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**Trevor Burke**

# Minamata four years on

Readers will be aware that The Minamata Convention on Mercury is a global treaty, signed by the UK and over one hundred countries from all over the world in October 2013, with the intention of protecting human health and the environment from the adverse effects of mercury, for example, by limiting the use of mercury from all sources, including LED light bulbs, fluorescent tubes, fertilizers, thermometers and, of course, dental amalgam. The agreement indicated that the mercury limitation would commence within four years, and Annex A part II dealt specifically with dentistry. Four years on, it might be considered useful to reflect how far along that road we have gone, given that we agreed to '*Promote use of cost-effective and clinically effective mercury-free alternatives*'.

At the time of writing, the Convention has been signed by 128 countries and ratified by 71, with Jamaica being the most recent country to '*deposit the instrument of ratification*'. The arrangements sealed within the Convention were that it would enter into force on 15 August 2017 in the ratifying countries, that being 90 days after the fiftieth ratification was received.<sup>1</sup> Regulation (EU) 2017/852 of the European Parliament was agreed on 17 May this year, the implication of this being that, from 1 July 2018, dental amalgam '*shall not be used for dental treatment of deciduous teeth, of children under the age of 15 years and for pregnant or nursing women, except when deemed strictly necessary by the dental practitioner, based on the specific medical needs of the patient*'. I cannot think of anything falling into that category, with the exception of allergy to a constituent of an alternative material. Some might argue that we need amalgam for the deep Class II box where isolation is difficult (but is that specific medical need?). In my view, an amalgam restoration in that situation contaminated with blood and/or saliva isn't a great result!! It is possible to isolate a cavity in such situations with a tight matrix and then place a resin composite with an RMGI sandwich extending to the exterior of the box. In this regard, on speaking with dentists from Continental Europe, it is obvious that, for increasing numbers, their experience of using amalgam is virtually nil and, indeed, the University of Nijmegen in The Netherlands abandoned the teaching of amalgam as long ago as the year 2000. I am not aware of any patients being disadvantaged as a result.

A further implication will be that each of the 28 countries in the EU who signed the agreement will have to produce a plan by 1 July 2019 on how they are planning to reduce amalgam use in the remainder of the population. It is my guess that, like Canada, many countries within the EU will quietly phase out amalgam, given that, as I implied above, many are already a long way down that route. Furthermore, from 1 January 2019, '*dental amalgam shall only be used in pre-dosed encapsulated form and the use of mercury in bulk shall be prohibited*'. Again, my guess is that we are already a good way down that route. The regulation of 17 May 2017 also specifies that dental facilities in which dental amalgam is used, or teeth containing such fillings are removed, must have amalgam separators of a specific retention level of 95% of amalgam particles. Chuck Palenik's article on this subject in the current issue helps shed light on the situation in the US.

Despite all of this, the European Parliament voted, earlier this year, in favour of a gradual phase down in dental amalgam use rather than the total ban which was rumoured to be made in 2022. Indeed, a British Dental Association press release in May 2017 proudly announced that they had campaigned against a ban on amalgam and that the phase out of amalgam was unlikely to take place until 2030. Apart from the mercury argument, this ignores the benefits of using an adhesive material such as resin composite – one being less invasive cavities, which are less likely to result in fracture of posterior teeth, apart from the fact that patients appear to prefer tooth-coloured restorations in their back teeth. Furthermore, results of a survey of the views of a convenience sample of 249 regularly attending dental patients in relation to the materials used in their teeth, indicated that 31% had anxieties about use of amalgam in their mouth and provoked anti-amalgam comments from 66 respondents, principally those who had worries regarding amalgams on health grounds:<sup>2</sup> even I was astounded by their depth of feeling!

I can understand the Departments of Health in the UK being anxious about having to fund an alternative to dental amalgam, given that restorations in the main alternative, resin composite, were estimated to take 2.5 times longer to place than amalgam.<sup>3</sup> However, those data were published a long time ago, and it could be that

improved matrix systems and the recent introduction of bulk fill resin composite materials, with a 5 mm depth of cure and which do not require a 'topping', will make composite faster to place in posterior teeth by obviating the need to place in increments. Given that clinician time is a major factor in the cost of any restoration, the introduction of these materials (examples being *Filtek One* [3M], *Tetric Evo Ceram Bulk Fill* [Ivoclar] and *Aura Bulk Fill* [SDI]) should make the placement of resin composite restorations faster and therefore cheaper. These materials are, in my view, the short-term alternative to amalgam, until the day comes, some time in the future, when a self-adhesive, low shrinkage stress, 5 mm depth of cure, tooth-coloured material comes to the market. We will all dream about that!

There is information in the literature on how to move away from

amalgam completely – Norway has done that,<sup>4</sup> even if it took 20 years. But, the force is now much greater than when they set out on the non-amalgam path. Dental students are now being taught the placement of posterior composite restorations more than ever before,<sup>5</sup> but perhaps we need to worry about the older generations of dentists who have not had this experience? However, I still have not spotted an increased number of hands-on posterior composite courses being advertised. Two years ago, I wrote<sup>6</sup> 'There has been a deafening silence from the Department of Health and the Postgraduate Deaneries on how to deal with the post-Minamata era. Perhaps it is time for them to let us know what they are planning'. Now seems even more like the right time than it did two years ago, unless they are planning a Brexit-like exit from the Minamata Convention.

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