





area since particulates generated by removing amalgams are dispersed in the environment. Beyond opening the window, other strategies for mercury removal include ultrafiltration and negative ion generators, plus basic vacuum force to remove the air from the operative field in the works room (*Dent-Air Vac, E. L. Foust, Smart-Air Solutions, and Tact-Air*). Finally, the routine use of oxygen while removing dental amalgam in the clinic is not easy since rules and Directive for its use are different in each country. In addition, simply moving into another space can be effective in reducing mercury exposure.

Mercury toxicity can be aggravated by the possible galvanic interaction between heavy metals due to metal ions release in mouth [29, 28]. The conventional dental filling is more prone to galvanic corrosion than the higher copper containing amalgam in contact with the Co Cr Mo alloy as well as titanium. These released heavy metals could be quelated by curcuminoides [30,21]. Thus, if too many amalgam restorations are present in the oral cavity or close implants are close to amalgams, the galvanic interactions will release ions constituting an additional factor contributing to mercury toxicity. In fact, the release of mercury from silver amalgam exposed to different bleaching agents (10 % carbamide peroxide) may also increase the toxicity of mercury. Since bleaching agents are often employed in cosmetic dentistry; we must also consider the possible interactions between them and increased mercury vapor levels during treatments and steam in these treatments [31]. Nowadays, there is an aesthetic demand in all fields of odontology [32]. For example, the exponential increases of multidisciplinary orthodontic treatments in adult patients together with great advances in the development of new materials have improved aesthetic and functional techniques such as micro-implants in orthodontics [33]. During these multidisciplinary aesthetic treatments, the safe protocols for dental filling removal are not always implemented in patients [31,2]. On the other hand, electronic magnetic contamination can also contribute to the noxious release of mercury from dental amalgam fillings in synergy with magnetic fields [34]. Finally, dentists must use a certified hazardous waste carrier to recycle and dispose of amalgam waste and develop combined strategies for preventing mercury vapor toxicity in odontology. Thus, the use of synergic nasal filters (active carbon) together with dietary supplements (*Curcuminoids, Desmodium, Clorella*, and other antioxidants) would increase patients' endogenous detoxification capacities helping prevent heavy metal toxicity.

Finally, since dental amalgam could be a risk factor for populations with mercury susceptibility, it is crucial to develop new precautions and rules even though certain cause-effect relationships have not been firmly established (UNEP. United Nations Environment Programme; Minamata); <http://www.unep.org/newscentre/default.aspx?> [37].

Interestingly, the Precautionary Principle states: "*The precautionary principle applies where scientific evidence is insufficient, inconclusive or uncertain and preliminary scientific evaluation indicates that there are reasonable*

*grounds for concern that the potentially dangerous effects on the environment, human, animal or plant health may be inconsistent with the high level of protection chosen by the EU*". This aspect of precaution must be followed by dentists, who could prevent irreversible environmental risks as well as toxicity of heavy metals in patients [35, 36, 37].

### 3. Conflict of Interest

None to declare. All authors declare that there is not conflict of interest

### 4. Figures



Figure 1: Nasal filters of Active Carbon



Figure 2: Safety protocol for dental amalgam extraction (patient and dentist)



Figure 3: The use of nitrile protection, glasses and nasal filter can prevent mercury contamination in patients (carbon active). His face was totally covered. This photo shows this nasal filter as alternative to the use of oxygen.



**Figure 4** a, b. Nitrile plastic must be used before/after dental amalgam removal in patients.



**Figure 5:** a, b. Removal of dental amalgams by other safe and more biomaterial compatible.

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