water systems, should remove or inactivate the virus that causes COVID-19."

[EPA announced](#), "Based on current evidence, the risk to water supplies is low. **Americans can continue to use and drink water from their tap as usual**...Coronavirus, which causes COVID-19, is a type of virus that is particularly susceptible to disinfection and standard treatment and disinfectant processes are



COVID-19 photo credit: CDC

expected to be effective.” Similar statements, as well as online resource pages and informational webinars, have been made available by a wide variety of [national](#) and [local](#) drinking water associations, utilities, and related organizations.

About 85% of Americans are served by community drinking water systems. But it’s also important to note that about 15 percent of Americans (almost 45 million people) get all or some of their water from private wells, many of which are not disinfected. However, the WHO technical brief also states “In places where centralized water treatment and safe piped water supplies are not available, a number of household water treatment technologies are effective in removing or destroying viruses, including boiling or using high-performing ultrafiltration or nanomembrane filters, solar irradiation and, in non-turbid waters, UV irradiation and appropriately dosed free chlorine.” [CDC](#) and [NSF International](#) provide helpful information and guidance on selection and appropriate use of household water treatment technologies.

Wastewater Disinfection

Properly treated and disinfected wastewater is vital for preventing disease and protecting the environment. In particular, wastewater systems that are operated to reduce enteric viruses (like norovirus) are also able to remove respiratory viruses like coronaviruses. As shared below, several agencies have made early statements on the COVID-19 virus in wastewater. More data are likely to emerge in the future that will allow for a better description of occurrence and removal of the virus as well as the vital role of wastewater treatment and disinfection to the protection of public health. (A [recent WQ&HC article](#), “Can Coronavirus Spread through Defective Bathroom Sewage Pipes?” discusses concerns about the potential spread of the COVID-19 virus through improperly connected bathroom sewage pipes in a high-rise apartment building in Hong Kong.)

WHO’s technical brief notes, “There is no evidence that the COVID-19 virus has been transmitted via sewerage systems with or without wastewater treatment.” CDC states the following about COVID-19 and wastewater: “Data suggest that standard municipal wastewater system chlorination practices may be sufficient to inactivate coronaviruses, as long as utilities monitor free available chlorine during treatment to ensure it has not been depleted.” EPA similarly notes, “COVID-19 is a type of virus that is particularly susceptible to disinfection. Standard treatment and disinfectant processes at wastewater treatment plants are expected to be effective.”

As for drinking water service, it is important to note that not all Americans are connected to community wastewater treatment systems, which serve about 75% of the population. Moreover, not all wastewater systems disinfect year-round and can reliably remove respiratory viruses like coronaviruses. In this regard, EPA states, “While decentralized wastewater treatment (i.e., septic tanks) do not disinfect, EPA expects a properly managed septic system to treat COVID-19 the same way it safely manages other viruses often found in wastewater. Additionally, when properly installed, a septic system is located at a distance and location designed to avoid impacting a water supply well.”

The Water Environment Federation (WEF) supports these early statements and regularly updates its [COVID-19-related resources](#). WEF’s resource page also emphasizes worker safety, but currently states that “No coronavirus-specific protections are recommended for employees involved in wastewater management operations, including those at wastewater treatment facilities.”

On an important “think globally and act locally” note, a recent [New York Times article](#) highlighted difficulties wastewater utilities are facing as consumers increasingly flush disinfectant wipes, paper towels, napkins, and baby wipes—often to cope with a lack of toilet paper. “The result has been a coast-to-coast surge in backed-up sewer lines and overflowing toilets, according to plumbers and public officials, who have pleaded with Americans to spare the nation’s pipes from further strain.” Please do your part and only flush toilet paper!

Water Safety Is Critical

The provision of safe water, sanitation, and hygienic conditions is essential to protecting human health during all infectious disease outbreaks, including the COVID-19 pandemic. In fact, the [water and wastewater systems sector](#) was recently designated as one of 16 critical infrastructure sectors “whose assets, systems, and networks...are considered so vital to the United States that their incapacitation or destruction would have a debilitating effect on security, national economic security, [and] national public health or safety.” This designation includes water and wastewater workers who are also essential to maintain the services Americans depend on daily during the COVID-19 response.

It is comforting to know that our community drinking water and wastewater systems are doing their part to help maintain water safety and protect public health during the pandemic.

Can the COVID-19 Virus Survive in Swimming Pools?

According to [CDC](#), “There is no evidence that COVID-19 can be spread to humans through the use of pools and hot tubs. Proper operation, maintenance, and disinfection (e.g., with chlorine and bromine) of pools and hot tubs should remove or inactivate the virus that causes COVID-19.” While it is good news that the COVID-19 virus cannot survive in a properly maintained pool or hot tub, there’s more to think about in this arena: Who else is in the pool, hot tub, or locker room? Unless your fellow bathers are keeping a “social distance” (six feet; hard to do in a hot tub!), they could potentially spread the virus through respiratory droplets in the air. We do not yet know how the pandemic will affect the 2020 summer swim season (e.g., will community pools even open?), but keep in mind that the properly disinfected pool and hot tubs will not necessarily be risk-free zones.

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