Mercury Amalgam

Image Awareness International

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Toxicology Series
1271 High Street
Auburn, Ca 95603
Phone: (530) 823-7092
Email: jmcafee@jps.net

Of Special Interest

- The primary source of mercury exposure in the general population is mercury amalgams in the teeth.
- Mercury and some other metals have been shown to induce autoimmune activity.
- Mercury causes neurological damage including lesions identical to those seen in Alzheimers disease.
- The use of mercury in dentistry is a significant source of environmental pollution.

Inside this issue:

Dentistry and Toxicology

Unfortunately, the dental and medical professions have not given a great deal of attention to the toxic nature of many of their healing modalities. George Washington was given lead dentures. His physician gave him two doses of mercury the day before he died.[1]

Mercury has a long history of usage by the medical profession. It became the drug of choice for treatment of syphilis in the 16th century. This led to its adoption as a germicidal and antiseptic.[2]

Discovery of the toxic nature of mercury has resulted in a gradual restriction in its use. Merthiolate and Mercurochrome were widely used as antiseptics until the FDA concluded in 1982 that they were unsafe. The use of mercury to treat seeds has been restricted as a result of severe poisonings.[3]

Today mercury is used primarily for a preservative in vaccines and mercury amalgam fillings in teeth. Many vaccines contain thimerosal, the chemical name for Merthiolate—a mercury compound.[3]

As far back as 1845 the American Society of Dental Surgeons realized there were problems with mercury amalgams. They made members sign a pledge not to use amalgam. In 1859 the American Dental Association based on the advocacy of amalgam was founded. This organization supplanted the American Society of Dental surgeons.

There were compelling financial reasons for the promotion of amalgam. It made fillings much more economical than gold, lead or other materials used at that time. This made dental services available to a much greater segment of the population. Amalgam was also easier to work with than other materials. The amalgam mixture in widespread use today was developed around 1895. It is about 50% mercury, 35% silver, 9% tin, 6% copper with a little zinc thrown in.

Approximately 90% of U.S. dentists use mercury. About 150,000 pounds of mercury is used to fill teeth in the U.S. every year.

In the 1980's it was learned that amalgam tooth fillings continuously release mercury into the mouth. Chewing food, gum, or tooth brushing increases the release. Electron microscopy has confirmed that amalgams corrode in the mouth. It has been estimated that mercury from amalgams may account for three or four times the mercury exposure of all other sources including food, air, and water intake.[4]

Dental amalgams release silver as well as mercury.5 Both mercury and silver have been shown to induce autoimmunity in rats. It only takes 10 weeks to 6 months of exposure.[6]

1. Hardy, James, *Mercury Free*, Gabriel Rose Press, 1996, p. 45.

2. Ziff, Sam, *Silver Dental Fillings: The Toxic Time Bomb*, New York: Aurora Press, 1984, p. 2.

3. Hardy, p. 19.

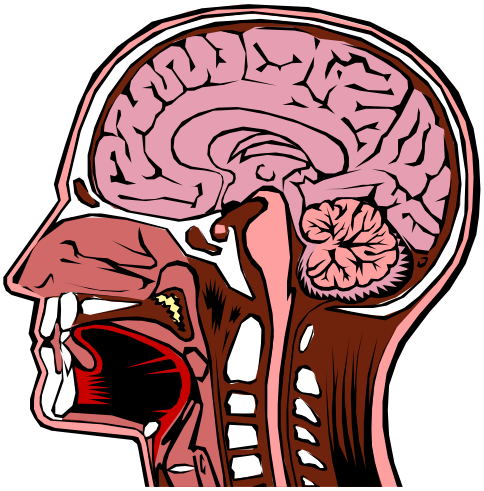
4. Lorscheider, Fritz, et al., "Mercury exposure from 'silver' tooth fillings: emerging evidence questions a traditional dental paradigm," *FASEB J.* 9, 504-508 (1995).

5. Drasch, G. et al., "Silver concentrations in human tissues, their dependence on dental amalgam and other factors," *J Trace Elem Med Biol* Jul 1995; 9(2):82-87.

6. Hultman, P. et al., "Adverse immunological effects and autoimmunity induced by dental amalgam and alloy in mice, *FASEB J.* 8, 1183-1190 (1994). Bigazzi, Pierluigi E., "Autoimmunity and Heavy Metals," *Lupus*, 1994;3:449-453.

Mercury and the Brain

During the 19th Century felt-hat makers were regularly exposed to mercuric nitrate. They became known as "Mad Hatters." The symptoms included sudden anger, depression, delusions, drowsiness, poor memory, timidity, insomnia and mania. In 1941 mercury was identified as the cause of the problems.[1]



Mercury has an affinity for brain tissue.

Subsequent episodes of serious mercury poisoning have taken place in Iraq and Japan. In Iraq, grain treated with mercury as a pesticide and fungicide was consumed as food. In Japan, Minimata Bay was contaminated with mercury and people eating the fish were mercury poisoned.

Study of these victims of mercury poisoning has shown serious changes in personality and mental function. Among the common symptoms were loss of short-term memory, poor concentration, and increases in anger.[1]

A study of women with and without mercury amalgams found that those with amalgam had a statistically higher tendency to express anger without provocation and had significantly more intense angry feelings. These women also scored lower in satisfaction, happiness, security, steadiness, and pleasantness. They had a more difficult time making decisions. Women with amalgams had more fatigue and insomnia.[2] Adverse behavioral effects of mercury are associated with mercury exposure levels received by the general population.[3]

Mercury is being increasingly incriminated as a factor in Alzheimer's disease. One study found blood mercury levels in victims to be two to three-fold higher than controls.[4]

A mechanism for the causation of Alzheimer's by mercury has been proposed. This involves inhibition of tubulin formation. Tubulin is involved in maintaining the structure of nerves. Approximately 80 percent of Alzheimer patients evidence inhibition of tubulin formation.[5]

Mercury is selectively concentrated in certain areas of the brain. One of these areas is the hippocampus, an area associated with emotions.[6]

Mercury amalgams appear to be associated with much more than emotionality, however. Those with amalgams appear to crave and eat more sweets, are more likely to smoke, drink coffee, and consume alcohol. Those with mercury amalgams also appear more prone to fatigue and pre-menstrual syndrome.[7]

" We hypothesize that if people are nervous, depressed, angry, and tired—as amalgam-bearing subjects are—they might drink more coffee as a stimulant to fight fatigue, smoke more cigarettes as a nervous habit, and drink more alcohol because they are depressed. Emotional problems can lead to substance abuse, and a link may exist between toxicity and these problems. 7

1. Siblerud, Robert, "The Relationship between Mercury from Dental Amalgam and Mental Health," *American Journal of Psychotherapy*, Vol. XLIII, No. 4, October 1989, p. 575.

2. Siblerud, R.L., Motl, J, and Kienholz, E. "Psychometric evidence that mercury from silver dental fillings may be an etiological factor in depression, excessive anger, and anxiety, " *Psychol. Rep.* , Feb 1994, 74(1):67-80.

3. Echeverria, D., et al., "Neurobehavioral effects from exposure to dental amalgam Hg(o): new distinctions between recent exposure and Hg body burden, *FASEB J* Aug 1998; 12(11):971-80)

4. Kock, C. et al., "Increased blood mercury levels in patients with Alzheimer's disease," *J Neural Transm* 1998; 105(1):59-68.

5. Pendergrass, J.C., and Haley, B.E., "Inhibition of brain tubulin-guanosine 5'-triphosphate interactions by mercury: similarity to observations in Alzheimer's diseased brain," *Met Ions Biol Syst* 1997;34:461-78.

6. Lorscheider, Fritz, et al., "Mercury exposure from 'silver' tooth fillings: emerging evidence questions a traditional dental paradigm, *FASEB J.* 9, 504-508 (1995), p. 507.

7. Siblerud, Robert, "The Relationship between Mercury from Dental Amalgam and Mental Health," pp. 582-586.

Mercury and Immune Function

One of the surprises about mercury has been its ability to promote the development of antibiotic resistant bacteria in the digestive tract of those who have amalgams. The same genetic mechanism that confers resistance to mercury upon bacteria also provides them with resistance to many antibiotics. This is obviously not a good idea if antibiotics are needed at some point by an individual.[1]

"This study concluded that both Hg and silver dissolution from dental amalgam can chronically stimulate the mouse immune system with subsequent induction of systemic autoimmunity."[3]

Mercury can also cause immune suppression. Mercury can inhibit the ability of white blood cells to migrate to the site of an infection.[2] The immune suppression of mercury may not be as great of a problem as the potential for triggering autoimmune attack which can devastate immune function.[3]

1. Summers, AO, et al., "Mercury released from dental 'silver' fillings provokes an increase in mercury– and antibiotic– resistant bacteria in oral and intestinal floras of primates," *Antimicrob Agents Chemother* Apr 1993; 37(4):825-34.

2. "Measurement of the Respiratory Burst and Chemotaxis in Polymorphonuclear Leukocytes From Mercury-Exposed Workers", Perlingeiro, R.C.R. and Queiroz, M.L.S., Human and Experimental Toxicology, 1995;14:281-286.

3. Lorscheider, Fritz, et al., "Mercury exposure from 'silver' tooth fillings: emerging evidence questions a traditional dental paradigm," *FASEB J.* 9, 506 (1995).

Nutrition

Zinc has been shown to be helpful in prevention of Alzheimers. It may help counteract some of the damage that mercury or other toxic metals do to nerve tissue.[1] Selenium is possibly the most protective nutrient against mercury poisoning. It also reduces risk of heart disease and cancer. Selenium has the ability to replace sulfur in chemical bonding. Mercury has a high affinity for sulfur so it is not surprising it would have an affinity for selenium.[2] Vitamin C may be of great value in treating mercury accumulation. "Until the mid– to late-1960's, ascorbic acid was often given as the antidote of choice for poisonings caused by fatal doses of mercury." Vitamin C fell into disuse when vitamin C began to be promoted for the common cold. [3]

"The net effect of selenium is protection of nearly all cell membranes while redistributing the mercury so that its negative effect is reduced in any one part of the body."5

Beneficial bacterial cultures can be of value by competitively inhibiting the antibiotic resistant bacteria resulting from mercury exposures.[4]

Onion, garlic, animal protein, eggs, and cruciferous vegetables are high in sulfur compounds (and fats) for which mercury has an affinity and may be helpful in escorting mercury out of the body or preventing absorption. [5]

1. Constantinidis, Jean, "Treatment of Alzheimer's Disease by Zinc Compounds," *Drug Development Research*, 1992;27:1-14.

2. Burton, Laura, L., "Selenium Secrets," *Environmental Health Prospectives*, September 1995;103(9):789-790. Goyer, Robert, "Nutrition and Metal Toxicity", American *Journal of Clinical Nutrition*, 1995;61:(Suppl.):646S-650S. Queen, H.L. Chronic Mercury Toxicity, Colorado Springs: Queen and Company, 1988, p. 49.

3. Queen, pp. 91-105.

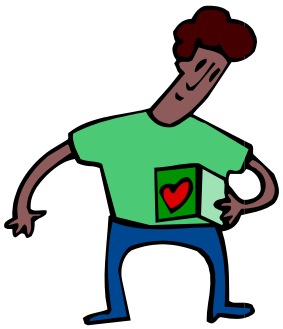
4. Queen, p. 48.

5. Queen, p. 50- 51.

Mercury Facts

Hepatitis-B vaccine, along with others, contains thimerosal, a preservative, which contains 49% organically-bound mercury. Some have suggested that administration of thimerosal-containing products may lead to mercury poisoning.[1]

1. "Mercury Poisoning Associated With Hepatitis B-Immunoglobulin," Lowell, Jeffrey, A., M.D., et al, *The Lancet*, February 28, 1996;5(2).



Analysis of hair for mercury revealed that the one third with the highest mercury had twice the risk of a heart attack. The risk of death was almost three times higher. Mercury was associated with immune complexes containing oxidized LDL cholesterol.[1]

1. "Intake of Mercury From Fish, Lipid Peroxidation, and the Risk of Myocardial Infarction and Coronary, Cardiovascular and Any Death in Eastern Finish Men," Salonen, Jukka T., M. D., M.P.H., et al, *Circulation*, 1995;91:645-655.

1271 High Street
Auburn, California 95603
Phone: (530) 823-7092
Fax: (530) 823-7086

Order Phone: (800) 359-6091
Email: jmcafee@jps.net

Mercury Tidbits

Dental Exposure

Numerous studies indicate that working with mercury in the dental office can have a negative effect on health. The dentist who places mercury amalgams in the mouth may be more at risk than the patient who receives them.

Exposure to mercury at levels that are lower than currently recommended thresholds can lead to neurologic impairment. Measurements of neurologic performance decreased as the exposure dose to mercury was increased.[1]

A study of dental personnel in Israel found that those exposed to mercury had higher levels.[2] Mercury is related to increased risk of cerebral palsy and central nervous system defects in children of mothers exposed to the metal.[3]

1. Ngim, C.H., et al, "Chronic Neurobehavioral Effects of Elemental Mercury in Dentists," *British Journal of Industrial Medicine*, 1992;49:782-790.

2. Steinberg, Doron, et al, "Mercury Levels Among Dental Personnel in Israel: A Preliminary Study," *Israeli Journal of Medical Sciences*, 1995;31:428-432.

3. "Environmental Hazards May Endanger Conception" *Medical Tribune*, June 2, 1994;12.

The End of Mercury Amalgam

Sweden is leading the way in discontinuing use of mercury amalgam. Use in children was ended in 1993. In 1995 use in youths up to 19 ended. All use ended in 1997. Mercury use was ended not only for health benefits, but also to end environmental contamination as a result of cremation of corpses with amalgam fillings and other sources of pollution as an overflow of dental use of mercury.

Germany restricts use of mercury where kidney disease exists. Amalgams are also not recommended for children, and pregnant and lactating women. Amalgam is also not recommended when other metals are in the mouth. Mercury amalgams are also not recommended at the apex of teeth subject to greater wear. Degussa A.G., formerly the largest European manufacturer of dental amalgams, has ceased production of these materials to avoid product liability. It may be the liability issue that eventually ends use of mercury amalgam in the U.S. At the current time, it is hindering elimination and resulting in a vigorous denial that there is any safety risk in use of amalgam.[1]

1. Lorscheider, F., L., et al, "Mercury in Dental Amalgam," *FASEB Journal*, November, 1995;9:1499-1500.

Chewing Gum

Those who chewed gum in one experiment excreted 1.36 mcg of mercury in the urine while non-chewers excreted only .70 mcg of mercury in a 24 hour period of time. Chewing gum apparently increases release of mercury from fillings.[1]

1. Gebel, T, and Dunkelberg, H., "Influence of chewing gum consumption and dental contact of amalgam fillings to different restorations on urine mercury content," *Zentralbl Hyg* Umweltmed Nov. 1996; 199(1):69-75.

Reduction of Mercury Levels

How long does it take after removal of mercury amalgams to reduce blood levels of mercury? In one study sixty days saw a 60% drop in blood, plasma and urine levels. Removal of amalgams can significantly decrease mercury exposure over the long term.[1]

1. Sandborgh-Englune G., et al., "Mercury in biological fluids after amalgam removal," *J Dent Res*, Apr. 1998; 77(4):615-24.