



The Latest in Eco-Friendly Dentistry

By Dan Kolen

Through anthropogenic global warming, human activity is causing irreversible damage to life on Earth, including rising sea levels, ocean acidification and ecosystem destruction, according to a report from the Intergovernmental Panel on Climate Change (IPCC), a body of the United Nations.¹ With this looming threat in mind, businesses — including dental practices — can make decisions that contribute to reducing and reversing climate change.

“The planet is one thing we all have in common, and it’s the only one we have,” said Toni M. Roucka, RN, DDS, MA, bioethics expert and associate dean for academic affairs at the University of Illinois at Chicago College of Dentistry. “If we all do a little, we can make a big impact. If the dental profession takes a lead on this, great things are possible.”

Whether it’s building a practice from scratch or beginning to use greener products and procedures, dentists have options. Changes made in dental practices can be positive for the environment, employees, patients and bottom lines.

Beginning the Journey Toward Greater Sustainability

“If you’re just starting on your sustainability journey, it can be overwhelming to see everything that can and should be done,” said Alyssa Bascue, a certified International Society of Sustainability Professionals sustainability associate. “Don’t try to implement everything at once. Brainstorm with your

team about what’s most important to your business, patients and community. Every year, choose two to three specific, measurable, achievable, realistic and timely (SMART) goals — better yet, create a multiyear plan.”

David R. Hennington, DDS, ran a green dental practice outside of Austin, Texas, for the better part of a decade. He said the first step was getting his team excited about the prospect of creating a greener practice.

“A huge thing for us was getting our team on board. Everyone wasn’t all that concerned with environmental issues, but, once we did it, they saw the value of it,” Hennington said. “Take small steps, and don’t be intimidated with what you may have to do in terms of cost and time. If you try and take on too much at once, there’s a chance it won’t work.”

The American Dental Association (ADA) has 80 recommendations for improving a dental practice’s sustainability.² These recommendations fall into six categories: Be proactive, install energy-efficient products, switch to green products, reuse and recycle, conserve energy resources and water, and educate patients and staff. The ADA’s suggested proactive behaviors, such as incentivizing carpooling or biking to work, wearing eco-friendly scrubs, bringing lunch to work in reusable containers, and using biodegradable bags, all “set an example for your staff and patients alike,” said Roucka.

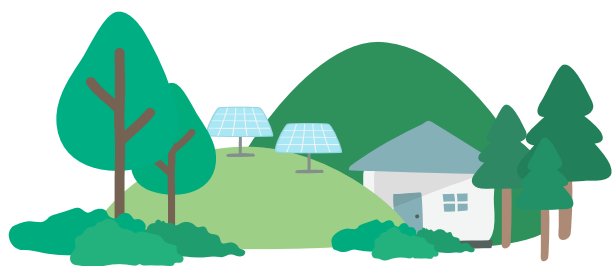
Energy-efficient products can include water-saving toilets, solar panels, trash compactors and reflective (low-emissivity) glass windows, according to the ADA. Green products include glass irrigation syringes, biodegradable cups and office furniture made with recycled or reclaimed materials. You can recycle office supplies and computer parts, and single-use products like batteries and heater/air conditioner filters can be replaced with reusable ones.²

“I think dentists — and the healthcare industry in general — have an ethical responsibility to conserve resources and limit single-use plastics as much as possible,” Roucka said. “At the minimum, I believe dentists should do a ‘waste audit’ of their offices and take inventory of the amounts and types of waste generated. Once they become

aware of the amount and types of waste, they can move to reduce waste, recycle what's recyclable and purchase more sustainable products. A plastic-free office is not possible at this time, but a plastic-reduced one is."

To conserve energy, the ADA recommends turning off computers when you leave for the day, removing TVs from the waiting room and using solar chargers for portable electronic devices. For education, the ADA says practices can teach patients to turn water off while brushing, encourage staff to conserve water in break areas and bathrooms, and distribute information on green behaviors in the waiting room.²

"Education is about discovering what resonates with people and finding common ground," Bascue said. "Funding educational programs, fighting homelessness and supporting charitable groups that are sustainable can resonate with families." Bascue also recommends starting a volunteer program, forming a "Green Team" in the office to go over sustainability issues, and participating in organizations like 1% for the Planet, which facilitates charitable donations from businesses and individuals to vetted environmental organizations.



Examples of Greener Options

Converting to digital dental radiographs from traditional film can reduce waste. Digital radiographs have higher portability, offer dentists the ability to communicate more efficiently, and eliminate the use of silver and chemicals to develop film.³ When disposed of improperly, the chemicals used to develop traditional radiographic film can harm the environment. If film radiographs are taken, the ADA recommends recycling the lead foil along with the fixer and developer solutions.²

The ADA recommends practices go paperless with a "virtual office system" that includes charting, billing, and radiography systems, and the Eco-Dentistry Association states that practices can save \$8,769 per year with these measures.^{2,4} Setting up online bill pay — for both patients and when a practice pays its own bills — is a small action that can play a big factor in combatting carbon emissions. According to Javelin Strategy & Research, if every U.S. household used online bill pay, 1.6 billion tons of solid waste per year would be eliminated, and 2.1 million fewer tons of carbon would be released into the atmosphere.⁵

Cleaning products are another place where dentists can

make a change. Many cleaning products can be harmful to people and the environment, contributing to poor air quality and leading to problems like skin and eye irritation and respiratory impairments, according to Health Care Without Harm. "Less toxic, environmentally friendly maintenance products exist for almost all healthcare facility needs," states the organization.⁶ To explore alternatives that may fit your practice needs, visit greenseal.org.

A Dentist Who Made the Change

Hennington decided to jump into green dentistry in 2010. "Our carbon footprint over time really adds up, and I knew there were things in our dental practice that were contributing to that. We decided to pay attention to them and rethink how we were doing things — it was in the best interest of the patient and the team as well," Hennington said. Some of the first things he looked at included minimizing chemical use, improving air quality in the office, and decreasing the exposure to potentially toxic materials for patients and team members.

"We looked at it pretty holistically. Some patients were excited and really into it. Others didn't really care about it that much. We didn't beat it over anyone's head. We just felt like this was who we wanted to be as a practice, and we communicated that with our patients," Hennington said. "The amount of water and electricity we saved was significant. We got to the point where we recycled as many materials as we could, and we minimized paper use as much as possible. The more we started thinking about things, the more strategies we came up with."

He began to see an improvement in his bottom line. With energy savings, he saw cost savings. By going digital, he saw less waste. He bought a digital impression system for \$50,000 when they first became available and immediately noticed cost savings of about \$1,000 per month from not purchasing impression materials and trays.

"There can be upfront costs, but there's no doubt these changes can improve your bottom line," Hennington said. "You're not always going to get instant gratification. It's more of a process — changing your habits over the long term instead of in a week or two."

Building a Green Practice from the Ground Up

If a dentist is considering building a new practice, there are many decisions that will reduce its environmental impact, including location selection, water and energy use, building materials, and indoor environmental quality, according to the latest Leadership in Energy and Environmental Design (LEED) parameters for building and construction, a program developed by the U.S. Green Building Council (USGBC).⁷

Sarah Stanley, USGBC director of communications, said

there are “a number of projects associated with the dental field” that have received LEED certification “and even more that are more generally healthcare-related.” Most of the certified dental-related buildings are schools, but two dental offices — one general practice in Michigan and one pediatric practice in California — have received the certification.

“By supporting the use of health-oriented and eco-friendly building practices, the medical industry can contribute to efforts to promote healthy behaviors and lifestyles that lead to healthier patients,” said Kelly Worden, MPH, director of health research at USGBC. “Intentional building design can help mitigate climate change, which is a growing threat to public health.”

Of the more than 100,000 LEED projects globally, about 1,370 are healthcare-related, according to Worden. While few dentists are currently working in LEED-certified buildings, the standards can provide a guide for dentists as they’re choosing a site for their new practice. Location-specific factors like close proximity to public transit as well as access to bike paths and bike storage in the office will provide points toward certification.⁸

The certification process also evaluates how a practice is being built to dispose of waste. From having a plan for recycling consumer products to disposing of harmful metals like mercury, lead, cadmium and copper, there are many ways medical practices can be built to be as eco-friendly as possible.⁸

Building materials are also integral to the certification. Wood must be certified by the Forest Stewardship Council or a similar organization approved by the USGBC, and bio-based materials must be approved by the Sustainable Agriculture Network. Recycled, salvaged, reused or refurbished materials can also be used. Harnessing daylight and implementing lighting options that have at least three illumination settings (on, midlevel and off) also helps.⁷

According to the Association of American Medical Colleges, the healthcare industry accounts for 4.4% of greenhouse gas emissions globally, which is the equivalent emissions output of 514 coal-fired power plants. The United States lead the world with 27% of those emissions.⁸

“The building sector is often a primary contributor to carbon emissions, and green buildings play an important role in reducing the risks associated with climate change,” Worden said. “By adopting LEED and other green building practices, the dental and medical world can contribute to reducing the environmental and human health risks posed by climate change.”

LEED projects have also helped companies’ bottom lines, leading to savings of more than \$1.2 billion in energy, \$149.5 million in water, \$715.3 million in maintenance and \$54.2 million in waste in LEED-certified buildings from 2015 to 2018.⁹

“Dentists building out a new practice should think about using green building techniques,” Roucka said. “Dentists should do some research to see what would work best in their area in accordance with local laws and building codes.” Trends she referenced include net zero-energy buildings, energy efficiency, renewable energies, biomimicry, water conservation, turning waste to fuel, smart buildings, climate change-resistant buildings and alternative building materials.

A Just Cause

Hennington felt an imperative to take on climate change and do what he could while he was practicing. “The only way to reverse the damage done is for everybody to do their part. I think every little bit helps — little things add up. The science that’s coming out about global warming, plastics in the ocean, all of it — that’s why we tried to look at things from a holistic perspective and do as much as we could.”

Where green dentistry is concerned, Roucka has an eagle-eye perspective on the health impacts on patients, the ecological impacts on the planet and the role dentists can play. “The plastic problem is making people sick. Water is a precious resource. It’s time to take action. More research dollars should be earmarked to develop more sustainable packaging for medical products as well as other materials that are biodegradable and safe for medical use,” she said. “Dentists can be leaders and put into practice many green initiatives without much added expense to the office. Patients will appreciate the efforts, too.”

Community outreach and showing what your practice stands for can bring people together. “Maybe your business is located near the coast and you want to make coastal conservation a priority action area,” Bascue said. “You could partner with an environmental nonprofit, schedule a beach cleanup and invite community members.” She refers to the triple bottom line theory, which proposes that, instead of one bottom line for profit, businesses should also consider additional bottom lines for people and the planet. “Show that you care about leaving the environment and your community better for future generations.” ♦

Dan Kolen is a freelance writer and media producer based in Chicago. To comment on this article, email impact@agd.org.

References

1. The Intergovernmental Panel on Climate Change. *Global warming of 1.5°C*. World Meteorological Organization, 2018.
2. “80 Ways to Make Your Dental Practice Green.” *ADA Center for Professional Success*, success.ada.org/en/practice-management/office-design/80-ways-to-make-your-dental-practice-green. Accessed 1 March 2020.
3. Department of Scientific Information, ADA Science Institute. “Oral Health Topics: X-Rays/Radiographs.” *American Dental Association*, 13 Aug. 2019, ada.org/en/member-center/oral-health-topics/x-rays. Accessed 1 March 2020.
4. “Go Green Save Green.” *Eco-Dentistry Association*, ecodentistry.org/green-dentistry/what-is-green-dentistry/go-green-save-green/. Accessed 1 March, 2020.
5. “The Global Warming Survival Guide.” *Time*, content.time.com/time/specials/2007/environment/article/0,28804,1602354_1603074_1603109,00.html. Accessed 1 March, 2020.
6. “Cleaners and Disinfectants.” *Health Care Without Harm*, noharm-uscanada.org/issues/us-canada/cleaners-and-disinfectants. Accessed 1 March, 2020.
7. U.S. Green Building Council. *LEED v4 for Building Design and Construction*, 25 July 2019, greenguard.org/uploads/images/LEEDv4forBuildingDesignandConstructionBallotVersion.pdf. Accessed 1 March, 2020.
8. Budd, Ken. “Hospitals Race to Save Patients — And the Planet.” *Association of American Medical Colleges*, 15 Oct. 2019, aamc.org/news-insights/hospitals-race-save-patients-and-planet. Accessed 1 March, 2020.
9. “Why LEED.” *U.S. Green Building Council*, usgbc.org/leed/why-leed. Accessed 3 March 2020.

Complying with the Amalgam Separator Rule

On June 9, 2017, the Environmental Protection Agency (EPA) issued a final rule that bans the discharge of dental amalgam into sewer systems. The rule aims to keep the harmful mercury in amalgam from entering the air, water and land. Even if a dentist does not place amalgam, the office will most likely need a separator. One of the few exceptions to the rule is if a dentist only places amalgam in “limited circumstances,” usually in around 5% or less of procedures.

New dental offices built after the rule went into effect July 14, 2017, had to comply immediately. The vast majority of existing practices must comply by July 14, 2020.

With the deadline around the corner, AGD spoke with Alfred Frost, DDS, MS, director of scientific and clinical affairs at Dental Recycling North America Inc. (DRNA), an AGD Exclusive Benefits provider, to address some common questions about amalgam recycling.

In order to comply, do I only need to install an amalgam separator that is tested to the International Organization for Standardization (ISO) 11143:2008 standard and has a removal efficiency of at least 95%?

While you do need to install an amalgam separator that is tested to the ISO 11143:2008 standard and has a removal efficiency of at least 95%, there are more steps required for full compliance. The rule is really a two-part rule, requiring you to install the amalgam separator and make sure the machine is maintained and the material collected is recycled. First, you will need to submit a one-time compliance report by Oct. 12, 2020, to your local EPA authority or local publicly owned treatment works (POTW).

Second, the dental office will need to keep records of maintenance and recycling. These records are important to have in case of future inspection. The waste should be recycled at an EPA-verified facility, and the records must include the final disposal site of the recycled waste.

Is it OK that my recycling provider recycles waste overseas but doesn't provide a certificate of recycling from the final disposal facility?

This is not OK. Companies that ship their waste outside the United States can issue the dentist a certificate of receipt, which means the waste that was picked up from the dental office was received at a holding facility, as opposed to a certificate of recycling. However, unlike certificates of recycling or compliance, a certificate of receipt does not certify that the waste was recycled, and it does not have the final disposal facility on the receipt — both are needed to be in full compliance. In the event that the foreign disposal facility provides a certificate of recycling or compliance and complied with 40 CFR 261.5(g)(3), then this could be acceptable; however, it is not guaranteed that your local POTW or EPA authority will accept a foreign certificate of recycling or compliance. Further, the rules for shipping hazardous waste overseas are quite onerous. If the dentist is unaware of which certification they need, they may think they are fully compliant when, in fact, they may have a huge potential liability if the waste is not properly recovered. Without full knowledge of the process of waste handling from start to finish by their recycling provider, they can only hope for a good end result rather than being guaranteed one.

As an AGD member, you can get a free amalgam separator from DRNA while locking in the current annual recycling rate for three or five years.¹ Plus, AGD members receive a DRNA compliance package, 2.5-gallon amalgam recycling kit and eight-credit continuing education course at no additional cost. DRNA's recycling services include on-demand pickup, prepaid shipping, recycling and all necessary compliance documentation required under the EPA rule.

Sign up online at agd.org/amalgam, or call 800.360.1001, ext. 2.

1. Receive a free amalgam separator unit when you sign a three- or five-year recycling agreement at \$500/year for the BU10-5 and \$750/year for the BU10-30, inclusive of all costs.

