Assured Biosolids Limited (ABL) Biosolids Assurance Scheme (BAS) Position Statement on the potential impact of coronavirus (COVID-19) on biosolids recycling to agricultural land

COVID-19 is an infectious disease, which emerged in December 2019, that is caused by a novel coronavirus (severe acute respiratory syndrome coronavirus 2 – SARS-CoV-2). Due to the novel nature of the COVID-19 virus, information is limited, particularly in relation to wastewater and sludge treatment. It is known that the COVID-19 virus is an enveloped virus with a fragile outer membrane. Although there is no evidence to date about its survival in sewage or sludge, according to World Health Organisation (WHO) Guidance (23rd April 2020) the COVID-19 virus is likely to become inactivated significantly faster than non-enveloped viruses (such as norovirus).

This is not the first coronavirus outbreak (e.g. SARS in 2002-03 and MERS (Middle East respiratory syndrome coronavirus) in 2012-15) so the knowledge of those viruses and their survival and behaviour can be used to understand the likely behaviour of the COVID-19 virus. Scientific studies following the SARS outbreak and from other enveloped viruses suggest it would be highly unlikely that the virus can survive in sewage or sludge long enough to pose any risks to human health, due to the duration of wastewater and sludge treatment as well as the processes themselves which are designed to accelerate pathogen destruction. Peer reviewed research on SARS found a 99.9% reduction in 2-3 days in wastewater, whereas the wastewater and sludge treatment (e.g. anaerobic digestion, advanced anaerobic digestion, lime treatment) process typically lasts 7 – 21+ days (excluding post treatment storage). The WHO Guidance highlights that higher temperature, high (or low) pH and biological activity all facilitate virus reduction – these methods are widely used to control pathogens in sludge treatment processes across the UK.

After the treatment processes, the controls and barriers as required by the BAS on biosolids storage and recycling, such as the harvest/grazing intervals (taken from the Safe Sludge Matrix), allow the effect of ultraviolet light and competition in the soil environment amongst others, to further reduce the likelihood that the virus can pose any risk to human health via biosolids treatment and recycling. The WHO Guidance also notes that sunlight and biological activity accelerate pathogen destruction.

Researchers and public health experts, in conjunction with the Water Industry, are increasingly testing wastewaters and sewage sludge to estimate the disease burden in the associated communities. Testing in this manner utilises genetic material (typically ribonucleic acid – RNA), so even if the virus has been destroyed and/or inactivated the RNA can still be detected. Importantly with regards safe biosolids recycling, as detailed above the treatment processes and controls on biosolids recycling are designed to destroy and/or inactivate viruses, meaning detection of genetic material does not translate to an increased risk.

Conclusions

The available evidence suggests it would be highly unlikely that the COVID-19 virus can survive in sewage or sludge long enough to pose any risk to human health. Even then, the controls and barriers in the BAS on biosolids treatment and recycling further reduce the likelihood that the virus could pose any risk to human health via biosolids recycling to agricultural land.

Given the evolving nature of the pandemic and our likely increasing knowledge of the COVID-19 virus itself, Assured Biosolids will review this position statement as further evidence becomes available; please see: https://assuredbiosolids.co.uk.