



IN DENTISTRY

# Ozone

## *What is the fuss?*

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The topic of ozone is gaining momentum in the United States due to its recent upgrade in status by the FDA to GRAS (*generally recognized as safe*). However, it is far from new. The first ozone generator was created by Siemens in 1857 and it has been used for the purification of reticulated water system since 1893 in Holland and 1906 in Nice, France where it has been in continuous use for this purpose ever since.

Ozone occurs naturally in the atmosphere, absorbs harmful ultraviolet radiation and beyond that is Nature's sterilant. It is responsible for that 'fresh' smell in the air after electric storms, beside rolling surf and crashing waterfalls. It forms when the O<sub>2</sub> molecule splits into individual atoms of oxygen in the presence of a very high-energy output such as lightning and then reforms into an O<sub>3</sub> molecule called ozone. This O<sub>3</sub> molecule is highly reactive due to its unstable state where it becomes a powerful oxidant, neutralizer, anti-bactericidal and anti-viral. Its breakdown product is oxygen (O<sub>2</sub>) with no residual.

Its use in medicine and dentistry goes back to the 1970s in Europe and has grown wide acceptance in Australia over the past decade. I personally have used ozone daily in practice for the past eight years and could not imagine working without it.

It plays a major role in minimally-invasive caries control with adjuncts such as the Diagnodent and air abrasion but its uses are much more extensive than this. Contamination of dental unit water lines can be treated or better, prevented, through the use of ozone either at point of use through self contained bottled ozonated water or by ozonating all the water as it enters the building.



Ozone is highly soluble in water and oxidizes the cell membranes of pathogens, effectively causing them to burst within seconds. This is highly disruptive to biofilms not only in DUWL's but the biofilms in plaque. Our hygienists use self-contained bottled ozonated water for every procedure they perform.

Ozone because of its instability as a gas needs to be generated at the point of use. The half-life is only 20 minutes so you cannot buy ozonated water; you produce it yourself with the appropriate equipment. It can also be produced as a gas, which has very wide application in prevention and treatment of infection in the dental patient. These applications include but are not limited to:

- Pre-treatment mouth rinse
- Pre and post extraction
- Implant surgery
- Salvage of failing implants
- Root canal therapy
- Pulp exposures/deep caries
- Pericoronitis
- Angular chelitis/herpes
- Oral ulceration including post radiation ulceration
- Neutralizing odors such as patient prostheses & orthotics
- Teeth bleaching



**Anne-Maree Cole pictured with her husband.**

Anne-Maree is the Director of LVI Global Australia and a past president of the IACA. As a perpetual student, she has taken more courses at LVI than anyone on record!

*Anne-Maree will be speaking on the applications of ozone in dentistry at the 2013 IACA Meeting in Calgary, August 1-3.*

