

Is ozone the panacea for an ailing water supply?

By Joseph Allbeury

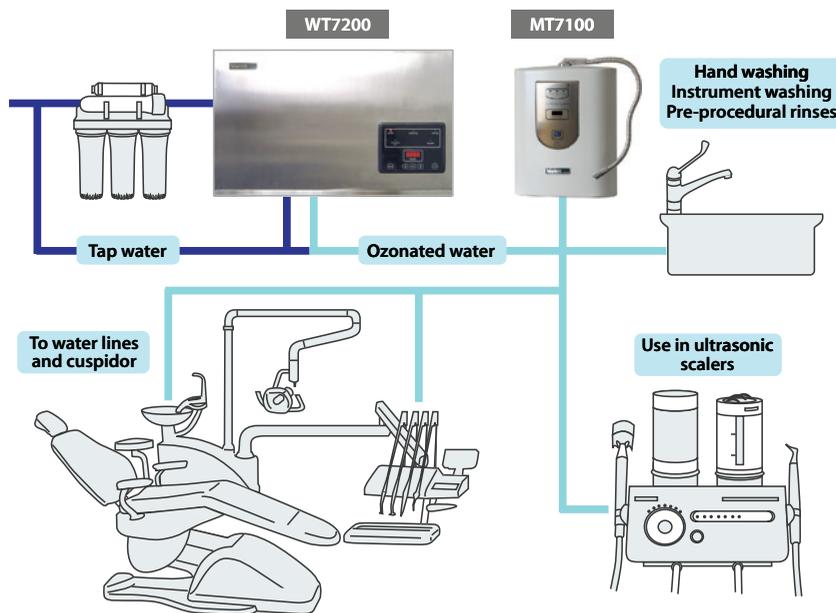
Building or refurbishing your practice is an ideal time to consider the quality of the water supply throughout your premises and take steps to ensure its quality. Parasites like *Giardia lamblia* and *Cryptosporidia*, and bacteria including *E. coli* and *Legionella* species can be present in your water supply and may ultimately end up in the mouths of your patients.

Many practices already filter the reticulated domestic water supply as it enters their dental premises to remove particles and aggregates, but this does not remove bacteria. In addition, filtration of sediments and solids from town water is not effective at combating biofilms that build up in dental unit waterlines within your practice where many of the abovementioned pathogens grow.

As a further measure to ensure the quality of the water supply, some dental practices are now choosing to go a large step further and treat the entire water supply of their premises with ozone.

According to Prof. Laurie Walsh, *Australasian Dental Practice's* Technical Editor and Chairman of the ADA's Infection Control Committee: "In the challenge of providing water of high microbial quality to supply dental units, ozone has attracted attention because it possesses several of the properties of an ideal disinfectant: it effectively removes pathogens over a range of physical and chemical conditions; it produces no residues and no unacceptable by-products (only oxygen); it is easy to generate, safe to handle, suitable for widespread use and cost-effective. Ozone requires only a short contact time to kill and inactivate bacteria, parasites, viruses and fungi and its antimicrobial action is relatively unaffected by pH. Unlike chlorination, it is able to give greater than 99% reductions in the levels of parasites such as *Giardia lamblia* and *Cryptosporidium* spp."¹

"Chlorine based approaches to waterline disinfection are not 100% effective nor do they work particularly quickly. Better strategies for dental unit waterline management are needed to improve the quality of water that is discharged through dental unit waterlines and thereby minimise both the risk of infection for vulnerable patients



as well as for dental staff chronically exposed to contaminated aerosols. Ozone is a particularly useful strategy for this."²

Ozone has become increasingly popular following the development of new electrolytic technology to generate ozonated water by Biotek Ozone using a highly efficient process. Older technology for ozone generation such as corona discharge required dry air and high voltage, and produced considerable heat as a side effect. These drawbacks have now been overcome.

Biotek Ozone has subsequently been able to commercialise systems that will ozonate all incoming water to a dental practice; or deliver ozonated water at point of use with units that typically mount under or above a sink. Ozonating all incoming water in a practice means that every drop of water used in the practice has been disinfected prior to use.

"Ozone in water kills bacteria and other pathogenic microorganisms by rapidly rupturing their cell membranes (within several seconds)," Prof. Walsh stated. "The same effects occur when dental plaque is exposed to ozonated water as a rinse. Ozonated water has no side-effects such as unpleasant taste or tooth staining, which are characteristic of other biocides or disinfecting agents."³

Ozonating the entire water supply of your practice, typically to a level of 1ppm ozone, will eliminate all waterborne pathogens, and prevent the development of biofilm in newly installed equipment. Flushing ozonated water through equipment can also reduce existing biofilms.

Higher concentrations of ozone, typically 2-3ppm, are available with point of use systems. These systems are ideal for:

- Handwashing;
- Instrument washing prior to ultrasonic cleaning and autoclaving;
- Ozonating water for use as a preprocedural mouth rinse;³
- Use as an irrigant in ultrasonic scalers;
- Refilling dental unit water bottles to counter biofilm build-up; and
- Washing of floors and other hard surfaces in the dental practice.

For more info, contact Biotek Ozone's Australian agent, Mint Devices, on (02) 8090-0994 or info@mintdevices.com.au.

1. Walsh LJ. Electrolytic ozonation of water: a new solution to the problem of dental unit waterline biofilms. *Australas Dent Pract* 2011;22(1):132-134.

2. Walsh LJ. What's new in infection control. *Australas Dent Pract* 2011;22(1):125-126.

3. Walsh LJ. Antiviral and antibacterial effects of preprocedural mouthrinses. *Australas Dent Pract* 2011;22(4):112-113.