

On-site measurement of bacteria in water from dental unit systems

Microbial contamination in Dental unit waterlines (DUWLs)

A dental unit waterline is a perfect environment for microbial growth and biofilm formation, due to their dimensions, material, low flow and minimal use of water. Incoming water can introduce different water bacteria including Legionella and Pseudomonas to the DUWLs, where they can proliferate to high numbers. The bacteria can then be distributed through the handpieces to the patient or staff, where they can cause mild to severe illness.

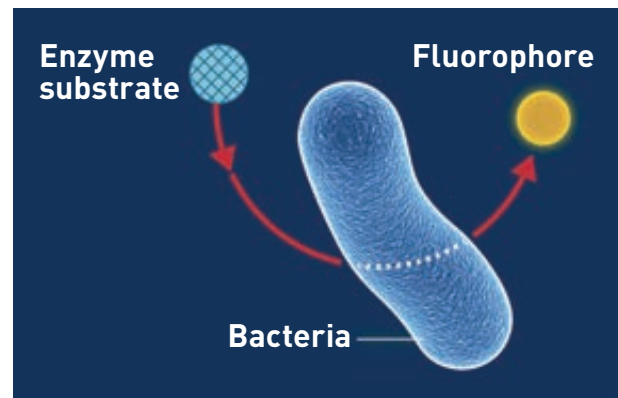
Ensure safety for patients and staff

The guidelines for dental unit water recommend testing the water at least once a year, however the water quality can change many times during a year. For some dental clinics the yearly water control can result in closing down the dental unit due to elevated bacterial levels. Most guidelines recommend Tot.

By monitoring the water quality more often, the situation can be controlled in time and ensure that the safety level is high at all times. Most authorities recommend that dental unit water should contain <500 CFU/ml aerobic heterotrophic bacteria (total viable count). In Sweden and Germany it is recommended that total viable count is <100 CFU/ml.

Bactiquant technology

Bactiquant quantifies bacterial presence by measuring enzyme activity using a sensitive fluorescence technology. The enzyme is located within the surface of the bacterial cell, and can be reached by the added substrate without the need of cell lysis or extraction; hence the chemistry is very simple and robust. The assay ensures highly accurate and reproducible results, making the method highly suitable for monitoring dental unit water quality.



Control water quality and decrease the risk of Legionella

BQ-value indicates the bacterial load in the water sample. The correlation between BQ-value and CFU changes when free chlorine is present in the water sample due to the partly bacteriostatic effect of low chlorine levels.

BQ-value in water without free chlorine	CFU/ml equivalent	BQW-value in water with free chlorine	CFU/ml equivalent
10	10-100	10	0
100	100-1,000	100	<100
1,000	1,000-10,000	200	<200
10,000	10,000-100,000+	500	<500
		1,000	<1,000
		10,000	<10,000

Special version of Bactiquant method developed for dental unit water

The procedure for the Bactiquant®-water Dental method is optimized for use by technicians on-site at dental clinics. After one day of training the technician will be certified and able to perform Bactiquant measurements, generating standardized results.

The analysis is performed in three simple steps

- Concentration and capturing of bacteria in the filter
- Reaction with substrate
- Reading fluorescence signal and calculating the BQW-value

Total assay time is less than 30 minutes!

The rapid on-site bacterial measurements allow for immediate action to control the contamination.

