

GREEN DENTISTRY “WAYS TO GO GREEN AT THE DENTAL OFFICE”

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ABSTRACT

Proper handling of biomedical and dental waste management is an essential responsibility for the dental profession. This can be achieved by reducing waste, improving efficiency and lowering pollution. A green dental office can use reusable towels, biodegradable cleaners and high efficiency machines. The office should have an environmentally sustainable method of disposing of toxic waste. It can also use paperless records to lower its paper consumption. All of these steps will make the overall impact of the dentist office less damaging to the environment.

INTRODUCTION

Environment pollution is the burning topic today in the world. Pollution shows health hazards in human being, animals and aquatic life. Directly or indirectly every human being is responsible for this, and the dentistry is not an exception for this.¹

Hospital waste is not only infectious but also hazardous and contributes significantly to environment pollution.² It is ironical that we as dental professionals, providing dental care in hospitals, clinics that bring relief to the sick can create health hazards due to improper management of waste generated in those places.³ Take the green route is the motto of this century. The need of the hour is to develop product or by products that can be recycled. Thus, the preferred method of disposal for many consumer and industrial waste streams (paper, wood, plastic, metals, chemicals etc.) is recycling.

In most industrial setting, including professional such as dentistry most heavy metals like elemental mercury and silver can be easily collected and recycled. If not to be recycled, these metals must be disposed of as hazardous waste.⁴

CLASSIFICATION⁵

NON-HAZARDOUS WASTE:

This constitutes about 85% of the waste generated in most healthcare set-ups. This includes waste comprising of food remnants, fruit peels, wash water, paper cartons, packaging material etc.

HAZARDOUS WASTE:

(A). POTENTIALLY INFECTIOUS WASTE:

Over the years different terms for infectious waste have been used in the scientific literature in regulation and in the guidance manuals and standards. Those include infectious, infective, medical, biomedical, hazardous, red bag, contaminated, medical infections, and regulated medical waste. All these terms indicate basically the same type of waste,

although the terms used in regulations are usually defined more specifically(6) It includes.

1. Dressings and swabs contaminated with blood, pus and body fluids.
2. Laboratory waste including laboratory culture stocks of infectious agents.
3. Potentially injected material. Excised tumours and organs, extracted teeth etc.
4. Potentially infected animals used in diagnostic and research studies.
5. Sharps which include needle, syringes blades etc.
6. Blood and blood products⁵

(B). POTENTIALLY TOXIC WASTE:

1. Radioactive waste: Includes waste contaminated with radionuclide;
2. Chemical waste: It include disinfectants (hypochlorite, gluteraldehyde, iodophors, phenolic derivatives and alcohol based preparation), X-Ray processing solutions, monomers and associated reagents, base metal debris(dental amalgam in extracted teeth).
3. Pharmaceutical waste: It includes anesthetics, sedative, antibiotic and analgesics etc.

1. DENTAL WASTE OF ENVIRONMENTAL CONCERN:

1. Amalgam: Dental amalgam particles are a source of mercury, which is known to be neurotoxic and nephrotoxic.⁸ Mercury vapor or elemental mercury, is the most significant form for the dentist's and patients health care concerns.

Precautions during preparing placement of Amalgam:

1. Instead of manual manipulations only precapsulated amalgam always should be used.
2. The capsules should be recapped after use and stored in closed containers for recycling.
3. Avoid skin contact with mercury or freshly mixed amalgam.

4. High-volume evacuation systems must be employed during finishing or removing amalgam restoration.

5. After condensation, the scrap should be collected and stored in water, glycerine or X - Ray fixer in a tightly capped jar (almost filled with liquid to reduce the space where mercury can collect).

6. Rubber dams, high volume evacuation and water cooling should be used to reduce the vapor released during removal of old amalgam restorations.

7. Amalgam scrap should be disposed of as hazardous waste or should be sent to a recycler. Waste mercury is disposed similarly.

8. Since amalgam decomposes on heating; amalgam scrap should not be disposed in the waste that could eventually be incinerated.⁹

2. X-RAY WASTES:

(a)X-Ray fixer solutions: is considered hazardous waste because of high silver content. It has to be disposed off as a hazardous waste or sent to silver recovery systems.

(b)Developer solutions can go into waste water drain. X-Ray developer fixer should not be mixed. If mixed they should be separated and treated independently.

(c)X-ray lead foil/shields: Lead foils and shields contain pure lead. Lead is treated as hazardous waste or recycled for scrap metal content. Dentists can use digital X-Ray equipment, which eliminates need for processing chemicals. In addition, digital X-Ray's reduce patient radiation exposure.¹⁰

3. PLASTICS: Disposable syringes, bottles, surgical gloves are examples of plastics used in dental clinic. Once hailed as a wonder natural plastic is now a serious environmental and health concern due to its non-biodegradable nature. Burning of plastics releases carcinogens like dioxin and furan. Designing eco-friendly, biodegradable plastics are the need of the hour.

4. BLOOD-SOAKED MATERIALS: must not be discarded with regular garbage. They should be separated from other wastes, collected in yellow liner and stored for fewer than 4 days. For any longer, the material must be refrigerated (below 4°C). Once a certain amount has been collected, a biomedical against waste carrier must be contacted for disposal.

5. DENTAL LABORATORY WASTE: like disposable trays or impression materials may be considered general waste and treated accordingly.

6. DISPOSAL OF SHARPS: like burns, blades, orthodontic wires should be done in puncture resistant containers.

- Black bags should be used for non-risk waste and can be transported to a land-fill. Red bags

are used for disposing sharps, tubing, gloves blood bags, plastic bottles, syringes etc.

- Yellow bags are used for waste with significant health care risk, such as human waste, cotton, extracted teeth etc.
- Blue bags are used for blades medicine vials/ampules or glass bottles etc.

CONCLUSION

Lack of knowledge and increased cost of waste management are important issues that impend waste management. A student initiation for environmentally responsible dental practice should start from dental education stage only, so that awareness of disposal of dental waste can be carried out in future. Dentists have power to create a cleaner, greener planet for future generations.

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