ProEconomy | orca

Copper and Silver Water Treatment

Case Study

Industrial Water at Baxter's Food Group

Controlling Legionella at an industrial site using copper and silver ionisation

Industrial Water at Baxter's Food Group

Background

The Orca copper and silver ionisation system (CSI) has often been used to treat water used in UK hospitals and a few other sites in the UK and Europe. However, the Orca has been installed and has been successfully treating industrial water, i.e. water which is to be used for an industrial process. This case study describes one such industrial case where the system was installed at the Baxters Food Group plant in Scotland, where the water used to wash vegetables is treated with the Orca CSI system to kill *Legionella* and other pathogen in the water.

Legionella is ubiquitous in water systems and industrial water, like any water supplied to public buildings, needs to be treated to make sure it will not pose risk of *Legionella* exposure to workers using the water. Exposure happens by inhaling water droplets (aerosols) emitted by showers and taps. It is estimated that approximately 20-80 cases per million populations occur annually in most developed countries, with the elderly, males, cigarette smokers and immuno-suppressed people being most at risk (Edelstein and Roy, 2015).

The Baxter's Orca system was commissioned and fitted in 2007, following two cases of Legionnaires' disease in September 2005.

About the Orca

The Orca is ProEconomy's copper and silver ionisation water treatment system for the control of *Legionella*, *Pseudomonas* and other water-borne pathogens.

The Orca system treats the water in a wide range of premises. This includes some of the largest hospitals in the UK, such as Great Ormond Street Hospital and the Royal Free Hospital in London, the John Radcliffe in Oxford and Addenbrookes Hospital in Cambridge, and some of the most prestigious sites such as Windsor Castle in the UK and the European Space Agency site in Holland.

The Orca CSI System is highly regarded by our clients. It has never failed to control *Legionella* in a client's premises.

The Orca System at Baxter's Food Group

The Orcas at Baxter's comprise one 12-pod and one 24-pod KB3 Orca systems which together treat an average of 500,000 litres of water per day. The treated industrial water is used in various processes but do not include the water used for food preparation.

An average of 20 sampling outlets were selected from outlets which showed risk of *Legionella* contamination, which comprise cold, hot and mixed hot and cold taps and showers.

After activation of the CSI system, samples were taken every month from the 20 outlets and were analysed for *Legionella* by the culture method, for total viable bacteria (TVC) at 37 °C and at 22 °C by the culture method, and for copper and silver by Inductively Coupled Plasma-Optical Emission Spectroscopy/Mass Spectrometry (ICP-OES/MS), by UKAS accredited laboratories (ALcontrol and ALS Laboratories, UK).

Results

It was not possible to obtain data from before the Orca system was installed. However, the data for after the installation of the Orca showed only three positive results since installation.

The Orca was installed at Baxter's Food Group in May 2007 and of over 1000 samples analysed since then there has been only three positive results for *L. pneumophilla*:

1800 cfu/L sg1 (mixed tap 28°C) November 2011
200 cfu/L sg2-14 (toilet hot tap 53°C) November 2011
200 cfu/L s2-14 (mixed tap 39°C) January 2015

Conclusion

There was enough evidence to show Legionella posed a real threat to the site. Legionella has been controlled using the Orca copper silver ionisation system from installation in 2007. The system, like any other Legionella control system, must be monitored regularly so that any problem outlet is quickly detected and dealt with. After the Orca system installation, ProEconomy always monitors the concentration of copper and silver to ensure the effectiveness of the Orca system.

References

Edelstein, P.H.; Roy, C.R. (2015). Legionnaires' disease and Ponticac Ferver. Chapter 234 in Bennett, J.E.; Dolin, R.; Blaser, M.J. (eds.) *Mandell, Douglas and Bennett's Principles and Practice of Infectious Diseases* (Eighth Edition), Vol 2. Pages 2633–2644. e6. Elsevier.