

THE MENACE OF MERCURY TO COMMUNITY HEALTH

By Clinical Ecologist/Toxicologist
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Mercury (symbol Hg) is a heavy silvery liquid metallic element which slowly releases mercury vapour at room temperature, increasing as the temperature rises. It is very highly toxic, a good electrical conductor and can form alloys called amalgams, with most metals, iron and platinum being exceptions. Dental amalgam, composed of mercury (50 to 55%) silver, copper, tin and sometimes zinc, rapidly hardens after preparation becoming a solid solution, and has been extensively employed as a tooth filling material in dentistry since the early 19th century. It rapidly became the cornerstone of dentistry as it is durable, easy to use, and inexpensive. Late 20th century evidence indicates that dental amalgams constitute the major source of mercury exposure in the general population.

Mercury vapour is continuously released from amalgam fillings and the rate of release is enhanced by chewing, tooth brushing, amalgam polishing and by hot food and hot drinks. Bathed in saliva in the mouth dental amalgams act as small batteries which produce galvanic mouth currents between every metal filling (amalgam, gold and other alloys) and other metal containing restorations, leading to corrosive activity and adverse symptoms, such as migraine, fatigue, electro-hypersensitivity, etc, in some individuals, in addition to extra mercury release.

Mercury is a cumulative poison which affects the whole body. Acute poisoning is caused by ingestion of water soluble mercury compounds such as mercuric chloride (HgCl₂) and chronic poisoning by exposure to mercury vapour, skin contact with mercury or mercury compounds, or ingestion of poorly soluble mercury compounds, such as mercurous chloride (HgCl). Organic mercury compounds such as methyl mercury (CH₃Hg) are very toxic and produce a more selective toxic action on the central nervous system. Body tissues retain mercury for long periods, half-lives varying from months to years.

Until about the early 1960's the organic mercurial mersalyl sodium was extensively used by intramuscular injection as a diuretic and until relatively recent times organic mercury containing compounds, e.g. mercurochrome, nitromersol, and thiomersal were very commonly used as topical antiseptics. Also phenyl mercuric salts and thiomersal were used extensively as preservatives in eye drop and injection solutions. Whilst this has now been broadly discontinued, unfortunately, particularly thiomersal is still employed in multiple dose injection solutions in some hospitals and medical practices.

It has still not been fully accepted by all in the medical and dental professions that mercury, or its compounds, should have no place in medicine or dentistry. Its continuing use poses a health threat to the public.

It used to be commonly believed in the dental world that once amalgam solidified in the tooth cavity it was a stable substance which did not release mercury. This erroneous belief arose, to a great extent, from the information given out by a dental group in the USA in the 1870's who were quick to appreciate the rewards which the use of easy to use and inexpensive amalgam offered compared with tooth extraction or very expensive gold which many patients could not afford. This group ultimately superseded a more conservative association of dental surgeons who would not use amalgam because they rightly believed it to be toxic.

Whilst many well informed dentists now accept that the use of amalgam is harmful and practise mercury free dentistry, there remain many who erroneously believe that mercury release from amalgam is too small to adversely affect health. This in spite of the World Health Organisation statement that a specific "no observed effect level" cannot be established for mercury vapour, which is probably the most important form determining human exposure from amalgam fillings. The highly lipid soluble vapour enters the blood from the lungs and oral mucous membranes, traverses cell membranes, including the blood-brain barrier and placenta, rapidly partitions between plasma and red blood cells and becomes widely distributed. Intracellular mercury vapour is oxidised to the very reactive mercuric ion (Hg^{2+}) which is the proximate toxic species and causes broadly based enzyme and cellular dysfunction. Mercury vapour, dissolved in saliva is also carried into the gastrointestinal tract where it is partially absorbed.

Much research on the pathophysiological effects of amalgam mercury has focused on the immune system, renal system, reproductive system, central nervous system and oral and intestinal bacteria. A mother's mercury load can do permanent harm to a foetus and a neonate will also be at risk from mercury in her milk. Additionally it has been found that mercury released by dental amalgam can enhance the prevalence of resistance to multiple antibiotics in the bacteria of the normal human flora.

In spite of a huge body of scientific evidence indicating that amalgam usage constitutes a health risk it continues to be used in National Health Service dentistry in the UK.

On the positive side, some countries (e.g. Norway and Sweden) have applied a complete ban on the use of dental amalgam and mercury in general, and finally it has been announced that the United States Food and Drug Administration (FDA) is on the verge (31st Dec'08) of limiting the use of amalgam in dentistry which is a huge step forward and hopefully only the first leading up to a complete ban on mercury usage in the USA.

The use of mercury in thermometers, sphygmomanometers, light bulbs and tubes, the use of mercury compounds as antiseptics, antifungals, preservatives and diuretics, as well as the use of dental amalgam, has contributed much to an environmental mercury hazard. Many countries including the UK have not as yet done enough to meaningfully address the problem of mercury toxicity arising from the multiple sources of exposure to this damaging element. Co-operation between medical, dental and pharmaceutical professions, industrial manufacturing companies, and government departments is required for legislation to be adopted to deal with this very damaging iatrogenic and environmental health problem.

During 25 years in practice in clinical ecology/toxicology I have repeatedly seen marked benefits to health which follow the safe removal of amalgam fillings and steady reduction of body mercury load with carefully selected oral mercury chelation regimes. It should be borne in mind that mercury can cause the production of cell damaging free radicals and nutritional deficiencies. Oral chelation should always be accompanied, or alternated, with antioxidant and cellular protective oral supplementation and continued until appropriate laboratory tests show that the body mercury level has been reduced to an extremely low value and the nutritional status has returned to normal. It is very important for anyone who suspects that he or she may have a mercury toxicity problem to be referred to a Clinical Ecological/Toxicological/Nutritional Practice and subsequently to a Mercury Free Dental Practice for safe and appropriate treatment. The British Society for Ecological Medicine will be very helpful in this regard; Tel. London, UK 02071007090.

Routine screening for mercury overload and hypersensitivity should be recommended by medical, dental, and all health care practices for all patients who have, or have had amalgam fillings, as well as for all who work, or have worked, in a mercury polluted environment such as dentists, dental nurses, all hospital staff and various industrial workers. Appropriate tests such as a urinary mercury provocation test, a mercury stool test (if available) as well as a lymphocyte sensitivity test for mercury, will provide important diagnostic information which should be integrated with the patient's medical history, symptoms and occupation. These tests should be repeated at approximately 3 monthly intervals during ongoing treatment to monitor progress.

Were it not for information disseminated by bodies such as The British Society for Ecological Medicine, The Australasian College of Nutritional and Environmental Medicine, The Australian Society for Environmental Medicine, The American Academy of Environmental Medicine, Specialised Web Sites such as this one, (mercurymadness.org) and well informed and experienced practitioners, the public would continue to be poorly informed about this most damaging threat to public health.

It is high time that medical, dental, pharmaceutical and related bioscience education should include very full information about the mercury related health problems, especially from dental amalgam, which are seriously affecting our communities.

The mercury toxicity problem is a most important "Missing Diagnosis" and one must hope that the zeitgeist for the full acceptance of this situation is not long in coming.

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