

UNIT-ORAL: WATER ANALYSIS for DENTAL CHAIR



**How to prevent and control water
contamination the dental unit
using UNIT-ORAL Water Testing**

Poor microbiological Dental Unit Water (DUW) quality associated with generated aerosols during dental procedures, could be an important source for transmission of pathogenic bacteria.

Dental chair units are equipped with a flexible, plastic tubing that supply water to all dental instruments (air/water syringe, turbine, rinsing equipment). Biofilm and bacterial contamination are often observed in the complex dental unit. Bacterial numbers per ml in DUW can reach several millions overnight. Opportunistic bacteria such as *Legionella pneumophila* and *Pseudomonas aeruginosa* have previously been revealed in biofilms. In addition, *Staphylococcus sp.*, isolated from DUW, could be resistant to several antibiotics.

Legionella pneumophila is the major agent of Legionnaire's disease (LD) and Pontiac fever. The estimated incidence rate of LD in the European Union (EU) is 100 per million. Approximately two thirds of reported cases of LD in the EU are community-acquired.

Recent studies have shown that *Legionella* is one of the most common agents of community-acquired pneumonia in Germany. A recent study has reported a transmission of *L. pneumophila* from a dental unit to a patient, who died from septic shock. The role of the dental unit as source of infection was proved by molecular fingerprinting techniques.

In Germany and The Netherlands, the microbial quality of water from dental units is regulated by National Ordinance.

- ✓ **The growth of certain bacteria strain (Total Bacterial Count) is a significant microbiological signal of DUW contamination risk increasing.**
- ✓ **Pathogenic bacteria (*Legionella pneumophila* and *Pseudomonas aeruginosa*) should be < 100 bacteria /100ml and Total Bacterial Count < 100 bacteria/ml. Absence is required during treatment of immune-compromised patients.**

DUW quality can be maintained under control during months by dentists and/or dental hygienists according to the use of the dental chair disinfection procedure and water testing protocol. The list of pathogenic bacteria strain to be at high risk for DUW contamination:



***Legionella pneumophila*:**

is a thin, aerobic, pleomorphic, flagellated, non spore-forming, Gram-negative bacterium of the genus *Legionella*. *L. pneumophila* is the primary human pathogenic bacterium in this group and is the causative agent of Legionnaires' disease, also known as legionellosis. *L. pneumophila* is a facultative intracellular parasite that can invade and replicate inside amoebae, reservoir that provide protection from environmental stresses, such as chlorination.



Pseudomonas aeruginosa

is a common Gram-negative, rod-shaped bacterium that can cause disease humans. *P. aeruginosa* is a multidrug resistant pathogen recognized for its ubiquity, its intrinsically advanced antibiotic resistance mechanisms, and its association with serious illnesses – especially hospital-acquired infections such as ventilator-associated pneumonia and various sepsis syndromes. *P. aeruginosa* typically infects the airway, urinary tract, burns, and wounds, and also causes other blood infections.

Technical recommendations and objectives:

For dentists and hygienists, it is advised to carry out an analysis in the following situations:

- Early morning before first patient visit
- Always measure at the same hour
- Spray water for 30 seconds before sampling
- Do not store the sample more than 6 hours before shipment for analysis

Guidelines on preventive measures to reduce the contamination burden in DUW have been issued by governments and national dental associations:

They recommend a periodical monitoring of DUW.

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FAQ

Why should I check the water unit?

The water in your practice is characterized as "process" and therefore must comply with the Health and Safety Legislation. Part of this legislation is regular monitoring of the microbiological quality.

Is there new EC or national directive for prevention in oral health care practices demand?

Yes after Germany, a new directive was published in early April 2016 in the Netherlands. The regulations regarding water quality is further explored in this new directive. One of the changes is that the minimum water quality should be checked every six months

What is the best time for sampling?

The best time for sampling is in the morning before entering the first patient. After a (chemical) disinfection wait for at least 48 hours before the water unit can be tested.

How often should I perform a DUW test?

Every month is the best option to secure the dental practice. Every 6 months is the existing directive

Is it possible to remind me that it's time for a sampling?

Yes, If you will need this, please let us know .

All units must be sampled?

Yes, all units in the practice should be sampled.

I have a separate bottle system, do I have to sample?

Also, with a bottle system, there is a risk of contamination, for example during the filling of bottles or by recoil of micro-organisms from the mouth of a patient. Bottle systems should be monitored for the quality of the water unit.

How soon will I get the results?

Within a week after receipt of the collected water in the laboratory, we will send you the results.

I receive the results by e-mail?

The result will be sent by e-mail and addressed to the contact person indicated on the order form. The result we will never communicate to third parties without explicit consent of the client.

Do you have any literature studies on water quality in dental practice?

If you need more background information, please contact us. We will send you more information or literature.

WATER SAMPLE INSTRUCTIONS FOR USE

INSTRUCTIONS FOR USE

UNIT-ORAL

Sampling Kit for Dental Unit Water

Kit Contents :

1 tube with reference label, 1 protection container, 1 prescription form, 1 postal envelope and Instructions for use.


Precautions :

Perform water collection before or 2 days after the last treatment of the dental unit waterlines with antibacterial solution.


Sterile gloves should be worn when collecting.

Close tightly the tube and the container to avoid water leak.


Instructions for use :




1) Wash the outside of the turbine with antibacterial solution or with antibacterial wipe.




2) Turn on the turbine without using it for at least two minutes to drain the waterlines.




3) Fill the provided tube with water. The tube must absolutely be full (above the line).



4) Close tightly the tube. Check the reference label is stuck on the tube.



5) Put the tube in the protection container to secure the transport of the sample.



6) Send the sample and the fulfilled prescription form to the laboratory with the postal envelope.