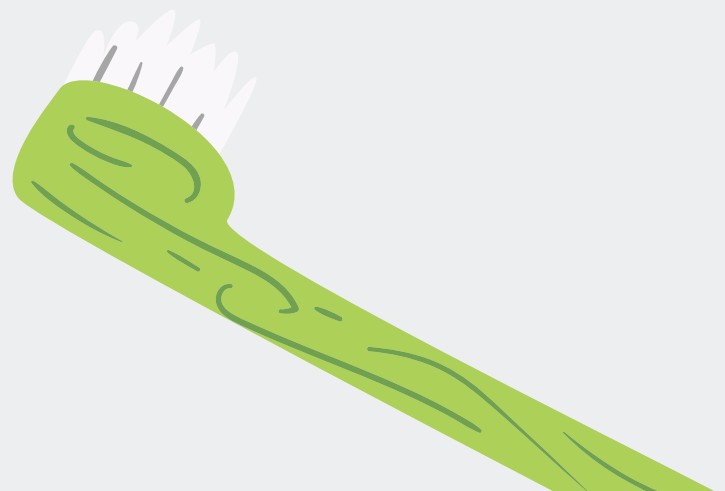




GREEN DENTISTRY



WHAT IS GREEN DENTISTRY ?

Green Dentistry is a joint project between the "International Association of Dental Students" (IADS) and "Freier Verband Deutscher Zahnärzte" (FVDZ) Student Chamber with the goal to:

- Raise awareness within dental practitioners.
- Teach them how to change their daily routine towards a profitable and eco-friendly workflow in order to have an eco-friendly dental practice in future.

(1)



WHAT IS GREEN DENTISTRY?

Definition by **EDA (Eco Dentistry Association)**: green dental practices, green dental patients and companies offering green dental products are transforming the dental industry through adoption of the EDA's green dentistry model.

- Reduces waste and pollution. You'd be surprised how much waste and pollution is generated by a single dental practice.
- Saves water, energy and money.
It's time for every industry to conserve resources, and dentistry has an important role to play.
- Is high-tech.
Many innovations on the leading edge of dental technology are also better for patients and the planet.
- Supports a wellness lifestyle.
A growing community of consumers seeks dental professionals who share their values of personal and planetary wellness.

(2)





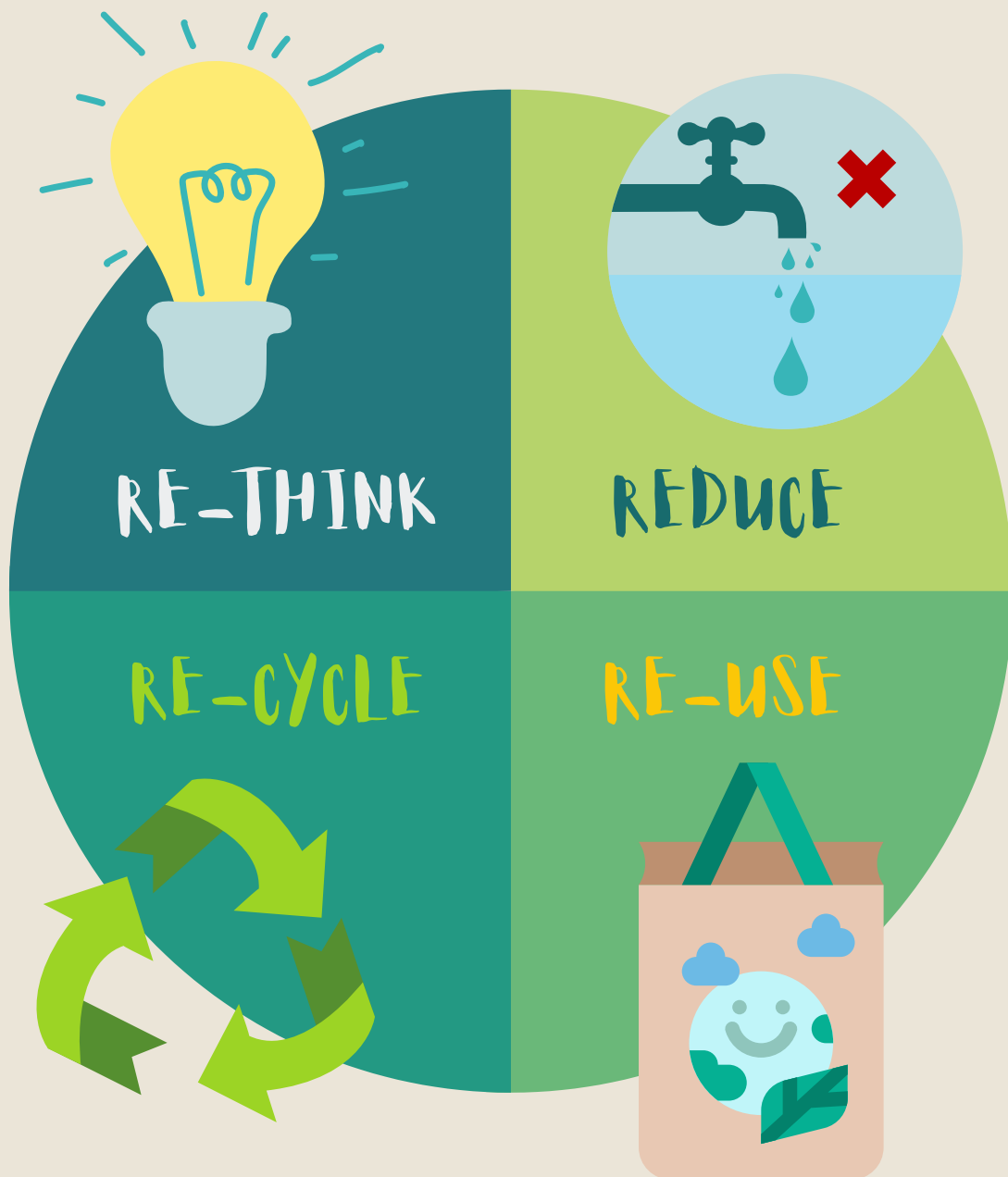
WHY GREEN DENTISTRY ?

As stated by the statistics given by WHO, SouthEast Asia Regional Office; production of hazardous and non-hazardous waste by a total of 11 SouthEast Asian countries come to a total of about 1000 tons per day and approximately 35000 tons of health care waste per year.

Dentistry as a profession has an exuberant endeavour in the health care waste. Though the individual dentist yields dental waste on a small scale, the overall accrued wastage may have a prodigious result on the environment. Ergo, it is the call of the clock for the dentists to become environmentally sensible and direct themselves to an eco-friendly dental practice. Eco-friendly dentistry is relatively a virgin concept in dental practice. It is a part of a bigger picture of the ecologically-sustainable healthcare system.

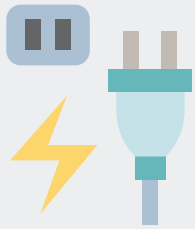
WHAT ARE THE ACTIONS THAT HAVE BEEN TAKEN REGARDING GREEN DENTISTRY?

Green dentistry's actions are heavily relied on 4R's **concept**: rethink, reduce, recycle, and reuse.



WHAT ARE THE ACTIONS THAT HAVE BEEN TAKEN REGARDING GREEN DENTISTRY?

There are several things that have been taken into actions as the implementation of green dentistry, including but not limited to such as :



Minimizing the use of electronics in the clinics when not used, e.g. computer. this aims to decrease electricity consumption.

Reducing the amount of paper used in the clinics. clinics can also go paperless or chartless by effectively and efficiently utilizing practice-management software that may be used well through computer (e.g. Dentrix, Practice Works, Softdent).



Use of digital x-rays instead of traditional x-rays. this may enable the reduce of paper, plastic, and lead waste that is produced when we discard empty film packets. Moreover, the use of digital x-rays would require no developer and fixer solution, thus reducing its dumping into drain water and supplies. by going digital, it would also benefit the patients since its usage exposes patients toward 70-90% less radiation exposure than the traditional ones.

Utilizing the use of compact fluorescent light (CFL) bulbs in the clinics. it has a longer usage with more affordable cost that produces less heat when illuminated.

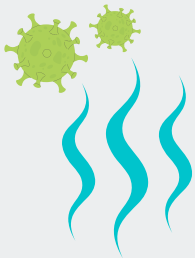


WHAT ARE THE ACTIONS THAT HAVE BEEN TAKEN REGARDING GREEN DENTISTRY?



Converting to the use of waterless vacuum system. since dental vacuum system can use up to 360 gallons of water per day, it will be highly more efficient to use a high tech dry vacuum system that need not require water, but still able to accomplish the same result with water vacuum system.

Use of CAD/CAM systems. by using digital technology like CAD/CAM, patients' visit can be effectively reduced to a single appointment. through this action, it will minimize the production of greenhouse gases that are yielded by patients and staffs' travel for multiple appointments.

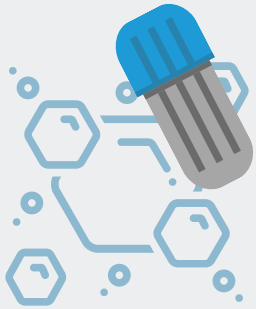


Use steam sterilization for the dental clinics' infection control. instead of using chemicals, steam sterilization is far better and safer in reducing the risk of poor air quality and community water stream pollution.

Replacing the use of disposable dental clinics stuffs with reusable ones. stuffs such as latex gloves, disposable patient bibs, head rest covers, plastic suction tips, syringes, and plastic pouches are disposable items that need to be discarded once used, thus may cause pollution. those stuffs may be replaced with reusable ones; such as cloth patient bib, reusable cup, cloth head rest covers, reusable metal suction tips, and cloth operator and sterilization methods.



WHAT ARE THE ACTIONS THAT HAVE BEEN TAKEN REGARDING GREEN DENTISTRY?



Use of amalgam separator. as we all know, amalgam is constituted of mercury that is health-endangering. currently, it has been predicted that dentists contribute 3-70% of total mercury pollution to waste treatment facilities. by the use of amalgam separator, it enables the mercury filling material to be prevented entering water supply, thus limiting its amount that enters the environment's waste water management facilities





WHAT ARE THE **MOST SUCCESSFUL** GREEN DENTISTRY CAMPAIGNS YET? EARLIER EVENTS?

By International Associations :



GREEN MY DENTIST BY ECO-DENTISTRY ASSOCIATION

Simple campaign for patients to educate their dentist by sharing materials from the Eco-Dentistry Association website to urge them to practice greener dentistry.

SAVE 90 A DAY BY ECO-DENTISTRY ASSOCIATION

Simple campaign urging general population to sign a pledge and spread awareness about saving water while brushing

PHILLIPS DENTAL CARE RECYCLING PROGRAMME BY PHILLIPS & TERRA CYCLE

Campaign that enables people to collect all their old dental health equipment in exchange for discounts on new Phillips electric brush deals.

COLGATE ORAL CARE RECYCLING PROGRAM

TerraCycle and Colgate have partnered to create a national recycling program for all brands of used or empty oral care products and packaging.

WHAT ARE THE MOST SUCCESSFUL GREEN DENTISTRY CAMPAIGNS YET? EARLIER EVENTS?

By Local Associations :



PALESTINIAN ASSOCIATION OF DENTAL STUDENTS (PADS AQU)

Awareness poster + Facebook live about environmental dentistry

PAKISTAN ASSOCIATION OF DENTAL STUDENTS (PADS)

Multiple awareness posters on social media +
Webinar on "Green Dentistry : an approach towards sustainability"

RDHEDUCRATE

Multiple informative posters about switching to eco-friendly oral hygiene aids on Instagram

UNIVERSITY OF MICHIGAN SCHOOL OF DENTISTRY WITH TERRACYCLE

Set up a glove recycling program.

JADS (JORDANIAN ASSOCIATION OF DENTAL STUDENTS)

Did posters and video to promote Green dentistry in addition to collaborating with De-litter initiation to clean up the streets.

WHAT ARE THE MOST SUCCESSFUL GREEN DENTISTRY CAMPAIGNS YET? EARLIER EVENTS?

By Individuals :

GREEN DENTISTRY APP BY DAVINDER & SUBPREET

Paid app to help individuals switch to a greener way of maintaining their oral health.



HOW TO GET INVOLVED ?

BE PROACTIVE

- 1 Implement an environmentally friendly sterilization program.
- 2 Install an amalgam separator.
- 3 Get rid of aerosol products.
- 4 Plan the office layout to maximize natural light and ventilation.
- 5 Walk, bike or take public transportation to work.
- 6 Consider stocking all-natural oral care products, from toothpaste to mouthwash.
- 7 Sign up for your energy company's summer energy savings program.
- 8 Partner with businesses that have sustainable principals, such as a green bank, a recycling service or a green architect/engineer to help with office design.

HOW TO GET INVOLVED ?

- 9 Send appointment reminders on recycled paper or through email or text message.
- 10 Consider installation of linoleum for flooring.
- 11 Purchase organic or eco-friendly scrubs.
- 12 Carpool to work with colleagues.
- 13 Request to be removed from receiving office junk mail.
- 14 Put indoor plants around the office.
- 15 Bring your meals to work in reusable containers.
- 16 Convert heating and cooling return-air vents from ceiling return-air vents in the summer to floor return-air vents during the winter.
- 17 Hand out patient giveaways in degradable plastic bags

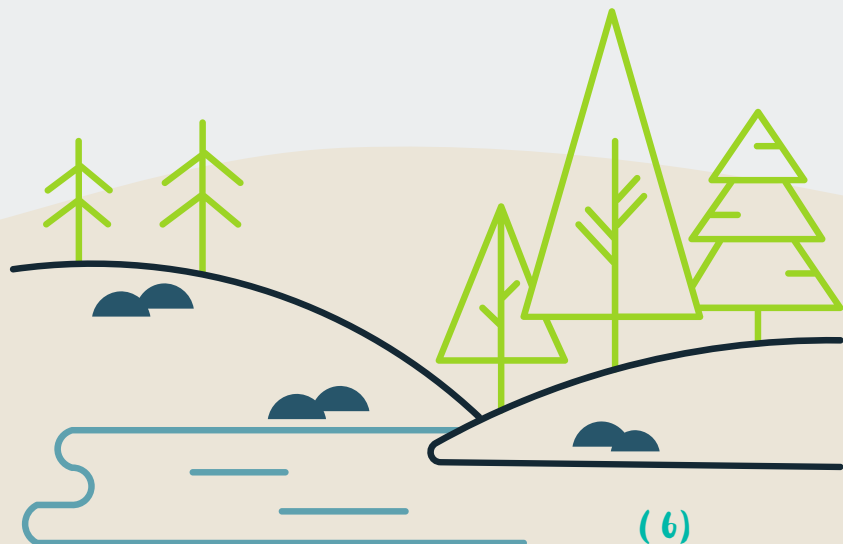
INSTALL ENERGY-EFFICIENT PRODUCTS

- 1 Add a dimmer lighting system, which saves electricity and only uses as much light as needed depending on the office's natural light.
- 2 Save on your heating bill with a programmable thermostat.
- 3 Purchase reflective glass (low-E) windows.
- 4 Install mini-fluorescent fixtures.
- 5 Invest in a central vacuum that uses no water and has an amalgam trap.
- 6 Switch to water-saving toilets.

HOW TO GET INVOLVED ?

- 7 Use sensor-operated faucets and/or low-flow faucets and fixtures.
- 8 Install energy-efficient appliances (washer, dryer, dishwasher, etc.).
- 9 Invest in solar electric panels and water heaters.
- 10 Hook up motion detectors and timers for lights.
- 11 Hang hot air dryers in washrooms instead of paper towels.
- 12 Plug in smart power strips for electronics.
- 13 Cover chairs with organic bamboo and organic cotton.
- 14 Ensure you're using environmentally friendly cabinetry (no added urea-formaldehyde).
- 15 Use biodegradable ceiling and/or wall panels.
- 16 Add a trash compactor.
- 17 Caulk your office windows, apply weather-stripping or replace them with energy-efficient models.
- 18 Replace your old 30-gallon hot water heater with an efficient 10-gallon model.

• SAVE
EARTH!



HOW TO GET INVOLVED ?

SWITCH TO GREEN PRODUCTS

- 1 Buy paint that does not contain Volatile Organic Compounds (VOCs).
- 2 Purchase office furniture made from recycled or reclaimed wood.
- 3 Choose reusable stainless steel high- and low-volume, surgical/endodontic suction tips as an alternative to disposable plastic.
- 4 Stock reusable glass irrigation syringes as a substitute for disposable plastic.
- 5 Order biodegradable disposable cups instead of regular paper cups.
- 6 Use only chlorine-free, high post-consumer recycled paper products instead of traditional paper products.
- 7 Make it a mandate that disposable, plastic or paper barriers are only used when necessary.
- 8 Switch to stainless steel prophylaxis heads with disposable prophylaxis-containing cups.



HOW TO GET INVOLVED ?

SWITCH TO GREEN PRODUCTS

- 9 Buy LCD computer screens instead of CRT screens.
- 10 Place water-free hand disinfectant around the office.
- 11 Drink tap water, not bottled water.
- 12 Use shredded paper for packaging material.
- 13 Purchase recyclable letterhead stationery, envelopes, fax paper and business cards.
- 14 Hang LED or electroluminescent (LEC) exit signs to improve energy efficiency.
- 15 Use ceiling fans to promote air circulation and reduce the need for air conditioning.
- 16 Choose less harmful surface disinfectants to clean and sterilize.
- 17 Purchase sealants, adhesives and other restorative materials in package sizes that allow all of the contents to be used during the procedure.



4Rs



REDUCE

Purchase of product with minimal packaging and use of reusable plastic container to minimize packaging garbage

- Purchase often used item such as prophylactic paste, mask, hand gloves in bulk.
- Request supply companies to combine orders to cut down on shipping boxes.
- Implement digital technology for imaging impression, cancer screening, charting, and marketing.
- Use steam sterilization eliminating the use of chemicals



REDUCE

Prolong the use of times, extending the life cycle of an item by re-using it eliminated the need to transport it away

4 RS: REDUCE, REUSE, RECYCLE, RETHINK

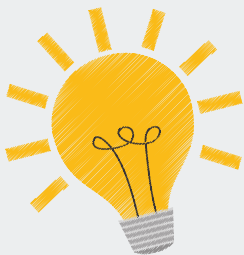
- Switch to cloth sterilization bags and patient barriers.
- Cloth lab coats instead of paper ones.
- Reusable face shield.
- Reusable shipping box.
- Stainless impression tray, suction tips.
- Washable dishes.
- Reuse rechargeable batteries.



RECYCLE

Reduce overall contamination of the environment.

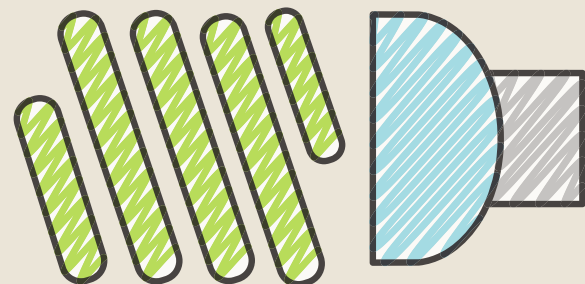
- Recycle the big five: aluminum, glass, plastic, paper and steel.
- If traditional x-rays are taken, recycle lead foil, fixer and developer solutions.
- Recycle or refill toner cartridges.
- Clearly label recycling containers in accessible areas for patients and staff to encourage recycling and reuse.
- Change and recycle vacuum pump filter screens at least once per month or as directed by the manufacturer.



RETHINK

CONSERVE ENERGY AND OTHER RESOURCES

- 1 Replace high-energy consuming office lights with energy-efficient fluorescent lighting.
- 2 Research local, state and federal tax incentives for earning Leadership in Energy & Environmental Design (LEED) certification.
- 3 Turn off lights when you leave the room.
- 4 Turn off your computer when you leave the office for the day.
- 5 Go paperless: Use a virtual office system for patient charting, billing and radiography.
- 6 Consider using windmill-generated electricity for power consumption.
- 7 Run the dishwasher only when it's full.
- 8 Pay practice bills online.
- 9 Cut back on the number of printers in the practice and print double-sided, when possible.
- 10 Run a practice energy audit.
- 11 Remove TVs from the waiting room.
- 12 Use digital versions of journals and publications.
- 13 Eliminate electronics that sleep on a standby setting; they continue to pull a current even when "turned off".
- 14 When you wash your hands, turn the water off while you lather.
- 15 Consider solar chargers for charging cellular phones, PDAs, laptops, etc.



EDUCATE YOUR STAFF AND PATIENTS

- Teach your patients to turn off the faucet when they brush.
- Provide brochures to patients that contain green tips in the waiting room.
- Post signs in practice restrooms and break areas encouraging water conservation.



(6)

HOW TO GO GREEN IN DENTAL PRACTICE?

OFFICE

- Green building which is the practice to increase efficiency with which focus on the use of natural materials.
- Electronic in office → shut down when not in use to save electricity.
- Paper → reduce paper usage in office.
- Digital X-rays → digital x-rays reduce radiation exposure compared to traditional x-ray. This usage reduce plastic and lead waste.
- Waterless vacuum system.
- CAD/CAM system.
- Infection control → replace chemical based sterilization with steam sterilization to reduce air and water pollution.

(7)

HOW WE AS IADS VISUALIZE AN IDEAL DENTISTRY EVENT TO BE?



In today's modern world, it is necessary to understand the importance of being eco friendly in every aspect which also includes dental practice as it has a big impact on the environment and ecosystem due to the large amount of waste produced by various dental procedures along with excessive use of water and

electricity, which specifically emphasis the need to move towards 'Green dentistry'. We as IADS would like to have an event that would educate more people especially dental students and the dentists about the importance of green dentistry to achieve waste reduction, energy conservation and pollution deduction with the use of latest techniques and procedures thereby protecting the environment and the human from the menaces of rapid urbanization in developing countries. We would like to educate dentist and dental students to understand the concepts of green dentistry as green dental practice encompasses water and energy conservation, usage of non-toxic products, waste reduction and management, and abolition of high risk contagions that adversely affect the human race as well as the environment, and encourage 'green' products.



HOW IS LIFE WITH GREEN DENTISTRY ENVISIONED?

A future with Green Dentistry ensures that we as a Dental Fraternity have done our part in curbing the current climate crisis by reducing the waste and practicing in a more sustainable fashion.

The major changes envisioned by implementation of Green Dentistry practices can be divided as the following :

CHANGES BY COMPANIES PRODUCING DENTAL PRODUCTS :



Packaging of all consumer products such as dentifrices & oral hygiene aids done plastic-free and materials used must be easily reused/recycled or biodegradable.



Packaging of all instruments and armamentarium used by Oral Hygiene Professionals must also be plastic-free or with reused/recycled or biodegradable materials.



Tooth brushes (Hand/Electric), floss and other oral hygiene aids can be made of biodegradable or recycled/recyclable material.

For example - Bamboo Toothbrushes, natural fiber made floss, recyclable electronic flossing and brushing devices.



Other accessories required for the dental set-up can also be switched to plastic-free/metallic (i.e Stainless Steel sterilizable) materials such as trays, suction tips, holders, cups, etc.



Personal Protective Equipment (drapes, surgical gowns, etc.) and instrument pouches that can be reused (cloth based which is autoclavable) or recycled.

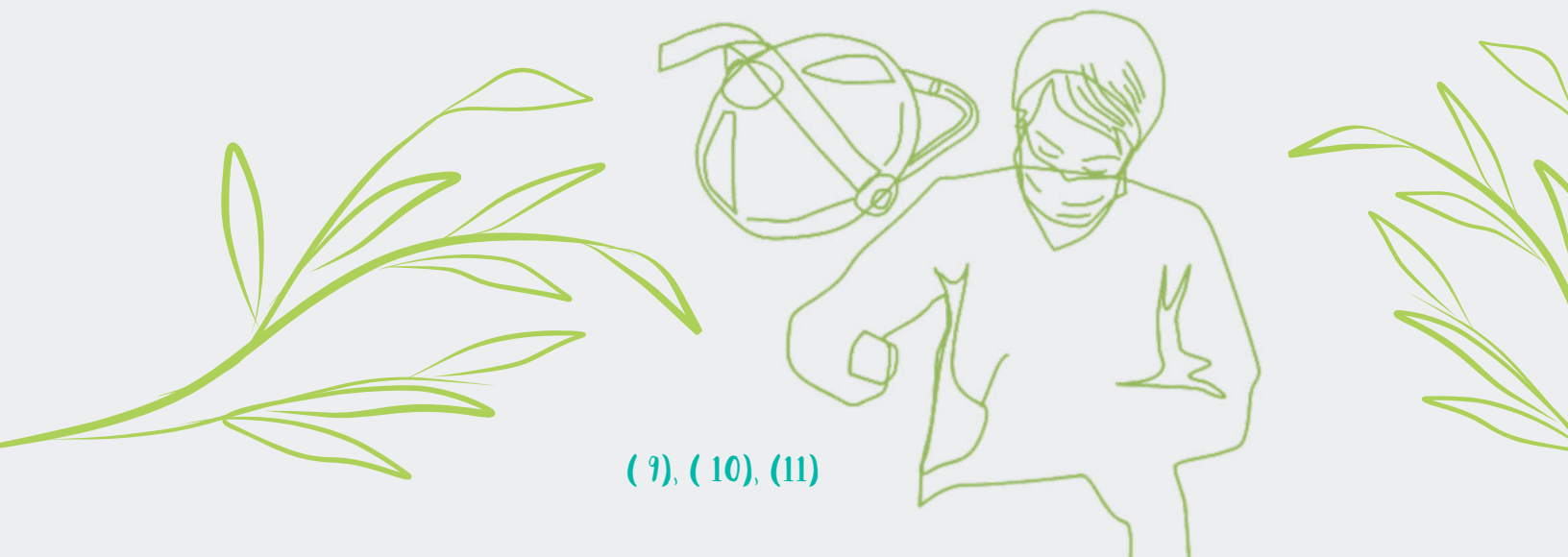


Use of hazardous chemical free disinfectants that are bio-enzyme based to cut the release of airborne irritants.

HOW IS LIFE WITH GREEN DENTISTRY ENVISIONED?

CHANGES ADOPTED BY DENTIST

- Establish a sustainable practicing environment with eco-friendly construction of the set-up.
- Renewable energy powered Clinic.
- Proper water filtration set-up with rainwater harvesting and recyclable water system.
- Procurement of eco friendly products for administrative set-up.
- Digitalize as many processes as possible from the administration to clinical practices such as:
 - 1.e-invoice/patient records
 - 2.paper-less patient communication system
 - 3.digital dental equipments (RVG, OPG etc), CAD-CAM process
- Prevent use of eco-hazard materials for treatment.
- Proper waste disposal of sharps and appropriate segregation of waste.
- Adequate exhausts with HEPA air filters/purifiers.
- Use low energy consuming bulbs and lighting.
- Switch to reusable materials like cloth towels, cloth drapes etc.



HOW IS LIFE WITH GREEN DENTISTRY ENVISIONED?

SCOPE FOR INNOVATION

Multiple research and development groups/organizations have a scope of developing new innovations to ensure that instruments & other materials used in Dentistry are completely eco-friendly, non-toxic or biodegradable.

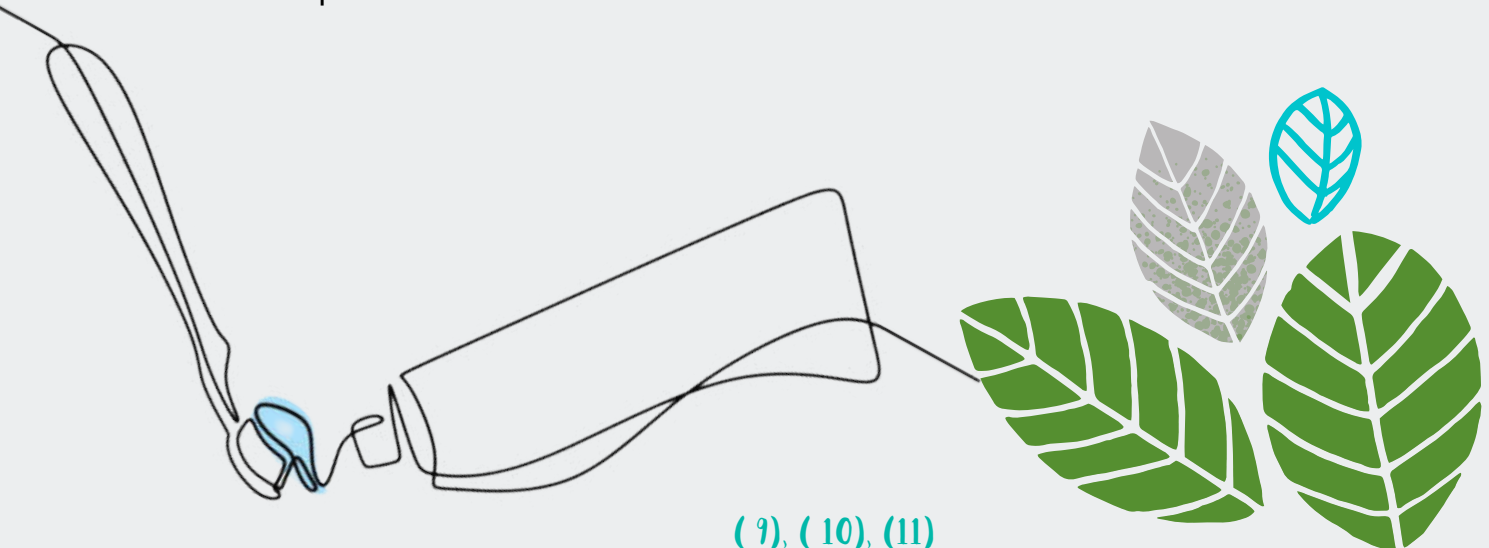
WELLNESS BASED DENTISTRY

1. Practicing wellness- based model of treatment which focuses on:

- Prevention
- Early detection
- Less invasive treatments.

2. Green future of dentistry envisions the wellness based model of the health sector. Following are the wellness-based modalities that are considered to be a part of green dentistry:

- Laser diagnostic tools that permit you to detect caries earlier than with the naked eye.
- To help dental patients relax naturally, use aromatherapy.
- To increase the oxygenation, use live, green plants in the clinics.
- To remove particulates from the air, HEPA UV germicidal, in-operatory air purifiers can be used.



(9), (10), (11)

HOW IS LIFE WITH GREEN DENTISTRY ENVISIONED?

TAKE ACTION

- Through the help of NGOs & Non-profit Organisations, population & Dental Community is made aware of the benefits and importance of Green Dentistry
- Action taken to urge Governments to make policies to support eco-friendly and sustainable products.
- A community of certified ([Eco Dentistry Association's GreenDOC™ Dental Office Certification Program](#)) Eco-Dentist Leaders working continuously to ensure that this Green Dentistry movement sustains until every Dental community adapts it across the world.



REFERENCES



GREEN DENTISTRY
CAMPAIGNS



INFORMATION

