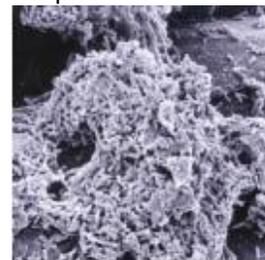


Biofilms and Dental Unit Waterlines (5/03)

Clearance of biofilms from dental-unit waterlines through the use of hydroperoxide ion-phase transfer catalysts. Shepherd PA, Shojaei MA, Eleazer PD, Stewart AV, Staat RH. Quintessence Int 2003;32:755-761.

The purpose of this study was to demonstrate the effectiveness of hydroperoxide ion-phase transfer catalyst (HPI-PTC) cleaners and disinfectants for maintaining dental-unit waterlines. Water samples were taken from 117 sites including a variety of dental units. The presence or absence of biofilms was confirmed by scanning electron microscopy. The cleaning procedure involved an overnight application of an HPI-PTC cleaner followed by a two-minute water rinse. Water from both the air-water syringe and the high-speed handpiece lines from all untreated units contained at least 6×10^2 CFU/mL of planktonic or free-floating bacteria (average 1.4×10^5 CFU/mL). An initial 5% solution of HPI-PTC successfully cleared the lines of any apparent biofilm when applied for three consecutive days. Thereafter, once weekly use of the cleaner maintained the dental water supplies free of significant numbers of planktonic organisms. **Routine weekly use of an HPI-PTC cleaner controlled dental-unit waterline biofilm and reduced, with minimum effort, the microbial contamination level of water used for patient treatment to less than 200 CFU/mL.**



DIS Comment: It is well documented that microorganisms colonize and multiply on the interior surfaces of DUWL resulting in the formation of biofilms. The levels of bacteria in water from untreated dental units often exceed 100,000 CFU/mL of water. Despite the lack of documented adverse health effects, exposing patients or dental health-care personnel to water of uncertain microbiological quality is inconsistent with generally accepted infection control principles. Current dental-unit water systems cannot deliver water of optimal microbiologic quality without some form of intervention (e.g., use of a disinfectant). The commercial product used in this study was Sterilex Ultra Dental Water Line Cleaner. DIS has evaluated Sterilex Ultra and rated it acceptable for use in federal dental clinics.