Dental Unit Water and Sampling Methods (12/03)


Many commercial dental unit waterline (DUWL) cleaners are available. Results regarding the efficacy of these products vary and sampling methods and laboratory procedures can affect results. This study was conducted to test the efficacy of a continuous-use stabilized chlorine dioxide product and determine if two different sampling methods produced the same results. In sampling method one, reservoir bottles containing the continuous-use product were removed from the treated units and the liquid was discarded. The bottles were rinsed out with tap water, filled with tap water, and reattached to the unit for sampling. In sampling method two, the reservoir bottles were left attached to the unit and samples were collected. There was a statistically significant difference between the treated units and the control units but the two sampling methods revealed no statistically significant difference. Treated units showed a decline in the mean number of colony forming units per milliliter (CFU/ml) over the study period but the level was not consistently low enough to meet the ADA-recommended levels of 200 CFU/ml. The findings of this study indicate that it is not necessary to replace a continuous use product with fresh, untreated water when testing water quality.

DIS Comment: This study evaluated a continuous-use chlorine dioxide DUWL cleaner and suggested that weekly treatment protocols may not be sufficient to reduce microbial counts to levels that comply with acceptable standards of dental water quality. This reinforces the need for periodic water monitoring. Two options for monitoring dental unit water are currently available. Water can be submitted to the microbiology lab or the bioenvironmental engineers for culturing using method 9215 (heterotrophic plate count) as described in Standard Methods for the Evaluation of Water and Wastewater or an in-office self-contained system that is equivalent to method 9215 can be used. When testing is performed on water undergoing continuous chemical treatment, the germicidal agent should be neutralized first to obtain accurate colony counts. Sodium thiosulfate is the neutralizing agent of choice for chlorine; the amount currently used (1.0 mg/ml) to neutralize continuous-use chlorine-based products is the same amount used when neutralizing residual chlorine from the municipal water supply. As the authors of this study noted, as manufacturers continue to develop dental unit waterline cleaners, the standardization of sampling and laboratory handling methods is important.

References