



2c. How to: Reduce chemical waste

Why is it important?

Chemicals used in healthcare can be hazardous to human health and also to the environment. Research shows that household cleaners, paints and perfumes have become substantial sources of urban pollution.

Many chemicals are used daily in dental practice, including dental materials such as amalgam, cleaning and disinfectant products, radiography equipment and Nitrous Oxide for sedation.

There is an abundance of legislation surrounding the use of hazardous substances in healthcare. COSHH (Control of Substances Hazardous to Health Regulations) requires all dental employers in the UK to control exposure to hazardous substances to prevent ill health. The 'Minamata Convention on Mercury' effective from August 2017 encouraging the phase down of amalgam use has been designed to protect human health and the environment from anthropogenic emissions and releases of mercury and its compounds.

Finding ways to and use products with both safer and more sustainable chemicals will have environmental benefits and health benefits for staff and patients.



What does a Sustainable Practice look like?

Modelled example:

Sanjit is an associate dentist at a mixed NHS/Private practice. A policy for the safe use of chemicals has been adopted by the practice after an initiative was taken by the team to review all of the chemicals used at the practice.

They have changed to using sustainable alternatives for cleaning and disinfecting products where possible. Each team member has been trained in the safe use and disposal of chemicals in the practice and this training is renewed annually. Sanjit's practice now also uses a fully digital radiography system.

Since the 'Minamata Convention' became effective, the practice has agreed on the use and phase down of Amalgam in the practice wherever possible. They have invested in trialling a variety of new Composite Resin and Glass Ionomer restoration materials, to find materials of high quality and comparable properties.



Actions

KEY:

Implementation: Easy = 😊😊😊 Less Easy = 😊

Investment Cost: Low = 💷 High = 💷💷💷

Financial return on Investment (ROI): Low = 🐷 High = 🐷🐷🐷

Environmental benefit: Small = 🌍 Large = 🌍🌍🌍

- Be aware of the legislation surrounding use of hazardous substances in the dental practice 😊😊😊💷🐷🌍
- Use less toxic and more sustainable/eco-friendly cleaning products 😊😊😊💷🐷🌍
- Use amalgam alternatives for dental restorations when possible and clinically appropriate 😊😊💷🐷🌍🌍
- If using amalgam, use encapsulated amalgam and an amalgam separator 😊💷💷🐷🌍🌍🌍
- Use digital radiography equipment to avoid the use of toxic processing chemicals 😊😊💷💷🐷🌍🌍
- If providing inhalation sedation with Nitrous Oxide, train staff on the health and environmental risks associated with its use; use the minimum effective dose possible; use correctly fitting face masks for patients; monitor airborne concentrations of waste gas; check equipment for faults or leaks; ensure adequate ventilation; consider purchasing a unit which converts waste gas into a less harmful product 😊😊💷🐷🌍🌍



Resources

More links:

Pocket Dentistry: Hazardous Substances

<https://pocketdentistry.com/9-hazardous-substances/>

The Independent: 10 Best Natural Cleaning Products

<https://www.independent.co.uk/extras/indybest/house-garden/kitchen-accessories/10-best-natural-cleaning-products-biodegradable-washing-up-liquid-dishwasher-toilet-cleaner-soap-a7833311.html>

British Dental Association information on the 'Minamata Convention':

<https://bda.org/dentists/policy-campaigns/public-health-science/Pages/The-Minamata-Convention-on-mercury.aspx>

The environmental impact of dental amalgam and resin-based composite materials

Mulligan, S, Kakonyi, G, Moharamzadeh, K, Thornton, S and N. Martin BRITISH DENTAL JOURNAL | VOLUME 224 NO. 7 | APRIL 13 2018

<https://www.nature.com/articles/sj.bdj.2018.229>

Duane, B., Ramasubbu, D., Harford, S., Steinbach, I., Stancliffe, R., Croasdale, K., Pasdeki-Clewer, E. (in press). Environmental sustainability and procurement; Purchasing products for the dental setting. British Dental Journal.

Dental Susnet, online network for improving the sustainability of dental services:

<https://networks.sustainablehealthcare.org.uk/dental-susnet>