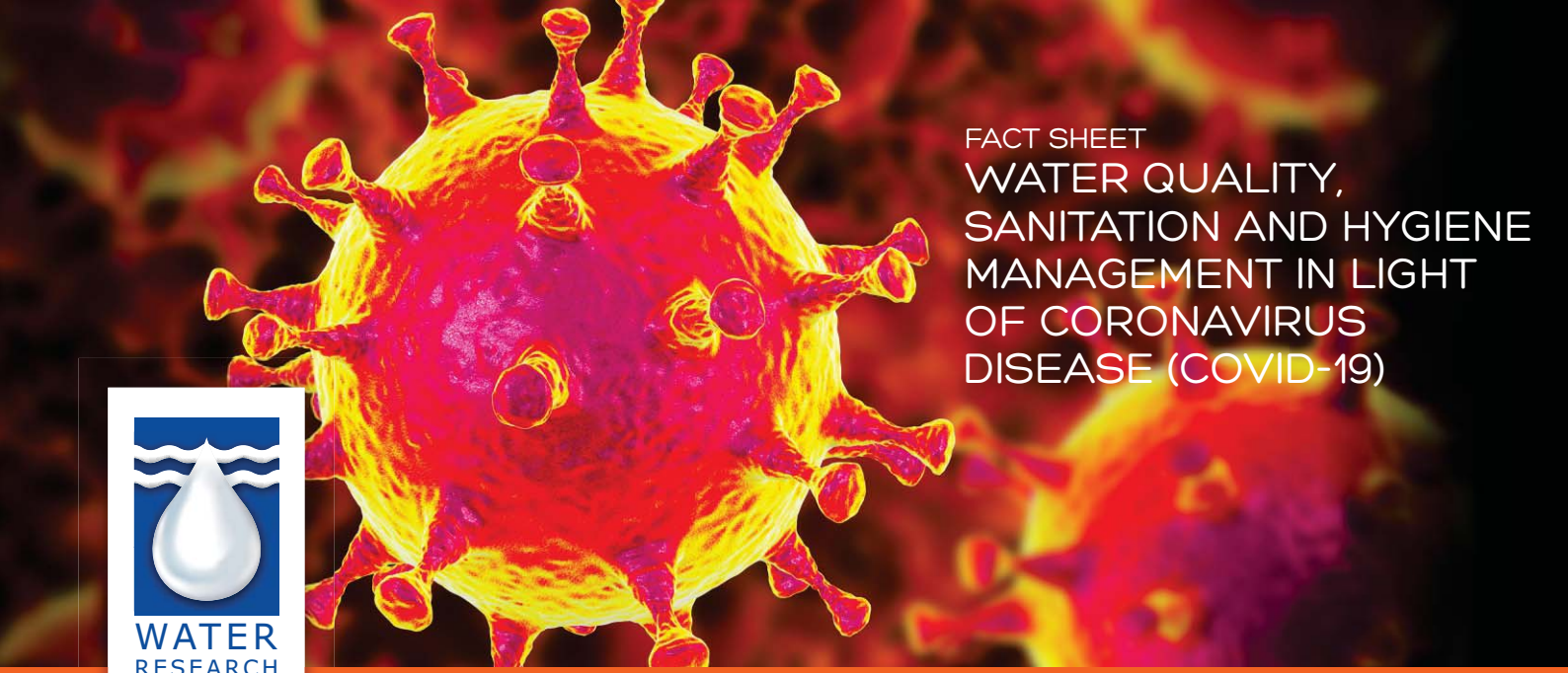


FACT SHEET

WATER QUALITY, SANITATION AND HYGIENE MANAGEMENT IN LIGHT OF CORONAVIRUS DISEASE (COVID-19)

WATER RESEARCH COMMISSION

Naming the Coronavirus disease (COVID-19) and the Virus that causes it:

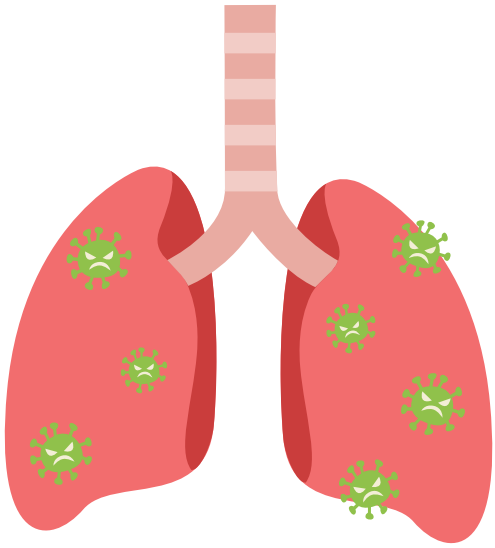
Official name for disease:
Coronavirus disease (COVID – 19)
Official name for virus is:
Severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2)

What we know

Coronavirus disease (COVID-19) which has been declared a pandemic by the World Health Organisation (WHO) is caused by the SARS-CoV-2 that was isolated in Wuhan, China in January 2020. SARS-CoV-2 belongs to the family of zoonotic Coronavirus (meaning they are transmitted between animals and people).

The virus has not been previously identified in humans and as a result human do not have immunity to the virus.

Individuals and people at high risk



For individuals at high risk (people > 60 years and those with underlying medical conditions (HIV/AIDS, diabetes, lung disease) infection can result in the development of severe pneumonia disease and can ultimately lead to death. Currently there is no known vaccine or medication that can treat the disease.

To date, the disease has been confirmed in over 100 countries including South Africa (SA) where infected persons have tested COVID-19 positive in 4 of SA's 9 provinces. Based on known infectious disease epidemiology models, it is expected that the number of cases will continue to rise, peak and then subsequently plateau off.

The South African National Institute of Communicable Diseases (NICD) continues to provide up to date status/changes of COVID-19 transmission in the country http://www.nicd.ac.za/

How it is transmitted

Confirmed human to human transmission of SARS-CoV-2 occurs through droplets of saliva and discharge from the nose when sneezing and coughing that land in the mouths or noses of people who are nearby or who possibly inhale droplets into their lungs.

Transmission also occurs through touching surfaces that are contaminated with live virus from droplets.

Know the signs and symptoms

COVID-19 presents as a respiratory illness with symptoms very similar to influenza disease such as:

- Fever
- Cough
- Shortness of breath

Seek medical advice if you develop symptoms or have been in close contact with someone known to have COVID – 19 (fever and cough may present approximately 5-6 days after infection, although the incubation period can range from 1-14 days).

Keeping Drinking Water Safe

South Africans get their drinking water from a variety of sources, the two main sources being surface water and ground water. Safe water sources include tap water and well managed boreholes and wells while unsafe water sources include rivers, and unmanaged wells and boreholes. Viruses such as rotavirus, norovirus, polio virus and hepatitis A are known to persist and be transmitted through untreated water but to date there is no evidence that SARS-CoV-2 can be transmitted through treated drinking water or through ground water although its persistence in water still remains to be verified.

Being a virus that is susceptible to environmental conditions, SARS-CoV-2 should be very fragile and will easily die off when in unfavourable conditions (commonly used disinfectants such as chlorine as well as to heat, low or high pH and sunlight).

For South Africans who have access to tap water

It is therefore reasonable to assume based on limited research available that South Africans with access to tap water from a well-managed drinking water distribution system are highly unlikely to contract COVID-19 from their drinking water. Well-managed drinking water distribution system should ideally use filtration and disinfection and should have a free residual chlorine (0.2 and 0.5 mg/L) throughout the distribution system to ensure effective inactivation of the virus.[5]

For South Africans who do not have access to piped water

For South Africans who use alternative sources of water such as springs, streams, boreholes, rainwater etc. and/or also store water in their homes for a period of time, the same rules with regard to household water treatment at point of use and safe storage apply.

As a general rule apply safe disinfectants in the form of bleach, hyphochlorite or chlorine.

SARS-CoV-2 should be inactivated either through:

- Correct application of boiling
- Irradiation (solar and UV) disinfection
- Sedimentation and filtration techniques which will ensure that water for drinking and various uses in the house is virus free

It should be noted that although drinking water in of itself might not lead to COVID-19 spread in an effort to collect water from community stand pipes, shared boreholes, or from tankers, close proximity to infected individuals during such times might aid in human to human transmission.

Wastewater and the Use of Sanitation Services

Unlike treated drinking water and ground water, SARS-Cov-2 is likely to be present in wastewater where active COVID-19 infections are present. Furthermore, based on observations COVID-19 may be transmitted through the fecal-oral route. It should be noted though that to date there no reports of fecal–oral transmission of the COVID-19 virus or transmission via sewage systems with or without wastewater treatment. Approximately, 2 to 10% of persons with COVID-19 disease presented with diarrhea at the early stages of infection rather than a fever. Molecular analysis in 2 studies also the virus survives in wastewater, feces and urine for at least 14 days at 4°C and approximately 2 days at the higher temperature of 20°C.

Although still not commonly used in South Africa, wastewater reuse is increasingly being recognized as a key to sustainable management of South African water resources in light of climate change and increasing drought conditions. In South Africa, wastewater reuse is currently being employed in agricultural scenarios as well as being treated to potable use in areas like Beaufort West where the water supply is a blend consisting of approximately 20% reused water. Given knowledge of the virus structure and the die off rates of other coronaviruses when exposed to different inactivation methods, it can be assumed that wastewater even if from a COVID-19 infected area will still be safe for reuse if treated with currently used water reuse technologies and systems.

Safe practices at wastewater treatment plants

In the absence of new information and research findings with regard SARS-Cov-2 and wastewater, current best practice at wastewater treatment and water reuse plants should still be implemented.

- Workers should always use personal protective equipment (PPE) and adhere to practices that will minimize or completely prevent their exposure to untreated water as they are the ones most at risk not only to getting COVID-19 but other waterborne diseases
- Personal protective equipment should ideally consist off a mask, goggles, a fluid-resistant apron and gloves and hand hygiene with an alcohol-based hand rub or soap and water should be performed after removing PPE

Once again, the people most at risk will be those working with fecal sludge when emptying pits or fixing sewage systems and it is critical, they continue to maintain best practice for safely managing fecal waste.

Safe practices in households

For all sanitation practices – open defecation is not safe, the safe confinement of human wastes (faeces and Urine) is very effective in preventing transmission of viruses and pathogens. Households that have flush toilets and connected to a well - designed and maintained public sewerage system or septic tank at present do not face any additional risk of contracting COVID-19. The same applies for well-constructed pit with a ventilation pipe. Toilets should be flushed with the lid down to prevent droplet splatter and aerosol clouds. An investigation in Hong Kong regarding COVID-19 cases in an apartment building revealed the possibility of virus spread through an improperly sealed pipe which carried infected fecal matter through the buildings ventilation system into people's bathrooms. So far this is the only study that has reported transmission through a sewage system.

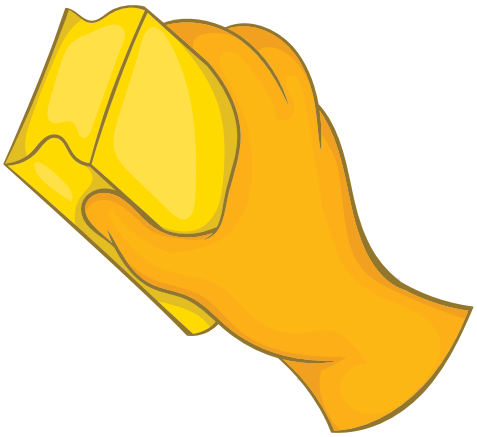
Households that utilize onsite dry sanitation systems such as Ventilated Improved Pitlatrines and even rudimentary pitlatrines reduce the risks, provided that proper hygiene practices and handwashing is practiced after each event.

Best Hygiene Practice to Curb the Spread of COVID-2019

Frequent and proper hand hygiene has been identified as one of the key measures in preventing the spread of COVID-19. Not only is proper hand hygiene important in curbing the spread of this particular outbreak but this practice is also important in preventing the spread of other harmful microorganisms in general.

Hands must be washed: after using the toilet; after disposing of feces; after changing baby's nappies and disposing of their feces; before preparing food; before eating; before feeding children; immediately after handling raw food; after contact with contaminated surfaces, e.g. rubbish bins, cleaning cloths; after handling pets and domestic animals; after contact with blood or bodily fluids, e.g. feces, vomit; before and after dressing wounds or giving care to a sick person; after wiping or blowing your nose. Hands must be washed using soap and clean water.

Best Hygiene Practice to Curb the Spread of COVID-2019



As South Africa heads in the winter season, a drop in ambient temperature and in humidity levels provides ideal conditions not only for SARS-Cov-2 to thrive but also influenza viruses. The following good hygiene practices apply:

- avoid contact with others if they have cold and flu like symptoms
- clean and disinfect surfaces and floors
- cough and sneeze into your elbow
- avoid touching face especially eyes, nose and mouth
- stay home if you are unwell

In the instances where water is not available, an alcohol-based product can be used (concentration of alcohol should be 60% v/v). If hands are visibly dirty, an alcohol-based rub is likely to be ineffective due to the fact that alcohol does not penetrate soil very well. If this is not available then alternative such as the following can be used:

- Bleaches
- Methylayted spirits
- Dettols and other antiseptic products

WRC Reports

- **WRC project K5/1737:** Provides a guide for the emergency disinfection of drinking water
- **WRC Report No. TT 460/11:** Provides guidelines for managing water related microbial diseases specifically looking at health and hygiene awareness
- **WRC Report No. 2134/1/18:** Understanding and addressing the exposure of workers, the public and the environment to pathogens during pit emptying'

For more information

- South Africa Coronavirus update http://www.nicd.ac.za/
- Water Research Commission (WRC) Knowledge Hub (www.wrc.org.za)
- WHO (Water , Sanitation, hygiene and waste management for COVID-19 Technical Brief (3 March 2020) https://www.who.int/publications-detail/water-sanitation-hygiene-and-waste-management-for-covid-19
- Global Water Research Coalition(GWRC). COVID-19 Virus Water, Sanitation and Wastewater Management. Fact Sheet

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