

Copper and Silver Ionisation Non - Corrosive

What is copper and silver ionisation?

Copper and silver ionisation is a relatively new modality for the control of Legionella, Pseudomonas and other pathogens in water systems. The use of copper and silver ionisation was first recorded in the USA in 1990 (Lin et al. 2011), although it was pioneered by NASA in the 1960s (Albright et al. 1967). The ProEconomy copper and silver ionisation system is known by its trade name of Orca.

How does copper and silver ionisation work?

Copper and silver ionisation works through the generation of copper and silver ions in water by water flowing through a turbine of a flow sensor. This sends a signal to the control unit, which then passes a low DC current between two copper and two silver electrodes located in an electrode chamber. The current causes ionisation, i.e. the release of copper and silver ions into the flowing water. Being electrically charged the copper and silver ions seek opposite polarity and find this in the negatively charged sites on cell wall of bacteria, such as Legionella, Pseudomonas and E.coli. The ions distort and weaken the cell wall and then damage the cell by binding at specific sites to DNA, RNA, cellular protein and respiratory enzymes denying all life support systems to the cell, causing death.

Is copper and silver ionisation corrosive?

Unlike most chemical water treatments, such as chlorine and chlorine dioxide, the copper and silver ions are not corrosive to metal pipes including those made from copper, PVC, galvanized steel and aluminium. The copper ions from the Orca water treatment system can help plate and rejuvenate piping.

Is copper and silver ionisation safe?

Being non-corrosive, the copper and silver levels found at outlets are completely safe to consume. There are no harmful effects to humans, the environment or animals. The Orca water treatment system conforms to the maximum allowed values for copper and silver in drinking water as prescribed in the UK Water Supply (Water Quality) Regulations 1989, and the UK Water Supply (Water Quality) regulations 2000.

Is copper and silver ionisation chemical-free?

The Orca water ionisation system requires only copper and silver to control Legionella. Being non-corrosive, harmful chemical by-products are not produced. There are no issues with COSHH regulations when handling, storing or transporting copper and silver.



References

- Albright C.F., Nachum R., Lechtman M.D. (1967). Development of an electrolytic silver-ion generator for water sterilization in Apollo spacecraft water systems: Final Report. Apollo Applications Program, Manned Spacecraft Center, NASA:Houston. Available online: <http://www.clearwaterpoolsystems.com/nasa-connection.html> (Accessed May 2017).
- Lin Y., Stout J.E., Yu V.L. (2011). Controlling Legionella in Hospital Drinking Water: An Evidence-Based Review of Disinfection Methods. *Infection Control and Hospital Epidemiology*. 32(2):166-173.



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Copper and Silver Water Treatment

proven Legionella control