

Recycling Mystery: Dental Appliances

□ Gemma Alexander □ January 9, 2019



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Braces, expanders, headgear, retainers, and eventually, dentures. Over a lifetime, that's lots of metal, plastic, and even precious metals and hazardous materials in our mouths. Except for the occasional broken retainer, most of our **dental** appliances are removed at the clinic. Where do they all go?

Hazardous Waste

Unfortunately, most of what lives in our mouths is worse than garbage — it's hazardous waste. Dentures and other such appliances naturally pick up a lot of oral bacteria. Steam sterilization uses a lot of water and electricity, while older sterilization methods can use chemicals like glutaraldehyde, formaldehyde, and alcohol. Some clinics may steam sterilize discarded appliances, but since many **dental** appliances are not reusable or recyclable anyway, most dentists and orthodontists dispose of them with contaminated medical waste like used gloves and other items that contact body fluids.

While disposed **dental** appliances are no more likely to be noticed in your garbage can than old toothbrushes, they are technically categorized as medical waste, which is banned from residential garbage service in many communities.

Complicated Plastics

Aside from the *ick* factor in second-hand teeth, nearly all **dental** appliances are custom made to fit an individual's mouth, so even with sterilization, reuse is not practical. Dentures and many retainers are generally made of acrylic or nylon resin and metal. Separating the multiple materials used in a single appliance would be difficult, and the amount of recyclable material recovered would not justify the cost. Most of the plastics used in appliances are not recyclable.

Molded plastic retainers are made from a variety of brand-proprietary plastic polymers, so it's impossible to know the exact composition. Even if municipal programs accepted medical waste, they cannot recycle plastic when the exact composition of the material is unknown.



WOULD THE SMALL AMOUNT OF METAL IN THESE RETAINERS JUSTIFY THE EXPENSE OF SEPARATING IT FROM THE PLASTIC? IMAGE: ADOBE STOCK

Metals

Many **dental** appliances — like braces, expanders, and some headgear — are made entirely or mostly from metal, which is easily recyclable. For hazardous metals like mercury from fillings and https://www.evernote.com/Home.action?_sourcePage=YAg6E_IAgbbiMUD9T65RG_YvRLZ-1eYO3fqfRu0fynRL_1nukNa4gH1t86pc1SP&__fp=-rZRI... 2/5

Mostly from metal, which is easily recyclable. For hazardous metals like mercury from fillings and lead from X-ray safety aprons, recycling is the cheapest and safest disposal method. For precious metals, like the gold in some fillings, recycling can even be profitable.

Some orthodontists use professionally sterilized and remanufactured braces brackets. Ortho-Cycle recycles brackets, bands, and other orthodontic attachments. Recycled brackets can cost half as much as those made from new metal. The EPA requires dental offices (but not orthodontists, who do not remove fillings) to install and regularly maintain an amalgam separator for their drains to ensure that mercury and other pollutants stay out of the water system. They send the spent cartridges from these filters to a recycling center.

Greener Practices

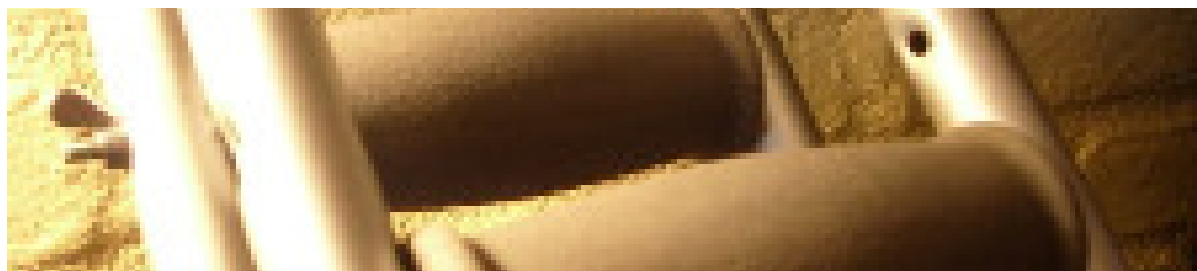
While the appliances themselves are mostly waste, there are services such as Envirodent that recycle the dental instruments used to make them. Many dental and orthodontic practices are eliminating disposables. They are replacing plastic mold trays with metal ones and using washable face shields instead of disposable masks. The Eco-Dentistry Association helps patients find dental professionals who are committed to greener practices in their office.

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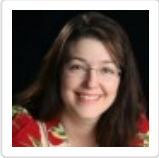


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Gemma Alexander has an M.S. in urban horticulture and a backyard filled with native plants. After working in a genetics laboratory and at a landfill, she now writes about the environment, the arts and family. See more of her writing [here](#).