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Toucan Eco, Coronavirus and Covid-19: what we know

Covid-19

Viruses are unique because they are only alive and able to multiply inside the cells of other living things. The cell they multiply in is called the host cell.

A virus is made up of a core of genetic material, either DNA or RNA, surrounded by a protective coat called a capsid which is made up of protein. Sometimes the capsid is surrounded by an additional spikey coat called the envelope. Viruses are capable of latching onto host cells and getting inside them.

What type of virus is COVID-19?

Viruses can be generally categorized into three groups by virus structure. This affects the effectiveness of disinfectants in killing the viruses.

1. Enveloped viruses are easiest to kill. (An example is Influenza A Virus.)
2. Large, non-enveloped viruses are more difficult to kill. (An example is Rotavirus.)
3. Small, non-enveloped viruses are hardest to kill. (Examples are Rhinovirus and Norovirus.)

Coronaviruses are enveloped viruses, meaning they are one of the easiest types of viruses to kill with the appropriate disinfectant product.

How can a company claim that a specific product should be used effectively during the COVID-19 outbreak?

During an outbreak of a new virus like COVID-19, no products exist on the market that can make claims to kill the virus. This is due to the simple fact that the virus is not available to test, and it can take more than one year to get a viral claim approved by a regulatory agency. For this reason, Biocide Regulatory Agencies such as the United States Environmental Protection Agency (EPA) and the European Chemicals Agency (ECHA) have enacted a 'hierarchy-based' policy. This means that if a company's product has been found to be effective against harder-to-kill viruses, it is likely to kill a virus like COVID-19.

A product that is likely to provide the greatest protection from COVID-19, will have claims against at least one non-enveloped virus such as Norovirus, Feline Calicivirus, Poliovirus, Rhinovirus, or

Reovirus. This theory is the basis by which EPA and ECHA assess the efficacy of biocides against viruses.

It should also be noted that laboratories that are equipped to test viruses are very specialised, accredited facilities, and for extremely virulent viruses are usually Government controlled. There are several companies currently advertising virus testing based in Kuala Lumpur and Thailand, but these are **not ECHA or EPA regulated or accredited**. There are no accredited laboratories in the UK currently testing for the specific Covid-19 virus.

EN 14476

EN14476 is a European standard for testing the efficacy of biocides against viruses. There are very few accredited laboratories in the UK or Europe that are equipped to test for viruses. EN14476 uses the test against 3 types of virus;

1. Poliovirus
2. Murine Norovirus (MNV)
3. Adenoviruses

This is for determining virucidal activity and the efficacy of biocides. ECA Toucan solutions have been tested against 2 of the 3 viruses (Poliovirus & Murine Norovirus) and have been proved to have high efficacy levels 99.999% which is log reduction 5. The pass rate for EN14476 is log reduction 4 = 99.99%!

Is ECA solution effective against the coronavirus?

ECA solutions at concentrations generated by the Centrego Toucan systems have been tested in a US EPA accredited laboratory and has been proven to be 99.999% effective against small, non-enveloped viruses such as human norovirus Murine Norovirus MNV-1 (99.999% = Log5 reduction) and Poliovirus CHAT Lsc1 (99.9999% Log6 reduction). These results demonstrate the efficacy of the ECA solutions against 'hard to kill viruses. Covid-19, with an enveloped structure, is classified as an 'easier to kill to virus'. In addition, Toucan ECA solutions have been proved to be highly effective against spores (Bacillus subtilis, 99.999%, Log5 reduction) in research by the University West of England. Spores are one of the most difficult microorganisms to kill due to their hard-outer structures. These results are strong indicators that ECA Toucan solutions will be highly effective in killing Covid-19 virus.

“The best available science indicates that ECAS (the electrochemical activated solution made by Toucan Eco) is effective against coronavirus,” explains Professor Darren Reynolds (BSc, PhD), Professor of Health and Environment in the Department of Applied Sciences at The University of the West of England, Bristol.

“There has been a lot of research looking into biocidal properties of ECAS, including its effect on a range of bacteria, fungal spores and viruses. Furthermore, this effectiveness can confidently be applied to the newly emerging virus SARS-CoV-2,” he continued.

In practice, the solution has an extremely rapid contact times (almost instantaneous), a very high kill rate and very low regrowth rate. For example, tests undertaken by an independent accredited laboratory for the solution against norovirus and poliovirus – both standard methodologies for

testing biocides for viruses – showed log reductions of 5 (99.999%) and log 6 (99.9999%) respectively.

The solution is also certified to both EN 1276:2019 and EN 13607:2015, can be used to sanitise large areas, and as you can make the solution onsite yourself, as long as you have a supply of tap water, salt and electricity, you'll never run out.

It's also non-toxic and hypoallergenic, which means the disinfectant can be left on surfaces and will continue to kill. And, as it's safe, it can also be used for personal hygiene in the same way as alcohol and antibacterial-based hand gels. ECA solutions can also be applied in mist form to disinfect whole rooms.

What is the coronavirus?

COVID-19 is a new illness that can affect your lungs and airways that was first identified in January 2020. It's caused by a virus called coronavirus. But we will all know this by now.

There is currently no vaccine to prevent COVID-19 acute respiratory disease. The best way to prevent infection is to avoid being exposed to the virus. The symptoms, which may develop in the days after exposure include a persistent cough, high temperature and a shortness of breath. More information can be found on NHS England's website [here](#).

How easy is the coronavirus to kill?

Coronaviruses are enveloped viruses, and it is known that viruses that have an envelope coating are easier to kill, at least outside of the human body. This lipid (fatty) bilayer is its weakest link and soap dissolves the fat membrane and the virus falls apart "like a house of cards and dies," explains by Pall Thordarson, a professor of chemistry at the University of New South Wales, Sydney, in an [article](#) featured recently in the Guardian.

In fact, viruses in vitro (or outside of the body) are relatively easy to kill on surfaces with disinfectant – it's a good contact that's vital here, between the disinfectant or soap wash. And the coronavirus, as with most viruses, are unstable and won't last long outside of the body. Even prolonged dry conditions or certain UV light will do the same, let alone commercial disinfectants for professional cleaning or soak washes and alcohol hand gels personal hygiene.

How is the coronavirus transmitted?

"When you cough, or especially when you sneeze, tiny droplets from the airways can fly up to 10 metres," explained Professor Thordarson. "The larger ones are thought to be the main coronavirus carriers and they can go at least two metres." And that's you might have heard of advice of distancing yourself by 2m from other people.

Professor Thordarson goes on to explain: "How these tiny droplets end on surfaces and often dry out quickly. But the viruses remain active. Human skin is an ideal surface for a virus. It is organic and the proteins and fatty acids in the dead cells on the surface interact with the virus."

So, when you touch a surface with a virus particle on it, it will stick to you and get transferred on to your hands. If you then touch your face, especially your eyes, nostrils or mouth, you can get infected. And, depending on where you read, on average people touch their face once every two to five minutes. That's how it's commonly believed to be transferred within a population. And, why it's vitally important to keep work surfaces and, in particular, hands hygienically clean.

And that's why for personal washing your hands with soap, where possible, is such an effective way to encourage personal hygiene. However, it's not always possible to do so, and why surface disinfecting is also of the utmost importance.

Tips for general cleaning

The general advice when there is the threat of virus is to increase the levels of personal and surface hygiene. The most important and repeated advice is to scrub hands clean with soap and water, cover coughs and sneezes, and wipe down shared work spaces with disinfectant.

Current evidence suggests that novel coronavirus may remain viable for hours to days on surfaces made from a variety of materials.

- Clean and disinfect all high touch contact points in a facility regularly is highly recommended, including washrooms, workstations, canteens, tables, doorknobs, light switches, handles, desks, remotes, toilets, wash basins and sinks, etc.
- Wash your hands often with soap (or soap substitutes) and water for at least 20 seconds or use an alcohol-based hand sanitiser.
- Cover your cough or sneeze with a tissue, then throw the tissue in a bin. You can download a 'Catch it, Bin it, Kill it' [poster](#) for your workplace from the NHS.
- Avoid touching your eyes, nose, and mouth with unwashed hands.
- Avoid close contact with people who are sick.
- If you feel unwell, stay at home, do not attend work or school.

If you are worried about symptoms, please call NHS 111 or go to the NHS 111 coronavirus advice website. Do not go directly to your GP or other healthcare environment.

Useful links

- [Latest Government information.](#)
- [Latest NHS information.](#)