

Hazardous waste management in Dentistry**Anuradha P, Amrita Rastogi**

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ABSTRACT:

As a dental professional we are exposed as well as generate various hazardous waste. These harmful materials include various materials like amalgam scrap, silver, anatomical and non anatomical wastes and other waste including sharps, disinfectants, chemicals like fixer etc.

Realizing this, we can begin to take measures to minimize the production of these Wastes and their potential environmental effects. Proper guidelines must be followed in order to handle various hazardous waste material, which includes proper collection, segregation and disposal of wastes.

Keywords: Amalgam, Bio medical wastes, Hazardous Waste, X-ray.

INTRODUCTION

Dentists like other health professionals are exposed as well as generate various hazardous waste materials which are harmful to them as well as to the environment if not disposed of properly.¹

These harmful materials include various kind of chemicals like x-ray developer, fixer, disinfectants etc., amalgam's scrap, infectious materials like blood soaked cottons, infectious tissues etc., lead foils, fluorescents tubes etc. and various kinds of sharps.^{2,3} All dental practitioners, must recognize that being in this noble profession which involves in promoting and enhancing oral health and well being its their responsibility to take effective measures to reduce the production of pontifically harmful and hazardous wastes generated by them.⁴

So, Dental waste management can and should be considered an integral part of the broader delivery of public health services and we can measures to minimize the production of these wastes and their potential environmental effects.

BIO MEDICAL WASTES MANAGEMENT

According to the Bio-medical waste rules 1998 of India, Bio – Medical Waste is defined as

“Any solid, fluid or liquid waste, including its container and any intermediate product, which is generated during the diagnosis, treatment or immunization of human beings or animals, in research pertaining there to, or in the production or testing of biological and the animal waste from slaughter houses or any other like establishments.⁵

In dental practices, bio medical wastes includes wastes generated during diagnosis, treatment or tissue culture, during surgical procedure etc. it may include, solid waste, sharps, discarded medicine, anatomical wastes, chemical wastes etc. these wastes poses threat to the dentist as well as patients or people around the workplace if not segregated and disposed of properly.⁶

All biomedical wastes must be color coded and marked with the WHMIS (Workplace Hazardous Material Information System) biohazard symbol. Biomedical wastes can only be transported by a company with proper certification.⁷

AMALGAM WASTE MANAGEMENT

Mercury is a well known potential hazardous material and its main source in dental practice is use of amalgam. Mercury is a

bioaccumulation material⁴ and has toxic effect which is both neurotic and nephrotoxic.⁸

Health related hazards due to amalgam is related to both the form of mercury i.e. liquid or vapor from which it can be absorbed through the alveoli in the lungs and through gastrointestinal tract.⁹

Types of amalgam waste generated at dental clinics:-

- Elemental amalgam- it includes amalgam which is released from dental amalgam alloy.
- Dental amalgam, scrap. – It includes particle which have not come into contact with the patients.
- Amalgam waste – it includes particle which have come in contact with patients (i.e. during restoration, or removal of restoration).
- Amalgam Sludge – it includes fine particles present in the dental office waste water, commonly trapped in chair side traps and vacuum filters.^{4,10,11}

Practitioners are advised to use precapsulated amalgam to avoid spill along with alternative use of other type of restorative materials like composite resin, ceramic or other metal alloys) can be used, when indicated and store scrap amalgam using sponge type Mercontainer TM. Empty capsule must be disposed in garbage.^{12,13}

Also, using gloves, mouth mask and glasses while cleaning the suction traps, mixing amalgam is important to avoid direct or indirect contact with amalgam.¹³

Dental offices should be well ventilated with fresh air exchange and outside exhaust.

According to American Dental Association regulations, mercury contaminated materials should not be placed in medical waste bags because these are burned and mercury becomes vaporized.¹⁴

SILVER CONTAINING WASTES MANAGEMENT

In Dental offices, fixer which is used to develop x-ray films is a hazardous material. It

contains approximately 400mg of silver per liter.¹³ Silver is a heavy metal if disposed off in an improper way can enter in our water system and can contaminate soil and ground water. Unused film should be recycled.⁴

Use of de-silver fixer solution and utilization of digital x-ray unit can minimize the need of fixer solutions. Care must be taken to insure that fixer should be pour down in the sewer or septic system provided it is diluted with water.¹³ Alternatively, the waste can be collected by a registered agency certified to carry and manage the waste.

LEAD CONTAINING WASTES MANAGEMENT

Lead foil- lead foil is a kind of byproduct of radiography as lead shield which is present in every film packet. Lead foils must be collected from x-ray packet for recycling an disposed as a hazardous waste and should not be put in any trash.

Lead Apron- dentist uses lead apron as a protection from the harmful radiations during radiography. Worn out aprons must be disposed of as hazardous waste as it contains lead and should not be thrown into regular garbage as it can contaminate water and sand.^{4,13}

Blood Soaked materials management:-

Wastes including blood soaked gauze and dripping blood are categorized under biomedical hazardous waste. Management is done by using a yellow color biomedical waste bag which is used to collect the non-anatomical waste. Double bag must be applied followed by proper labeling with a biohazard symbol. These wastes, after accumulation must be handled by certified biomedical waste carrier companies.¹⁵

GENERAL OFFICE WASTE MANAGEMENT

Other waste includes various sharp materials including needles, scalpels, reamers, broaches and other sharp objects that can cause a puncture wound, they should not be placed in the garbage.

Sharp wastes must be collected in a puncture resistant bag yellow/red and must be disposed using appropriate guidelines. It should be kept in a tight sealed lid container that cannot be labeled properly.^{13,16}

Emphasis must be made regarding practicing environmental friendly dental practice. Use of minimal packing products and reusable plastic containers can be practiced. Use of recycled materials and products along with proper disposal of chemical, disinfectants and sterilizing agents used in dentistry.

Also, waste including non hazardous wastes like paper, cardboard, aluminum, plastic etc can be minimized, reuse and properly disposed.

CONCLUSION

As a dentist, it's become our prime concern about kind of waste generated in our clinics, as we have a major responsibility towards community as well as environment. With the prevalence of various occupational hazardous along with diseases like AIDS and Hepatitis B, there should be adequate knowledge among health care workers and other personnel's working in health care institutes.¹³ Thus there is a need of making us aware of the various types of waste there generation, segregation, collection, transport, and final disposal.

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