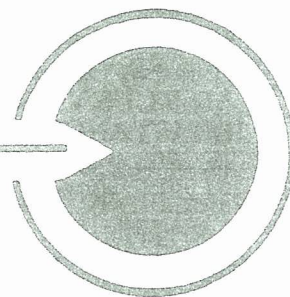


BIO-PROBE

NEWSLETTER



Volume 9

November 1993

Issue 6

MEDICAL SCIENTISTS ADDRESS AMALGAM MERCURY!

A "Symposium on Neurotoxicity of Metals" was held in Tuscon, Arizona during the week of 18-22 October 1993. The symposium was for the 5th North American Meeting of the International Society for the Study of Xenobiotics and was attended by approximately 600 active scientists and principal investigators from universities and the pharmaceutical industry. A number of those in attendance represented the famed National Academy of Sciences (NAS). There were also numerous representatives from the Food and Drug Administration (FDA) and the National Institute for Environmental Health Services (NIEHS).

The symposium featured four major presentations and included approximately 300 poster session papers addressing metal toxicology. One of the four major presentations addressed dental amalgam mercury. It was sponsored by the National Academy of Sciences and presented by Fritz Lorscheider, Ph.D. of the University of

Calgary Faculty of Medicine. The symposium abstract of this presentation is provided below.

The other three papers dealt with the involvement of manganese in Parkinson's Disease, the involvement of lead in learning deficit disorders, and the design and use of novel chelation agents to remove ionic metals from the body.

Clearly, the issue of heavy metal toxicology has come of age and is recognized as a serious issue in medicine by the prestigious National Academy of Sciences, as well as the scientific divisions of several government agencies. The general consensus at the meeting was that mercury exposure from amalgam dental fillings is a definite cause for medical concern and that as much as 90% of the body burden of mercury is derived from dental amalgam fillings.

The information presented in the following abstract is clear indication of adverse health effects resulting from exposure to mercury from amalgam dental fillings. Further, it is important to note that the findings are from well qualified medical scientists and are being published in respected, peer-reviewed medical journals.

The growing chasm between the findings of the medical scientists and the anecdotal position of organized dentistry is becoming increasingly evident. Committee "opinion" reports claiming that dental amalgam is harmless because it has been used for over 150 years have an increasingly hollow meaning.

Table of Contents

<i>Medical Scientists Address Amalgam Mercury!</i>	1
<i>The dental amalgam mercury controversy - mercury vapor and the CNS: Genetic linkage of mercury and antibiotic resistances in intestinal bacteria. Lorscheider et al.</i>	2
<i>Don't use amalgam for first tooth filling. Loe</i>	2
<i>Seattle, Washington to require dental office amalgam separators</i>	5
ABSTRACTS:	
<i>HgEDTA complex inhibits GTP interactions with the E-site of brain beta-tubulin. Duhr et al</i>	5
<i>Oral mucosal mercury concentrations in patients with amalgam fillings. Willershausen-Zönnchen et al</i>	6
<i>The prevalence and relationship of oral lichenoid reactions to food-stuff and amalgam. Macleod et al</i>	6
<i>Oral cancer development in oral lichen planus. Scully et al</i>	7
FORUM:	
<i>Explosive news story from Canada</i>	7
<i>IAOMT Education/Fellowship Program</i>	8
<i>IAOMT Winter Regional Board Meeting</i>	8
<i>IAOMT Midwinter meeting on Biocompatible Dentistry</i>	8
© 1993 by Bio-Probe, Inc. The Bio-Probe Newsletter is published bi-monthly. Editorial office is at 5508 Edgewater Drive, Orlando, FL 32810. Subscription price \$65.00 per year. Postage paid at Orlando.	

NOW IS THE TIME TO MAKE THAT
TAX-FREE DONATION TO THE
FOUNDATION FOR TOXIC FREE
DENTISTRY. SEND IT TO FTFD, P.O. BOX
608010, ORLANDO, FL 32860-8010.

THE DENTAL AMALGAM MERCURY CONTROVERSY - MERCURY VAPOR AND THE CNS; GENETIC LINKAGE OF MERCURY AND ANTIBIOTIC RESISTANCES IN INTESTINAL BACTERIA.

Lorscheider, FL (1); Vimy, MJ (2); Summers, AO (3); Zwiers, H (1).

[(1) Dept. of Medical Physiology and (2) Dept. of Medicine, University of Calgary Faculty of Medicine, Calgary, Alberta, T2N 4N1, Canada. (3) Dept. of Microbiology, University of Georgia, Athens, GA, 30602, USA.]

[Invited paper sponsored by the National Academy of Sciences (USA) for the Symposium on Neurotoxicity of Metals, presented at the 5th North American Meeting of the International Society for the Study of Xenobiotics, Tuscon, AZ, 19 Oct 1993.]

ABSTRACT: The use of mercury (Hg), a volatile toxic heavy metal, in tooth filling materials has been controversial since its inception 160 years ago. At the present time, dental amalgam contains approximately 50% Hg and is used in at least 80% of all tooth restorations. Over the past 10 years, numerous reports have substantiated that amalgam Hg vapor is continuously released into mouth air and that this form of Hg exposure is greater than all other environmental sources combined for the general population. Absorption and body tissue concentration of amalgam Hg in the monkey is significant. Two important regions of amalgam Hg accumulation are the brain and the intestinal tract (Goering et al. *Fundam. Appl. Toxicol.* 19:319-329, 1992). Several laboratories have now focused on the effects of amalgam Hg upon cell function of these two organ systems.

Recently, other laboratories have implicated Hg, selectively concentrated in human brain regions involved with memory function, in the etiology of Alzheimer's disease (AD). Abnormal microtubule formation in AD brains has been associated with a defect in tubulin depolymerization, which increases the density of neurofibrillary tangles. A similar tubulin defect can be induced in brain of Hg-treated rats, suggesting a connection between exposure to inorganic Hg and AD (literature reviewed by Goering et al. *ibid*). Since the brain neuronal phosphoprotein B-50 (Coggins et al. *J. Neurochem.* 60:368-371, 1993) and brain microtubule protein (Sciafe et al. *Biochem.* 31:310-316, 1992) are both substrates for ADP-ribosyltransferase, current

collaboration in our laboratories involves the measurement of ADP-ribosylation of rat brain neuronal and microtubule proteins (B-50 and tubulin) by quantification of ³²P-labelled proteins on 2-D gel following in vitro and in vivo exposure to inorganic Hg (both Hg²⁺ and Hg⁰). The results of this study indicate that inorganic mercury markedly inhibits ribosylation metabolism of both tubulin and actin in vivo in rat brain at mercury concentration levels which are identical to amalgam mercury levels previously reported in monkey brain.

Intestinal bacteria can acquire genetic resistance to the toxic effects of Hg, and human bacteria with this Hg resistance are significantly more likely also to be resistant to antibiotics. In monkeys, a large proportion of their oral and intestinal bacteria (eg. oral streptococci, enterococci, enterobacteriaceae) became resistant to Hg within two weeks following installation of amalgam tooth fillings. Nearly all of these Hg-resistant bacterial strains also became resistant to one or more commonly used antibiotics (eg. ampicillin, tetracycline, streptomycin, kanamycin, erythromycin, chloramphenicol). The proportion of Hg and antibiotic resistant bacteria markedly declined during the two months after amalgam removal. It is concluded that dental amalgam Hg can selectively increase the prevalence of plasmid-associated Hg and antibiotic resistances in oral and intestinal bacteria (Summers et al. *Antimicrob. Agents Chemother.* 37:825-834, 1993). Our laboratories are currently examining explicitly the effect of amalgam Hg upon the oral and intestinal microbiota of humans.

DON'T USE AMALGAM FOR FIRST TOOTH FILLING!
SAYS

DR. HAROLD LÖE - DIRECTOR, NATIONAL INSTITUTE OF DENTAL RESEARCH.

A new era in dentistry has been initiated; the nation's top dental authority has publicly declared that mercury/silver amalgam should not be used as the first filling in a tooth!

Dr. Harold Loe, the Director of the National Institute of Dental Research (NIDR) stated in the September, 1993 edition of "Dental Products Report":

"That first filling is a critical step in the life of a tooth. Using amalgam for the first filling requires