

Legionella pneumophila kill claim testing for CleanCore Solutions

The bacterium **L. pneumophila** is responsible for most cases of **Legionnaires'** disease. Outdoors, legionella bacteria survive in soil and water, but rarely cause infections in humans. However, legionella bacteria can multiply in water systems made by humans, such as air conditioners, chillers, ice machines as well as spas and hot tubs.

Aqueous ozone is known to kill many microorganisms and research has shown that it also kills legionella pneumophila. To prove this claim, CleanCore Solutions contracted with **Wilcox EVS** and **Micro Chem Laboratories** to conduct independent 3rd-Party testing using their CCS 1000 Ice unit.

Testing Results

Microchem Laboratories in Texas received the CleanCore Solutions CCS 1000 and installed it per factory specifications onto a cold-water supply line to produce aqueous ozone, AO, in the ~0.50 ppm range.

This table shows the test results for the killing of the L. pneumophila over 5- and 10-minute testing times. Due to the biodegradability of AO, these dwell times were chosen to show that the AO will kill the L. pneumophila over time with one dose. Testing was also done using this procedure to show that continuous testing at the 0.5ppm level, as a continuous dosing method with the CCS 1000 will kill and keep a flowing water source decontaminated.

For comparison, public health reduction of L. pneumophila is achieved at a log 3 or 99.9% kill. This testing shows a log 7 or 99.99999% kill, or complete destruction of L. pneumophila in the ~ 0.50 ppm aqueous ozone solution.

Test Device	Contact Time	Data Type	L. pneumophila ATCC 33153
CleanCore Solutions CCS 1000 Ozone Ice	T=0 sample prep	CFU / ml	4.57E + 07
	5 min	CFU / ml	<1.00E +01
		Log ₁₀ Reduction	>6.66 ~ log 7 reduction
	10 min	CFU / ml	<1.00E +01
Log ₁₀ Reduction		>6.66 ~ log 7 reduction	

Conclusion

The CleanCore Solutions CCS 1000 unit destroys Legionella pneumophila at its ~0.50 ppm concentration to a log 7 reduction. It is an effective, non-synthetic, sustainable way to kill Legionella pneumophila and keep water systems free of Legionella Disease.