

بررسی تراکم بخار جیوه موجود در فضای کار دندانپزشکان شهر تهران

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Title: Evaluation of mercury vapor in dental offices in Tehran

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Background and Aim: Dental Amalgam is a common restorative material for posterior teeth. Because of Hg content in the composition of amalgam, during the handling of material, mercury may release as vapor in the environment. Excess amount of mercury vapor can cause serious health problems in dental personnel. The aim of this investigation was to determine mercury vapor concentration in working environment of dentists in Tehran.

Materials and Methods: 211 dental clinics were participated in this cross-sectional study. The clinics were randomly selected from different regions of Tehran (north, center, south, east and west). The dentists were asked to complete a questionnaire including items on demographic characteristics such as age, sex and work history, method of handling of amalgam, environmental characteristics and general health conditions. Environmental measurements of mercury vapor in dentists' offices were done by mercury absorption tubes (Hydrar) and personal pumps (SKC, 222-3, England) as suggested in NIOSH method. Analysis of air samples was done by atomic absorption spectrophotometry (cold vapor). The data were analyzed by non-parametric tests (Kruskall Wallis, Mann-Whitney and Kendall). $P < 0.05$ as the level of significance.

Results: The mean mercury vapor concentration in dentists' offices was $8.39(\pm 9.68) \mu\text{g}/\text{m}^3$. There was no significant relationship between the urine mercury of dentists (3.107 ± 3.95) and the air Hg vapor concentration of their offices. Using precapsulated amalgam showed significantly less Hg vapor than bulk amalgam ($P=0.034$). Also the surface area of working room and air Hg vapor ($P=0.009$) had a significant relationship ($P=0.009$ $r=0.81$). There was not any significant correlation between mercury vapor and other factors such as working hours per day and working days per week, squeezing of triturated amalgam or not, storage medium of set amalgam (water or fixer solution), mercury storage method and type of ventilation.

Conclusion: The concentration of mercury vapor in dental offices' environment was lower than threshold limit value. Based on this study the type of amalgam (precapsulated or not) and area of the working room had significant effect on the mercury vapor concentration of environment.

Key Words: Dental amalgam; Amalgam mercury; Mercury vapor; Precapsulated amalgam

: آمالگام دندان به عنوان ماده ترمیمی برای دندانهای خلفی مورد استفاده دندانپزشکان است. هنگام کارکردن با آمالگام به دلیل وجود جیوه در

ترکیب این ماده، ممکن است، مقداری بخار جیوه در فضای کار منتشر شود که اگر تراکم آن از اندازه‌های استاندارد تجاوز کند، مشکلاتی در سلامتی کارکنان دندان ایجاد می‌کند. مطالعه حاضر با هدف ارزیابی میزان مواجهه دندانپزشکان شهر تهران با جیوه ناشی از آمالگام دندان از طریق اندازه‌گیری تراکم بخار جیوه موجود در فضای کار آنها انجام شد.

⁺ مؤلف مسؤول: نشانی: تهران - خیابان انقلاب اسلامی - خیابان قدس - دانشگاه علوم پزشکی تهران - دانشکده دندانپزشکی - گروه آموزشی ترمیمی
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