

November 26, 2021

Dr. Jill M Taylor DMD  
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Dear Dr. Taylor,

Attached is the formal report regarding green initiatives within The Tooth Gallery dental office. Research was conducted on current waste management techniques and green initiatives used within the office. It was concluded that much of the current green implementations are ineffective due to lack of staff awareness or commitment to the cause.

Based on the findings, an individualized action plan for the office is recommended. This plan needs to be regularly analysed for newer and better options coming available on the market. Staff should receive training in waste management techniques, placing much importance on their recycling and supply ordering habits.

Thank you for taking the time to read this report and for allowing me to conduct this research. If you have any questions, please reach out to me at [kargarn@student.ubc.ca](mailto:kargarn@student.ubc.ca).

Respectfully,

*Kgarneau RDH*

Karissa Garneau RDH

# **Improving Green Initiatives at The Tooth Gallery Dental Office – Formal Report**

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## **Abstract**

Environmental practices of organizations and businesses are more and more scrutinized by the general public as they are expected to make efforts to remain “Green”. Often businesses may implement green initiatives and there are efforts made towards sustainability, but in the end they are ineffective or difficult to maintain. Research was conducted on staff members of a dental office by way of survey distribution and follow-up interviews. Staff were observed to be unaware of green implementations and generally uninvolved in waste management techniques within the office. This report concludes that current practices need to be analysed regularly in order to find the current best environmental practices. An individualized environmental action plan is required for successful implementation of greener initiatives. Following implementation of revised green initiatives at The Tooth Gallery dental office, it is anticipated that other offices will be motivated to make conscious choices to be more environmentally friendly with the products and services they chose.

## Introduction

Waste management is a growing ecologic concern and dental offices are significant contributors to environmental waste (Muhamedagic, 2009). Whereas some efforts for repurposing can be made, a large portion of dental materials available on the market are not designed to be reused or recycled. Waste containing metals and hazardous substances require proper disposal due to standards and guidelines set by the ministry of health. While single-use plastics, disposable items, and plastic wraps and barriers have only increased in popularity following the COVID-19 pandemic. Dental services involving the manipulation of oral tissues often produce moderate amounts of biological fluids such as blood and saliva and require the use of dental materials to be cleared from the mouth. Cotton gauze and single-use plastics are the materials that account for the most significant amount of dental waste (Duane, 2019).

An important first step to improving green initiatives in a dental office is to create an individualized, environmental action plan. The office will have the best success in maintaining better environmental choices by having all members of the team following the same protocols. The services the company uses and the products frequently ordered need to be analyzed and compared with other options available on the market. Some products such as suction tubes and client protective wear have reusable alternatives. By making thoughtful choices to order more sustainable products and consider how each product can be best utilized, the Tooth Gallery can reduce its ecological footprint. Primary sources of data will be collected from surveys distributed to staff members of the dental office. Open-ended questions are asked to allow subjects to provide further clarification to the questions in their own words. The inquiry included questions regarding the office's current use of products that produce the most waste

as well as current waste management practices. Secondary sources of data involved follow-up interviews and reference to publications regarding environmental waste in dental offices. This report aims to assess how dental offices can reduce their ecological footprint by way of implementing sustainable greener initiatives.

## **Report**

Data collected demonstrates the need for improved green initiatives within the specified dental office. Even though this office in particular has implemented a number of environmentally friendly practices, many staff are not aware of them or simply do not use them. The current practices include handing out bamboo toothbrushes and paper bags instead of offering plastic and turning off all equipment and lights before leaving the office for the evening. The office has also purchased a personal protective equipment (PPE) recycling bin through the company Terracycle which reduces the amount of treatment gloves and face masks thrown in the regular trash. There are recycling bins in a back room and staff are encouraged to reduce and reuse paper whenever possible. The cleaning of non-treatment areas is handled by an outside cleaning company and staff are generally uninvolved in cleaning protocols.

## **Data**

Over 50% of participants rated the green initiatives at The Tooth Gallery a 3 or lower. The office has confirmed that certain environmentally friendly practices are available to staff, but data demonstrates that that does not guarantee that they are being utilized. For example, many staff at the office do not dispose of their used treatment gloves in the PPE recycling bin. Staff are expected to recycle, but many recyclable products end up in the regular trash. There is

a wasteful approach to the amount of disposable supplied ordered, especially perishable items such as polishing paste, fluorides, and some restorative materials. (Duane, 2019).



Figure 1

A majority of staff reported that they only give out the client take-home bag if the client requests it. The office is mostly paperless; documents are printed and sent home with the client only if requested. The average number of heavy-duty garbage bags removed from the dental office in a typical week varies from 2-6 bags. Staff have not received any training in waste management and are mostly unaware about general office cleaning procedures as they are handled by an outside cleaning company that comes in once a week. Cleaning supplies are stored in the laboratory room and used product is disposed of down the drain. The products used are ordered in bulk and have not been assessed for factors such as environmental safety and cost. All of the respondents reported properly disposing of hazardous waste and metals; these practices seem to be the most well-maintained. See Figure 1 for an overview of items that must be placed in the biohazard disposal bin. All of the respondents described a willingness to share responsibilities and push for better, more sustainable products.

## Analysis

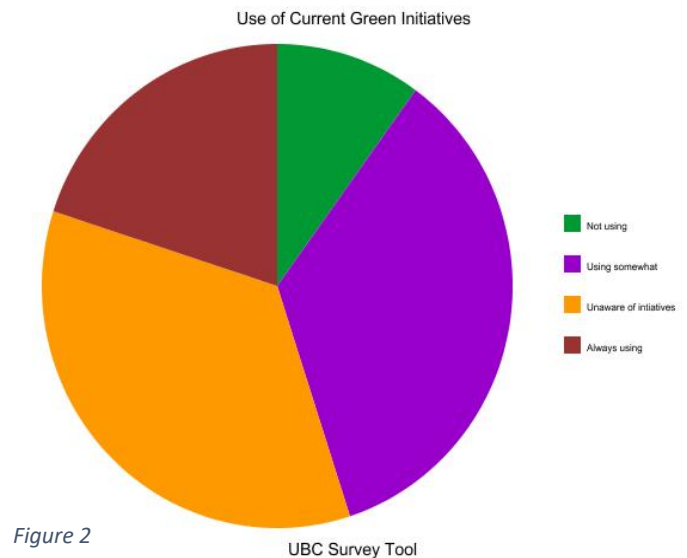
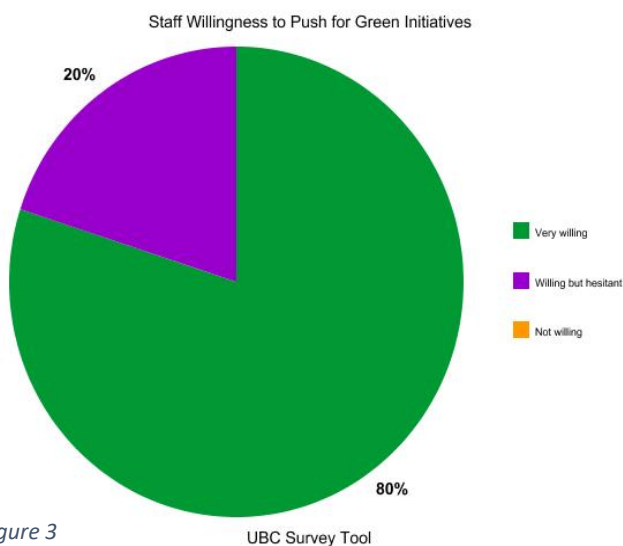
Paper products and single-use plastics are the items most commonly disposed of within the dental office, and account for the largest amount of dental waste. Contaminated biomedical wastes, items that have had contact with blood or saliva, are classified as a non-hazardous substance in Alberta (Alberta Dental Association & College, 2015). Heavily soaked products should be separated from regular waste and placed in the biohazard disposal unit located in all dental offices. The largest offender of waste in the dental office becomes evident after observing the amount of disposable gauze and plastics used during a single dental treatment. For example, a reasonable amount of cotton gauze should be prepared for a client-specific treatment such as a tooth restoration. Any extra supplies taken out during set-up must be disposed of even if they haven't been used due to the risk of cross-contamination. Barriers used to cover commonly touched treatment areas are important infection control procedures, but they also need to be used only when they are actually needed. A smooth surface without any irregularities or buttons does not benefit from the added infection control layer so this plastic use is unnecessary and wasteful.

The options for reducing the volume of soiled paper product waste are minute, but it is possible to rely more heavily on other options for removal of the biomedical waste, such as saliva ejectors. However, plastic low-volume and high-volume ejectors and plastic air-water syringe tips are most commonly ordered due to their lower price point and apparent ease of use. Yet there are excellent reusable alternatives available on the market, such as sterilizable metal ejectors and syringe tips. Opting for these alternatives reduces overall costs as materials



need to be ordered much less frequently. Perishable materials should be ordered on an as-needed basis, but all other supplies should be assessed for the best available reusable option.

Staff described being willing to push for greener, more sustainable products. However, the same staff are mostly unaware of current green implementations. Figure 2 demonstrates staff willingness to push for green initiatives and it is evident that staff are very willing to make changes. Figure 3 describes staff use of green initiatives that have already been implemented in the office. The results are fairly equal in that nearly half of the staff on the team are not using or are unaware of the current initiatives. This is why an individualized, environmental action plan is necessary in order to implement successful green initiatives within a dental office. This plan needs to regularly be assessed and updated to fit the office's evolving needs. Dental offices can greatly reduce the amount of waste produced by employing the three main elements of waste management: Reduce, Reuse, Recycle (Alberta Environmental Protection, n.d.). Staff should regularly search for new or more obscure products and services that they can utilize to reduce the office's ecological footprint.



## **Conclusion**

It is evident that dental offices produce a large ecological footprint. There are more sustainable choices that can be made to reduce environmental waste and lower carbon emissions. By implementing a successful environmental action plan in this dental office, other dental professionals may be encouraged to make greener choices in their own offices.

## **Recommendations**

- As a starting point, sitting down and critiquing current environmental practices
- Being open with the general public about the office's current environmental practices
- Determining areas that would benefit from a change by asking staff members or clients
- Creating an individualized plan with a list of environmentally friendly action items for staff to take
- Reducing the amount of supplies wasted during dental treatment
- Ordering perishable items as needed but reusable items in bulk to reduce overall fees and waste
- Periodically reassessing how implemented practices are working and modifying plan as needed and as newer and better practices come to light

## Works Cited

1. Muhamedagic B, et al. "Dental Office Waste – Public Health and Ecological Risk" *Mater Sociomed.* 21(1): 35–38 (2009),  
<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3796776/>.
2. Duane B, et al. "Environmental Sustainability and Waste Within the Dental Practice" *BDJ Team*, 6, 21–29 (2019 June 7), [www.nature.com/articles/s41407-019-0106-6?error=cookies\\_not\\_supported&code=5cbedfc4-b8ea-4fee-97b2-0b28efe03de0](http://www.nature.com/articles/s41407-019-0106-6?error=cookies_not_supported&code=5cbedfc4-b8ea-4fee-97b2-0b28efe03de0).
3. "Guide for Best Practice Management of Dental Office Waste." Alberta Dental Association & College, (2015). <https://www.dentalhealthalberta.ca/wp-content/uploads/2019/11/Guide-for-Best-Practice-Management-of-Dental-Office-Waste.pdf>.
4. "Waste Minimization – Dentists, Dental Specialists & Denturists." *Alberta Environmental Protection.* (n.d.), <https://open.alberta.ca/dataset/040e170c-a42c-4f3c-8e7b-087a9ddf7524/resource/50a76870-324a-45e1-b977-e095ee62efa5/download/wasteminimization-dental-jul1999.pdf>.

Link to survey [https://ubc.ca1.qualtrics.com/jfe/form/SV\\_eEukMkeBhcSDV7o](https://ubc.ca1.qualtrics.com/jfe/form/SV_eEukMkeBhcSDV7o)

## **Appendix**

### Survey Questions:

1. What are you currently doing to reduce environmental waste in the dental office?
2. What kind of training has staff received in waste management?
3. What kind of waste management/cleaning services are being used in the dental office?
4. How does the dental office clean non-treatment areas: floors, waiting room, bathrooms, staff areas? Where do cleaning products get disposed of after use?
5. How many garbage bags on average are removed from your dental office in a typical week?
6. How does the dental office dispose of hazardous waste and silver/mercury/lead?
7. How does the dental office dispose of unsoiled, used treatment gloves and masks?
8. How well managed are green initiatives in the dental office?
9. Describe your willingness to share responsibilities for ordering supplies and push for better, more sustainable products.

### Interview Questions:

1. How would you rate current green initiatives in the dental office and why?
2. What products used in the dental office create the largest amount of waste?
3. What are some issues related to recycling in a dental office?

### Figure 1:

Drna. "Dental Practice Waste Management Tips | Dental Recycling of North America." DRNA, 17 June 2017, [www.drna.com/blog/39/dental-practice-waste-management-tips.php](http://www.drna.com/blog/39/dental-practice-waste-management-tips.php).

### Figures 2 & 3:

Karissa Garneau. "Current Environmental Practices of the Tooth Gallery Dental Office." UBC Survey Tool. [https://ubc.ca1.qualtrics.com/jfe/form/SV\\_eEukMkeBhcSDV7o](https://ubc.ca1.qualtrics.com/jfe/form/SV_eEukMkeBhcSDV7o).