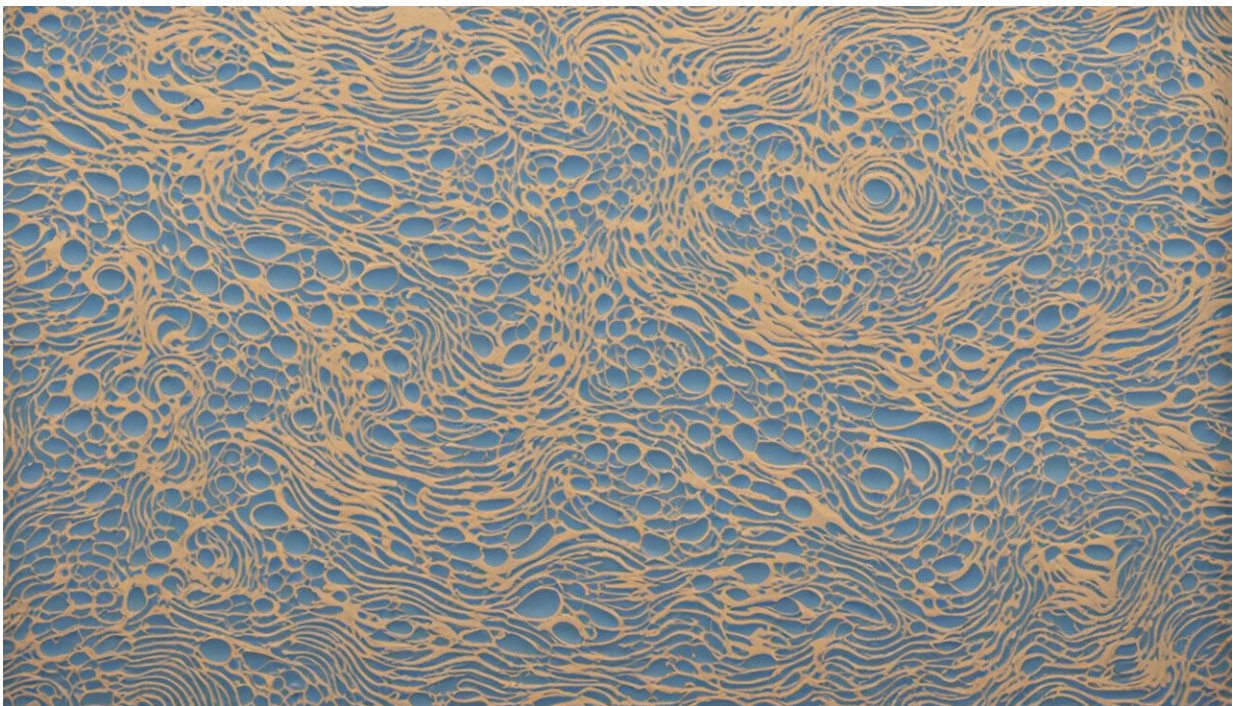


Five ways the pandemic surge in hand sanitizers may not be great news in the long term

March 16 2021, by Manal Mohammed



Credit: AI-generated image ([disclaimer](#))

The use of hand sanitisers and other antibacterial and antiviral cleaning products has [sharply increased](#) worldwide since the pandemic started—and may be here to stay. While this has no doubt helped reduce the transmission of the novel coronavirus, it could also present problems

for human health and the environment in the long term.

During a raging pandemic it is obviously worthwhile to use [hand sanitisers](#), particularly when we are unable to wash our hands. But we should minimize their use when cases drop and a significant proportion of people have been vaccinated against the virus. Here's why:

1. Potential toxicity

Hand sanitisers are mainly made of alcohol—either ethanol or isopropanol—at 60%–95% concentration, and may be toxic when misused. One study reported that regular application of ethanol hand sanitisers resulted in relatively [low but measurable](#) blood concentrations of ethanol. Although this was below acute toxic levels, continuous application can result in "[chronic toxicity](#)", [increasing the risk](#) of health problems such as eczema or skin cancer. It may sometimes even be lethal.

Acute poisoning, meanwhile, can be caused by swallowing more than a couple of mouthfuls of hand sanitiser. This can cause nausea, vomiting, pain and [varying degrees of impairment of the](#) of central nervous system. Ethanol toxicity [is also associated with](#) breathing problems, possible cardiac arrest and [acute liver damage](#).

In children, poisoning can occur more easily through the skin. Children may also accidentally ingest hand sanitisers. Ingesting any more than a lick of hand sanitiser [could put them](#) at risk of alcohol poisoning with symptoms such as vomiting, confusion and drowsiness. In severe cases, such poisoning can lead to respiratory failure, blood acidity, [coma](#) and even death in young children.

The [American Association of Poison Control Centers](#) reported over [9,000 cases](#) of alcohol poisoning from hand sanitisers in children under

12 years in the five first months of 2020. This [was an increase of 46%](#) compared with the first half of the previous year.

2. Antimicrobial resistance

The repeated use of alcohol-based hand sanitisers is also contributing to [a rise in superbugs](#) as microbes become resistant to them. Superbugs include bacteria that are resistant to antibiotics, and can be lethal. Studies have already found that several bacterial strains [have begun to become tolerant](#) to hand sanitisers.

In the early 2000s, Australian hospitals [started to mount more hand sanitisers](#). This caused a rise in "[enterococcal infections](#)", which affect the digestive tract, bladder, heart and other body parts. Research looking at the behavior of enterococcal bacteria in 139 hospitals from 1997 to 2015 showed that they indeed evolved to become [ten times more resistant](#) to alcohol after 2010.

It has also been reported that E. coli and [Pseudomonas aeruginosa](#) (which can cause pneumonia and blood stream infection) are respectively 48% and 64% [resistant to all available sanitisers](#) on the market. This is concerning as it is estimated that antimicrobial resistance already causes more than 700,000 deaths worldwide each year.

3. Altered microbiome

Too much use of alcohol-based hand sanitisers can cause skin damage and cracks which can allow contaminants and harmful viruses to enter our bodies. But more seriously, hand sanitisers also remove the helpful, normal bacterial flora present on the skin which prevents the invasion of other viruses—our skin microbiome.

Some researchers believe that hand sanitisers and excessive hand washing can even damage the trillions of microbes living in our gut, although this is yet to be proven. We do know that these bugs are beneficial to our health by [boosting our immune systems](#). In fact, it is estimated that 70%–80% of our immune cells [live in our gut](#). We also know that ingested alcohol [can alter the gut microbiome](#).

4. Rise in other infections

Although hand sanitisers are effective against coronaviruses, they don't work against all pathogens. Exceptions include parasites such as [Cryptosporidium](#), bacteria including [Clostridium difficile](#), and viruses such as [Norovirus](#) – which all cause diarrhea and vomiting.

Hand washing is the only effective hygienic method against these bugs. If we start relying on hand disinfectants instead of hand washing, we may therefore [be at risk of infection](#) by these microbes, some of which can be lethal for vulnerable people.

For example, a survey of 161 [long-term care facilities](#) in the US revealed an association between using hand sanitisers for routine hand hygiene and [increased risk for outbreaks of norovirus](#). Staff in the care facilities that suffered norovirus outbreaks were six times more likely to use hand sanitisers equally or more than soap and water for routine hand hygiene.

5. Environmental effects

Alcohol including ethanol and isopropanol could have direct impacts on the environment as well. For example, studies have also shown that ethanol spills into lakes, ponds, rivers and oceans [can harm aquatic species](#) such as water fleas (*Daphnia*), rainbow trout and pond fish known as fathead minnow.

Accidental spills of large amounts of isopropanol can [deplete oxygen](#) in water, which will ultimately have adverse impacts on the ecosystems there. This is a serious issue as many [aquatic species](#) are already struggling as a result of climate change and overfishing, with billions of people around the globe relying on fish as a source of food.

It is clear that increased use of [hand](#) sanitisers can be hazardous for human health and the environment. As it is unclear how large these effects will be, we need more independent studies on the long-term impact. In the meantime, we should all remind ourselves that water and normal soap is our best and safest line of defense against harmful microbes.

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