



Pro*Economy* | orca

Copper and Silver Water Treatment

# Case Study

## Churchill Hospital

Controlling Legionella risk in a Oxford hospital building using copper and silver ionisation

### **Background:**

The Churchill Hospital (part of the John Radcliffe, Oxfordshire) is a teaching hospital in Oxford, England. The hospital was established in 1942 and is primarily a centre for the treatment of cancer patients, with research and teaching facilities. It has 180 in-patient and 100 day care beds. The Orca Copper and Silver Ionisation system (CSI) system was installed at the Churchill Hospital in November 2014.

**Sampling:** Before the CSI system was activated, pre-commissioning samples were taken from 16 outlets identified as being at risk of Legionella contamination. After activation of the CSI system, samples were taken every month from 9 to 20 outlets that showed risk of Legionella contamination and were analysed for Legionella 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). The number of outlets sampled was then reduced to 11 outlets, after ProEconomy was satisfied that Legionella was being controlled, and it was reduced to six outlets sampled monthly in the past year.

### **Results:**

The results of the pre-commissioning samples (November 2014) are shown in Figures 1 and 2. A total of nine of the 16 outlets tested showed the presence of Legionella pneumophilla SG2-14 with counts of 100 (2), 200, 300, 600 (2), 1300, 1400 and 5200 cfu/L. One outlet had flexible hoses and a large deadleg, which caused Legionella to persist there for longer than in other outlets. The number of outlets sampled was then reduced to 11 outlets, after ProEconomy was satisfied that Legionella was being controlled, and for the past year, six outlets are sampled monthly.

Legionella at counts above 100 cfu/L persisted in some outlets until April 2015 (Figure 1), due to flexible hoses and deadlegs. Since June 2015 (6 months after commissioning) Legionella has been controlled, with only three outlets showing low counts (100 cfu/L of mainly non-pneumophilla). No Legionella has occurred in any of the tested outlets at Churchill Hospital after July 2016 (Figures 1 and 2).

### **Conclusion:**

There was enough evidence to show Legionella posed a real threat to the hospital. Legionella control using a CSI system was achieved from May 2015 and total Legionella eradication was achieved from August 2016 onwards. The system, like any other Legionella control system, must be monitored regularly so that any problem outlet is quickly detected and dealt with. Legionella has been totally eradicated from the Churchill Hospital for about a year now and as a result, ProEconomy is now providing Legionella control to the whole of the John Radcliffe Hospital.

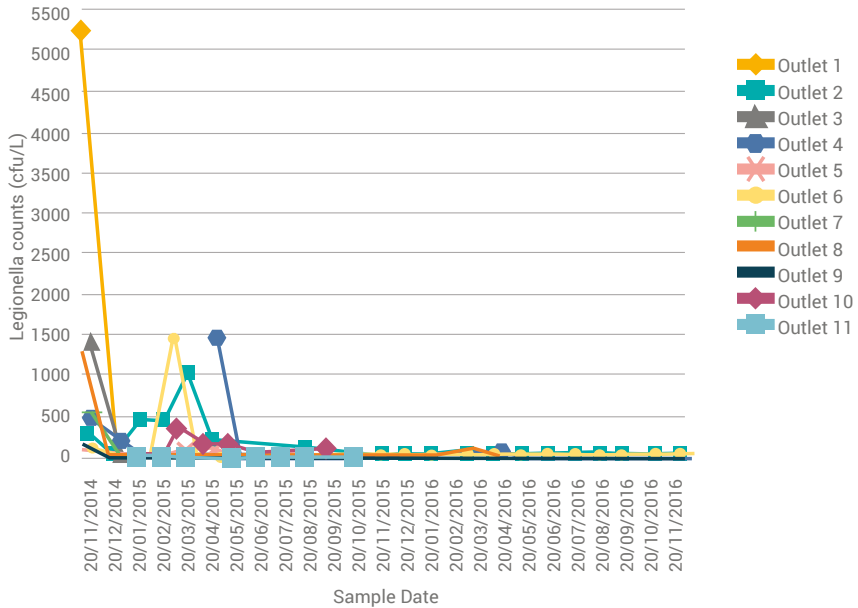


Figure 1 – Legionella counts at eleven outlets

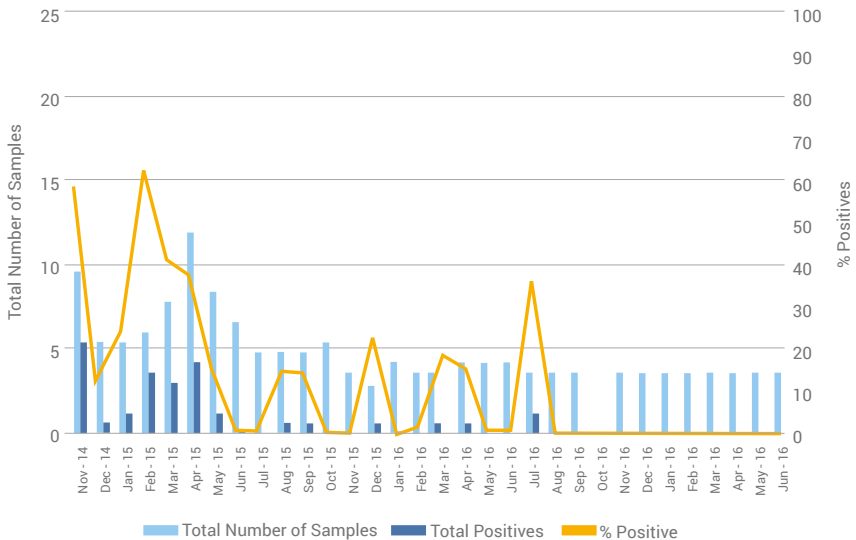


Figure 2 – Total number of samples taken per month, number of positives and percentage of Legionella positives.