

# PWTAG Disinfection Guidelines

The Covid pandemic has inspired a multitude of research; on the virus - its epidemiology, vaccine effectiveness - etc and PWTAG has played a small but significant part. This research, backed up by material from the World Health Organisation, provides reassurance about the effectiveness of PWTAG's disinfection guidelines. PWTAG's recently updated Code of Practice embodies all this.

## The research

PWTAG has been involved in research led by the Department of Infectious Disease at Imperial College London. The team addressed one crucial issue head on: how well in practice does chlorine kill SARS-CoV-2 in pool water? Water from a swimming pool provided the raw material. Its free chlorine and pH were adjusted to provide a range of samples, to which the virus was added (in high containment labs). A free chlorine of over 1.5mg/l and pH of 7.4 or less gave the target 3-log<sub>10</sub> reduction (1,000-fold, 99.9%) of virus within 30 seconds. If the pH was even a little higher, at 7.6, significant amounts of virus escaped inactivation.

These are preliminary results; further research would be needed to explore the effect of a wider range of free chlorine and pH values. And it would be useful to know what parameters would produce a 4-log<sub>10</sub> reduction (10,000-fold, 99.99%) of virus. But these results do give the assurance that if pool water is managed to PWTAG standards, no detectable virus infectivity remains.

<https://www.biorxiv.org/content/10.1101/2021.04.19.440446v1>

## WHO

Last July, amid all the information, some of it conflicting, that was circulating, WHO produced a statement relevant to swimming pools. Now the dust has settled, it is worth revisiting it.

*The risk of transmission of SARS-CoV-2 from fresh and coastal water or swimming pools and spas water contaminated with faeces is very low. Existing recommendations for managing the quality of bathing water apply.*

*For a conventional public or semi-public swimming pool with good hydraulics and filtration, operating within its engineered bathing load, adequate routine disinfection should be achieved with a free chlorine level of 1mg/l throughout the pool. Lower free chlorine concentrations (0.5 mg/l or less) will be adequate when chlorine is used in combination with ozone or UV disinfection. The pH should be maintained between 7.2 and 7.8 for chlorine disinfectants. This should be sufficient to eliminate enteric pathogens and enveloped viruses, like coronaviruses, which are sensitive to chlorine disinfection.*

*The risk of transmission of SARS-CoV-2 increases where bathers and people visiting beaches, pools and spas are in small, crowded conditions including in changing rooms, toilets and showers, restaurants and kiosks. General recommendations on hand hygiene, physical distancing and the use of face masks when appropriate are recommended along with regular cleaning (once or more times a day) and maintenance of toilet facilities. <https://www.who.int/publications/i/item/WHO-2019-nCoV-IPC-WASH-2020.4>*

## **PWTAG Code of Practice**

The WHO statement of course very much endorses PWTAG's guidelines, in *Swimming Pool Water* and our technical notes. But our online Code of Practice has always tried to be up-to-date with any necessary reconsideration of guidelines. And the pandemic has encouraged us to recommend lower pH – and thus more effective chlorine disinfection – than WHO or PWTAG have previously. In the [CoP update](#) published on 19 July 2021, you will find we now recommend pH values of 7.0-7.4 and ideally 7.0-7.2. Follow that, stick to the other guidelines, and stay safe.