

The DUWS RISK ASSESSMENT Project:

Microbial risk assessment of dental unit water systems (DUWS) in general dental practice (GDP)

Dental Unit Water Systems (DUWS) are used in dental practices to provide water to irrigate the oral cavity, and have been demonstrated to be heavily contaminated with microorganisms, particularly in dental hospitals. There are currently no EU guidelines applied to DUWS.

Objectives

The aim of this project was to investigate the microbial contamination of DUWS in general dental practice in the UK, Denmark, Germany, the Netherlands, Ireland, Greece and Spain by:

- Carrying out a questionnaire survey on DUWS type in use and General Dental Practitioner (GDP) attitude to the risk of microbial infection from DUWS;
- Evaluate the efficacy of a variety of products based on different classes of active compound using a laboratory model to generate reproducible biofilm on DUWS tubing and;
- Applying disinfectants identified from the laboratory model to DUWS in general dental practice for the control of microbial contamination in GDP.

Key findings and conclusions

The major findings were that:

- The majority of dentists did not clean, disinfect or analyse the microbial load of their DUWS. Dentists would welcome regular monitoring and advice on cleaning their DUWS;
- The microbial load of DUWS in the different countries ranged from 0 to 4.4×10^4 cfu.ml⁻¹;

- Water supplied by 44% of dental units in this microbiological survey of GDP DUWS failed current European Union potable water guidelines (100 cfu ml⁻¹) and 51% failed American Dental Association (ADA) recommendations (200 cfu ml⁻¹);
- Biofilms were identified as the major source of contamination; therefore effective products should be able to reduce the biofilm load within DUWS;
- Irrespective of overall contamination, pathogens such *Pseudomonas* spp., enterobacteria, *Legionella* spp. *Mycobacterium* spp. and *Candida* sp. could occasionally be detected, as could presumptive oral bacteria, indicating possible failure of antiretraction valves and potential for cross-infection incidents.



Relevance and contribution to EU policy

The following is recommended in the view of the outcome of the project:

- The EU adopts the same or similar standard as the ADA in that the water in DUWS should contain < 200 cfu.ml⁻¹;
- Where administered then effective products such as Dentosept and Oxygenal should be used;
- The application of products should be carried out in combination with education and training of the staff involved as well as an appropriate microbial monitoring regime as part of the GDP's cross-infection control strategy.

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<i>Project acronym</i>	DUWS RISK ASSESSMENT
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<i>Project coordinator</i>	Dr. James T. Walker Health Protection Agency Centre for Emergency Response and Preparedness Porton Down Salisbury, SP4 0JG United Kingdom jimmy.walker@hpa.org.uk