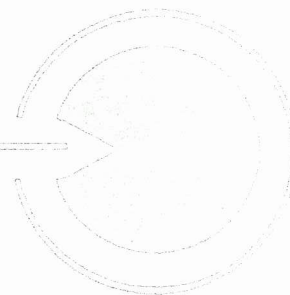


BIO-PROBE

NEWSLETTER



Volume 11

January 1995

Issue 1

NEW RESEARCH - AMALGAM MERCURY HARMS DENTAL PERSONNEL!

A newly published research study adds further evidence that amalgam mercury is not totally without adverse health effects to dental personnel. The study compared urine mercury levels before and after DMPS challenge, urine porphyrin profiles, and neurobehavioral scores of dental personnel to controls. The dental personnel exhibited statistically significant adverse effects on neurobehavioral function. It should be noted that the dental assistants, who obviously handle the amalgam far more than do dentists, were affected more severely.

Table of Contents

New research - amalgam mercury harms dental personnel. Gonzalez-Ramirez D. et al.	1
U.S. Government meets on amalgam mercury and methyl mercury	2
Other governments also looking at amalgam mercury research.	2
How much mercury is too much?	3
ABSTRACTS:	
The behavior of T-Cell subpopulations in the blood of workers exposed to mercury. Moszczynski P.	4
Human exposure to mercury and silver released from dental amalgam restorations. Skare & Enqvist ...	4
Amalgam tooth fillings and man's mercury burden	4
Urinary mercury monitoring of university staff and students occasionally exposed to mercury vapor.	5
The kinetics of intravenously administered methyl mercury in man. Smith JC. et al.	5
Mercury release during ultrasonic scaling of amalgam. Hinkelman KW. et al.	5
Comparison of particle size distributions of dental wastewater under various clinical procedures	6
Absorption of mercury vapor in simulated oral environment. Marek M.	6
Osteoporosis: A risk factor in periodontal disease	7
IAOMT research study volunteers needed	7
FORUM:	
IAOMT Spring Scientific Symposium	8
ASOMAT Symposium in Australia.	8
Great Lakes Association of Clinical Medicine.	8

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The authors included a significant comment: "We once stated that our experimental results (Aposhian, et al., 1992) can not be used to support either side of the controversy dealing with whether mercury vapor liberated from dental amalgam is harmful or involved in the etiology of disease(s). In the present study, however, in which dental technicians were exposed to mercury vapor as a result of their working with amalgams, the mean urinary mercury level after the DMPS challenge was adversely and statistically associated with functions related to complex attention, a psychomotor task, mood and symptoms in a linear dose-effect manner.

Of singular importance, this investigation establishes a firm protocol for the evaluation of dental personnel regarding potential adverse neurological effects from occupational exposure to amalgam mercury. The study was abstracted as follows:

Gonzalez-Ramirez, D; Maiorino, RM; Zuniga-Charles, M; Xu, Zhaofa; Hurlbut, KM; Junco-Munoz, P; Aposhian, M; Dart, RC; Gama, JHD; Echeverria, D; Woods, JS; Aposhian, HV.

Sodium 2,3-Dimercaptopropane-1-Sulfonate Challenge Test for Mercury in Humans: II. Urinary Mercury, Porphyrins and Neurobehavioral Changes of Dental Workers in Monterrey, Mexico.

J Pharmacol Exper Therapeutics. 272:264-274, 1995.

The sodium salt of 2,3-dimercaptopropane-1-sulfonic acid (DMPS) challenge test (300 mg p.o. after an 11-hr fast) was given in Monterrey, Mexico to dental and nondental personnel. Urine samples were collected and analyzed for total mercury.

The mean mercury urinary excretion (\pm S.E.) for 6 hr before and 6 hr after DMPS administration for 10 dental technicians, who formulate amalgam, was $4.84 \text{ mcg} \pm 0.742$ and $424.0 \text{ mcg} \pm 84.9$; for 5 dentists, who use amalgam in their practice, $3.28 \text{ mcg} \pm 1.11$ and $162.0 \text{ mcg} \pm 51.2$; and for 13 nondental personnel, $0.783 \text{ mcg} \pm 0.189$ and $27.3 \text{ mcg} \pm 3.19$.

The urinary coproporphyrin levels before DMPS administration, which are indicative of renal mercury content, were quantitatively associated with the urinary mercury levels among the three study groups after DMPS administration. This was not so if the urinary mercury level before DMPS administration was compared with the urinary coproporphyrin concentration.

The urinary mercury level after DMPS administration is a better indicator of exposure and renal mercury burden than is the mercury level measured in the urine before DMPS is given.

Regression analysis showed that the coefficient of urinary mercury was statistically and adversely associated with complex attention (switching task), the perceptual motor task (symbol-digit substitution), symptoms and mood. The easily performed DMPS-mercury challenge test is useful for monitoring dental personnel for mercury vapor exposure.

U.S. GOVERNMENT MEETS ON AMALGAM MERCURY AND METHYL MERCURY!

On 16 September 1994, the United States National Institutes of Health sponsored a workshop entitled "Methods for Detection of Health Effects from Low Level Exposure to Methyl Mercury and Inorganic Mercury". Representatives of the Food and Drug Administration (FDA), Environmental Protection Agency (EPA), Public Health Service (PHS), National Institute of Environmental Health Services (NIEHS), National Institute of Dental Research (NIDR), and the American Dental Association (ADA) attended.

Several medical scientists who have conducted and published research specifically on dental amalgam mercury were members of various panels of the workshop. These included: Dr. Anne Summers, Dr. Diana Echeverria, Dr. K. Michael Pollard, and Dr. John W. Reinhardt. In addition, Dr. William Markesbery of the University of Kentucky (Alzheimer's Disease and mercury) was also a panelist, as were other noted mercury researchers Dr. Thomas Clarkson, Dr. Maths Berlin, and Dr. George Cherian.

The workshop focused on two reports; a 1992 NIEHS workshop responding to a section of the "Clean Air Act" and the 1993 PHS report entitled "Public Health Service Strategy for Research, Education and Regulation of the Human Health Risks from Dental Amalgams."

The 1992 NIEHS workshop summarized the state of knowledge concerning the "threshold level of mercury

exposure below which adverse human health effects were not expected to occur" and pointed out the need for:

- Better methods to detect early or "subclinical", particularly neurotoxic, effects of low level mercury exposure.
 - Possible improvements in the "patch test", currently used to detect populations that are immunologically sensitive or hypersensitive to mercury.
 - Additional research on the conversion and differences in pharmacokinetics and toxicities of methyl, elemental and inorganic mercury.
- The 1993 PHS report on dental amalgam - along with subsequent determination from NIEHS, FDA, and NIDR - emphasized the need for assessment of:
- Methods currently used to measure the extent of exposure as well as the dispersal of mercury.
 - Tracking the absorption, distribution, metabolism and elimination of mercury from all sources.
 - The adequacy of current animal models.
 - The effects of mercury exposure on high risk or more sensitive groups.
 - Mechanisms of action of mercury from all sources on the central nervous system and other target organs.
 - Possible interactive effects of mercury from various sources (e.g., from food and amalgam).
 - Potential genetic differences in the effect of mercury from various sources.

No one can predict for certain the eventual outcome of this new attention to dental amalgam mercury by U.S. government agencies. One thing, however, is obvious; the recently published medical scientific research on adverse effects of amalgam-derived mercury has stimulated the government to initiate a more serious investigation of the issue.

OTHER GOVERNMENTS ALSO LOOKING AT AMALGAM MERCURY RESEARCH!

On 9 December 1994, the Ministry of Health of the German government held a special meeting on dental amalgam. The ministry invited a number of short presentations, both pro and con, from interested parties. The IAOMT position was presented by Dr. Graeme Hall, President of IAOMT Europe.

The German Ministry of Health did not offer any new position or directives on dental amalgam, but the presentations of Dr. Hall and others regarding the medical scientific findings are on record with the Ministry.

Following this national meeting, on the 16th of December the German government sponsored an international conference of government regulatory officials, for