

Why eco-friendly dentistry should be a top priority for dental professionals

By **Simon Davies**¹

Everything we do has an impact on the world around us. While industry and global political leadership are frustratingly slow to drive social change, a growing number of companies across a wide range of sectors are pushing ahead with a green revolution. It is gratifying to see businesses investing in more sustainable practices as eco-conscious customers seek out less environmentally damaging products – switching everything from cosmetics to bank accounts.

Young people are always the biggest consumers but for both tech native millennials (1981–1996) and Gen Zs (born 1997–2012) environmentalism and ethical consumption are a major influence on their lives. The Deloitte Global 2021 Millennial and Gen Z Survey¹ refers to them as ‘Generation Green’. The stats in this report and others demonstrate their increasingly environmentally and social-conscious consumer behaviour, made even more intense due to the COVID-19 pandemic, political instability, severe climate events and racial discord.

- More than a quarter of millennials and Gen Zs said that businesses’ impact on the environment has influenced their buying decisions¹
- Healthcare is millennials’ top concern as a result of the pandemic at 28%. The environment is the top concern for Gen Z, but their focus on healthcare has grown from the previous year to 21%¹
- 53% of millennials say they would buy environmentally friendly products instead of a brand, as compared with 34% of baby boomers [born 1946–1964].²

Dentistry must catch up with this social change movement and respond to the demand from younger generations for environmentally friendly products. As a vital health service, dentistry also offers cosmetic treatments that increases confidence and improves wellbeing. But what are the immediate and long-term impacts of a trip to the dentist? Widespread use of toxic chemicals – unpleasant for both our bodies and the wider environment – lurk beneath the positive changes that are starting to take place. It is only a matter of time before digital savvy patients will research online what chemicals are being used *before* they visit and choose their dental practice.

Traditional dentistry uses a wide range of harsh chemicals for sanitising equipment, surfaces, and hands, including chlorine-based bleach. Many cleaning products can be so toxic



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that they often require dilution and must be handled by the dental team with protective equipment such as gloves and masks. Misread the instructions or accidentally spill some, and such chemicals can inflict damage on dental staff's skin or eyes, or patients' mouths.³

Quaternary ammonium compounds (quats) are often the active agent in disinfectants due to their excellent antimicrobial activity. Unfortunately, they are also skin and lung irritants, and ongoing research is starting to show they could be more toxic to the cells of our bodies than we ever thought.⁴ They are toxic to aquatic life including fish, and their extensive use is contributing to the problem of antibiotic resistance: one-off doses might be deemed harmless but it is the 'bioaccumulation' in vital organs that scientists are increasingly turning their attention to. Dental rinses and mouthwashes can also contain EDTA [Ethylenediaminetetraacetic acid], bleach, artificial preservatives, and other toxic ingredients.⁵ Research has linked frequent use of alcohol-containing rinses and mouthwashes to an increased risk of head and neck cancers.⁶

environmental pollutants dioxins and furans. Factories producing bleach also release chlorine and other toxic by-products into the atmosphere where they contribute to air pollution and ozone depletion.

SLS [sodium lauryl sulfate] is also toxic before it degrades, and it is often manufactured using unsustainable palm oil or petroleum. And chlorhexidine has been classified as environmentally harmful by European regulators because it is highly toxic for aquatic life, causing harmful long-term effects.

The fact is that none of these chemicals are a necessary evil. We do not need them. It is simply that dental practices have used them for decades without care, consideration or even knowledge about their impact on us or on our world. Some were approved for use before stricter controls on harmful substances were brought in.

But here is the good news: alternative choices exist. Products that are manufactured in factories with zero carbon plans in place. Products that are packaged sustainably and responsibly. Crucially, products that have been through the highest toxic tests devised by the

molecule is 80 to 120 times more effective than bleach. But – and here's the clincher – it is completely non-toxic, pH neutral, and non-irritating. It has no impact on the environment. Hypochlorous is completely biodegradable and harmless to aquatic life.

After a long period of being thought of as niche, I am proud to be part of a movement that is changing the way we think about chemical use in everyday dental treatment. Thanks to hypochlorous-based products, so-called 'sustainable dentistry' is something all dental professionals can be a part of. There is no doubt that before long the majority of patients will choose a green dental practice over one that uses environmentally harmful products. Aside from the vital health and safety benefits for any dentist practice this is an opportunity for us all – a small change that, if taken collectively, can help improve our world.

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The chemical chlorhexidine is a widely used ingredient. In some people, it can cause altered taste, numbness, dryness, and pain, not to mention staining of the teeth.⁷ As for waterlines: biguanides, disodium metasilicate and peracetic acid are some of the most corrosive chemicals around.

Many of these chemicals have persistent effects on both the environment and humans. Released into wastewater, EDTA does not biodegrade and mobilises toxic heavy metals.

While bleach breaks down quickly once flushed away in wastewater, its production produces chlorine waste that forms the

EU: toxicity, mutagenicity and reproductive toxicity.

Hypochlorous acid is a game changer. Although this naturally occurring substance is an unbeatable disinfectant, there is nothing corrosive about it.

Hypochlorous – chemical formula HOCl – is produced by the human body's immune system as a key line of defence against infection. Our white blood cells release it in response to the presence of bacteria or viruses. Hypochlorous slips passively inside the pathogen to rapidly destroy it from the inside out.

Packaged into disinfectants, this powerful

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