HEALTH HAZARDS of MERCURY

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In Greek mythology, Mercury is the fleet-footed messenger of the Gods. He was the cleverest of the Olympians, patron of translators and interpreters. He ruled over wealth, good fortune, commerce, fertility. . . and thievery. He brought the souls of the dead to the underworld, and was honoured as a god of sleep. As a physical substance in the living organism, however, mercury is the antithesis of the fleet-footed messenger's finer qualities. In the body, mercury disrupts cellular function at all levels, robbing the body of health and escorting the victim to the underworld of neurological dysfunction.

Mercury is a powerful poison. Published research has shown that mercury, even in small amounts, is more toxic than lead, cadmium and even arsenic. Some of the most common signs and symptoms of mercury exposure include irritability, fits of anger, lack of energy, fatigue, low self-esteem, drowsiness, decline of intellect, low self-control, nervousness, memory loss, depression, anxiety, shyness/timidity and insomnia.

MERCURY, THE ELEMENT

Mercury is a dense liquid metal that gives off a colorless, odorless, tasteless vapor at relatively low temperatures. The three most commonly encountered forms are the vapor form (Hg), the ionic form, (Hg^{2+}) and the organic family of forms, principally methyl mercury ($Cl-Hg^0-CH_3$). Each has its own effects, routes of absorption and tissue specificity.1

In spite of its well recognized toxicity, mercury in its various forms is released into the environment at the rate of 11,000 tons annually, supposedly for the "benefit" of mankind. Cinnabar (mercuric sulphite), for instance, continues to be used for red pigment in many tattoo salons; calomel (mercurous chloride) is a common treatment for diaper rash; mercury vapour lamps provide enhanced indoor and outdoor lighting; and elemental mercury has many uses including thermostat regulation and the manufacture of plastics, mirrors and thermometers.

Although a natural component of the earth's crust, mercury does not have a role in the human body. Yet humans are constantly exposed to mercury, primarily through large fish (terrestial animals are negligible sources),2 thimerosol (a preservative added to vaccinations and many other pharmaceuticals) and "amalgam" or mercury-based dental fillings. Adverse health effects, particularly of a neurological nature, have resulted from low exposure levels, especially to the foetus in pregnant women.

Mercury vapor released from mercury dental fillings is absorbed very rapidly and thoroughly by your body, primarily by inhalation and swallowing.3 This elemental mercury also adds to the environment in significant amounts when dental wastes are not disposed of properly,4 and through cremation, which vaporizes the mercury in the amalgams. Although crematoriums now often use mercury vapor collectors to prevent this, they are not mandatory. Mercury vapor collectors are also used in some dental surgeries but a better solution is the immediate cessation of the use of amalgam fillings.

Mercury released into the atmosphere is indestructible; it merely hides or changes its form, being truly fleet-footed. Mercury is incorporated into the food chain as methyl mercury, primarily through the action of bacteria and other microbes transforming elemental or inorganic forms. Even mercury from amalgams is readily methylated by bacteria in the mouth.5 Organic mercury is the most deadly of the mercury compounds, probably due to its ability to enter the cells almost effortlessly. Within the cell it can destroy the various components selectively or in total by releasing lysosomes, damaging DNA and by rupturing the cell membrane. Its effects upon the neurological and reproductive system have been extensively documented.6

Methyl mercury accumulates in living organisms because it has a strong affinity for protein sulfhydryl groups. As lower-order organisms are eaten by higher-order organisms, the mercury concentration is increased along the food chain.7 This process of accumulation at each trophic level is called biological magnification. As humans are at the highest trophic levels, mercury can have a very destructive effect on individuals and on the entire gene pool.8

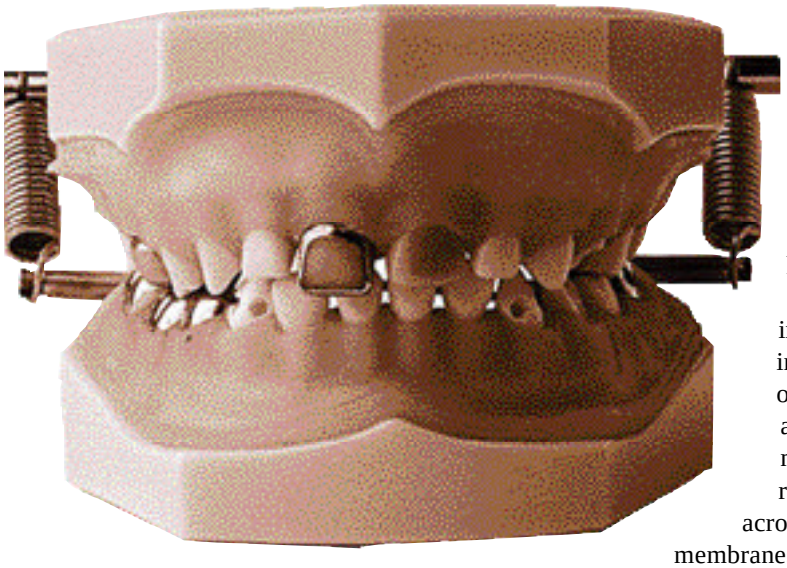
Most poison molecules that enter the body are processed by the liver or kidney and broken down into smaller components, then excreted in relatively less toxic forms than they were originally. Heavy metals are different. They cannot be broken down, so unless they are excreted immediately after they are ingested, these absolutely indestructible elements accumulate and continue as a source of potential damage.

The toxicity of mercury came into world prominence in the 1950s as a result of mercury dumping in the Minamata Bay in Japan. Consumption of seafood from the bay led to widespread neurological damage and teratogenic effects. After all the cats in the neighbourhood died—some found committing suicide—and birds began falling from the sky, the government began an investigation. They brought in new cats and followed them around to see what was killing them. Even when the source was known—the bay and subsequently the wildlife there—the chemical plant continued to pollute and fishermen continued to sell their catch. By 1997, 2,200 people were certified as having Minamata disease and qualified for compensation. More than 8,000 suffered from some degree of physical and psychological symptoms, such as muscle and joint pain, forgetfulness, memory loss, fatigue and tremors.9,10

MERCURY HOT SPOTS

Scientists investigating mercury buildup in wildlife have looked closely at two locations where mercury concentrations are particularly high: the Mediterranean basin and the island of Madeira in the Atlantic.

Marine animals found in the Mediterranean Basin have high mercury concentrations compared to similar



species from most parts of the Atlantic because of the natural presence of mercury from volcanic activity. About half of world mercury resources are located in the Mediterranean area.11 Mining in the area has increased the release of mercury into the environment.

The process of biomagnification in the Mediterranean basin is evident. High levels of mercury are found in Mediterranean tuna compared to similar species in most parts of the Atlantic, as well as in smaller species such as anchovy and sardines, and also in local marine birds and their eggs. An investigation of fishermen and their families in coastal villages on the north Tyrrhenian Sea found a correlation between the number of seafood meals and the mercury levels from hair samples. Those consuming one or fewer seafood meals per month averaged about 1 mcg/g while those who consumed four or more seafood meals per week had an average of 36 mcg/g. Levels over 50 mcg/g of mercury in hair were found in a few fishermen, who then underwent a cytogenetic monitoring study to evaluate DNA damage. A positive correlation was found between mercury concentration in blood and chromosomal aberration, findings that have been confirmed by several authors.

A study of women in the village of Camara de Lobos in the island of Madeira, where sea currents cause a concentration of mercury in local sea life, found that average values of total mercury in hair and blood were about 10 mcg/g and 32 mcg/L respectively. These levels have been associated with risk for fetal brain development.

MERCURY FROM AMALGAMS

The largest exposure to mercury among adults comes comes from a source that is completely avoidable—amalgam fillings—primarily in the form of vapor of metallic, elemental mercury. Elemental mercury forms a monatomic gas that is highly volatile and readily inhaled.12

Whether inhaled from an industrial process or from mercury amalgam fillings, mercury vapor is readily absorbed across the pulmonary membranes. It then dissolves in plasma, persisting as a dissolved gas for a period sufficient to cross most of the diffusion barriers in the body including the blood-brain barrier.

Once it enters cells, whether the brain or red blood cells, or any other body cell, mercury un-dergoes an oxidation reaction to the inorganic ionic form—often referred to as divalent mercury (Hg^{2+}). Through this route Hg^{2+} does indeed accumulate in the body from the metallic mercury vapor given off by dental amalgam fillings. In addition, methyl mercury, the highly toxic organic compound, can be formed from inorganic mercury by the action of bacteria in the mouth.

A study carried out by M. J. Vimy in 1990,13 brought to light the highly absorbable nature of mercury out-gassed by amalgam fillings. He placed twelve occlusal amalgams contain-ing radioactively tagged mercury (that does not occur in nature) in the molars of pregnant sheep. Radioactivity mea-surements determined that by the third day mercury was found in the amniotic fluid and foetal blood, and that by the 26th day most foetal tissues (especially the liver, bile, bone marrow, blood and brain) had a higher mercury level than that within three days found in maternal tissues. During lactation mercury levels in the milk were eight times greater than those in the maternal blood serum, thereby causing great risk of mercury

SYMPTOMS OF MERCURY TOXICITY

1. LOCAL ORAL CAVITY: Excessive salivation; metallic taste; swollen tongue with scalloped edges; periodontal disease; bleeding gums; stomatitis; loosening of teeth; foul breath; white patches in mouth; bone loss around teeth; ulcers of gums, palate, tongue; burning of mouth; gum pigmentation.

2. PSYCHOLOGICAL: Irritability and unreasonable anger; inability to make decisions; insomnia; lack of concentration; low self-confidence; drowsiness; decline of intellect; low self-control; nervousness; memory loss; depression; anxiety; shyness /timidity.

3. NEUROLOGICAL: Headaches, including migraines; tremors (hands, feet, eyelids, tongue); muscular weakness; diffuse myalgia (muscular rheumatism); tinnitus (ringing in the ears); paraesthesia (abnormal skin sensations); impaired visual fields and visual acuity; depression; memory loss.

4. CARDIOVASCULAR AND RESPIRATORY: Tachyarrhythmia (irregular heart beat); chest pain; changes in blood pressure; feeble or irregular pulse; pain or pressure in chest; persistent cough; emphysema; shallow or irregular breathing.

5. GASTROINTESTINAL: Abdominal pain (often mimicking ulcers); colitis; constipation; diarrhoea; irritable bowel.

6. IMMUNOLOGICAL: Allergies; rhinitis; swollen lymph nodes in neck; asthma; sinusitis.

7. ENDOCRINOLOGICAL: Chronic fatigue; subnormal temperature; excessive perspiration; edema; weight loss; cold, clammy hands and feet; muscle weakness; hypoxia (oxygen deficiency in the tissues); loss of appetite; joint pain; thyroid dysfunction; infertility.

8. URINOGENITAL: Frequent urination; night urination; loss of libido.

9. INTEGUMENTARY: Unexplained rashes.

exposure to the neonate. Even after the 73rd day the mer-cury level in the foetal tissues was still rising, prompting Vimy's team to conclude that placing amalgam during pregnancy unquestionably places the foetus at undue risk and endangers the health of our children.

Vimy also found that the labelled mercury concentrated within three days in the sheeps' kidneys and caused a significant reduction in the glomerular filtration rate. In a second animal study of monkeys, whose digestive tract is much more closely related to that of humans, a team of microbiologists from the University of Georgia working with Vimy found that mercury from dental amalgam promoted the development of mer-cury-resistant bacteria in both the mouth and in the intestine, a finding of far-reaching significance.14

MERCURY IN BREAST MILK

Studies carried out during the mid 1990s found a correlation between the mercury concentrations in the kidneys of newborn babies and the number of amalgam fillings of the mother.15 As a result, the Federal Institute of Medicines and Medical Products (an agency of the German government) officially advised against the use of amalgam as a filling material during pregnancy and breast feeding.16

These studies found that the mercury concentration in the urine of pregnant and lactating women positively correlated with the number and surfaces of amalgam fillings and with frequency of fish consumption.17 Levels of mercury in breast milk taken at day 2 of lactation also depended on the number and surfaces of amalgam fillings and with frequency of fish consumption. Mercury levels in the second breast milk sample, taken after two months of breastfeeding, were found to depend only on fish consumption. Investigators believed the lower concentrations of mercury in the milk at 2 months were due to higher amounts of milk being produced.

Mercury is excreted predominantly in the faeces, but also in sweat and urine. Five percent will be excreted in breast milk. By the time of parturition, a baby's levels can be 30 percent higher to 100 percent higher than that of the mother. Mercury passes readily across the placenta, and binds to the red blood cells and tissues in the foetus. Since the foetus is not sweating, making bile or having bowel movements, the mercury accumulates. Also, foetal haemoglobin has a greater affinity for mercury than the mother's haemoglobin.18

On January 12, 2001, the FDA press office released a statement advising pregnant women, women of childbearing age who may become pregnant, nursing mothers, and young children not to eat shark, swordfish, tilefish and king mackerel. The statement also warned against two servings of any other fish per week. Government agencies in Australia and New Zealand have issued similar recommendations.

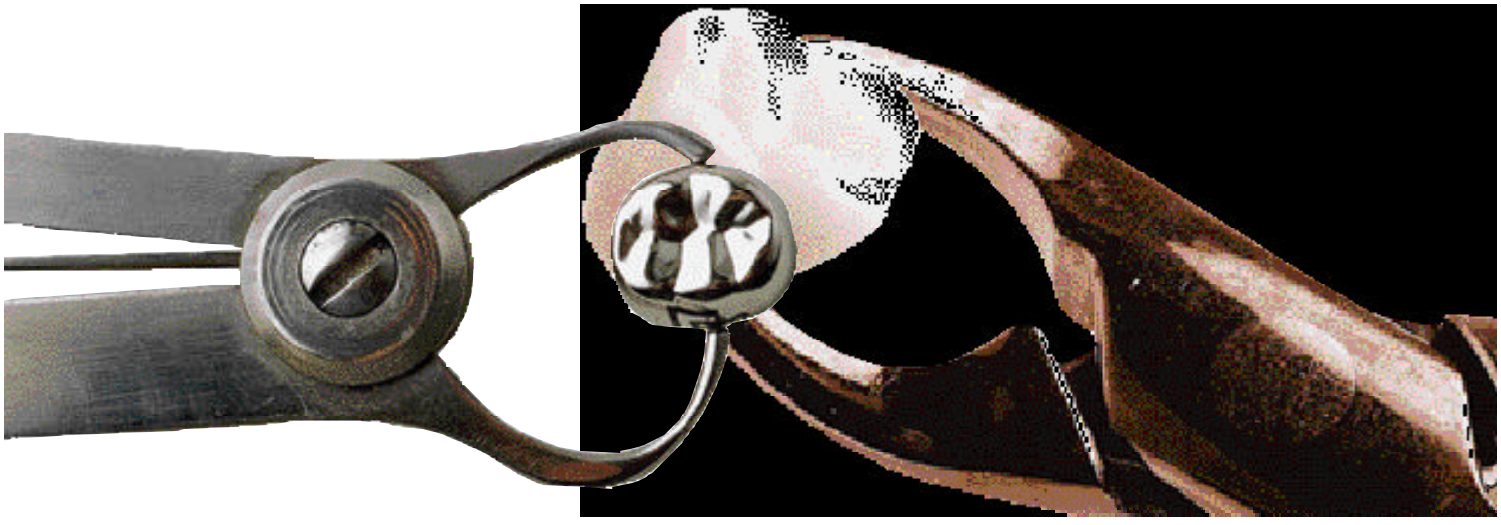
The FDA report cited swordfish that routinely tested over the 1 mcg/g "action level," above which fish should not be sold. Some swordfish contained greater than 3 ppm of mercury. Thus, the EPA and FDA advises expectant mothers to reduce or eliminate their intake of seafood due to the possibility that the amount of methyl mercury contained in fish might adversely affect their unborn offspring. The question is, why aren't the EPA and FDA clamoring for the elimination of mercury amalgam restorations—a much greater source of mercury than swordfish—at least in pregnant women, women of child bearing age and children? As long ago as 1991, a panel of experts convened by the World Health Organization determined that mercury amalgam fillings were the primary source of mercury exposure in the non-occupationally exposed population.19

THIMEROSAL

In spite of well-established health risks, organic mercurials are still added to prescription and non-prescription drugs, such as medicines for haemorrhoids (Preparation H), as well as in formulations for the treatment of bacterial and fungal infections. Because mercury has antifungal properties, it is used in indoor paints.20

Until recently, nearly all contact lens solutions contained thimerosal as an antibacterial agent. Thimerosal is ethyl mercury, an organic mercurial (sometimes called merthiolate). In some patients, thimerosal caused visible accumulation of mercury in the retina and chronic eye irritation. In a few highly sensitive people, the mercury-based additive caused loss of sight. Nevertheless, manufacturers continued to add it to contact lense solution for many years. The ban on thimerosal in contact lens solutions did little to eliminate its use in other products, such as eardrops and nose drops. Thimerosal continues to be used today in a variety of health-related products: for preserving vaccines and intramuscular injections, cosmetics, and some drugs that must be kept in solution.

It is the thimerosal used in childhood vaccines that gives the greatest cause for concern. Investigators evaluating doses of mercury in the form of thimerosal used as a preservative in childhood immunizations found that they exceeded US federal safety guidelines. The analysis showed increased risks for neurodevelopment disorders, autism and heart disease with increasing exposure to thimerosal in vaccines. The US Environmental Protection Agency (EPA) safety of exposure standard is .1 microgram per kilogram of body weight per day equating to 7 micrograms for a 70 kilogram adult. Fully vaccinated children receive as much as



237.5 micrograms of mercury from vaccines in doses of up to 25 micrograms each. According to studies carried out by the research team of Geier and Geier, thimerosal in a single vaccine greatly exceeds the EPA adult standard.21

The epidemiological evidence is compelling and statistically conclusive. Geier and Geier found that the prevalence of speech disorders, autism and heart arrest was a function of the mercury dose that the children received. Autism is now epidemic in the United States, rising from 1 in 2500 children in the mid 1980s to 1 in about 300 children in 1996. There has been a steady increase to the childhood vaccination schedule since the late1970s.

MERCURY AND HEART DISEASE

Mercury exposure may also contribute to heart disease in adults. In a study involving over 1000 men aged 42-60, the "The Kuopio Ischemic Heart Disease Risk Factor Study" (KIHD), researchers from the University of Kuopio, Kuopio, Finland, noted that lipid peroxidation and excess risk of myocardial infarction (MI) could be best related to high mercury levels in the hair.22 At the four-year follow-up point of the KIHD study, the same research team noted that high hair mercury levels were related to increased arterial wall thickness and growth in the carotid arteries.23 The team concluded: "Accumulation of mercury in the body is associated with accelerated atherosclerotic progression in men."

A CASE HISTORY

I have a busy, biologic dental practice in the Queensland area of Australia, which specializes in patients suffering from mercury toxicity. The typical patient is a female with numerous dental amalgams in her mouth and who has followed the advice of the Australian Heart Foundation, consuming a low-protein, low-fat, low-cholesterol diet that includes fish as the chief animal food, often eaten several times per week.

Nervanne was such a patient. She originally consulted our practice in November of 2001 with a multiplicity of symptoms including migraines three times per week; tremors (both internal and visible external) with associated tingling in the hands and feet; poor memory and decline of cognitive function; chronic unrelenting fatigue and depression; tinnitus; painful joints; night urination; a metallic taste in her mouth; and abdominal bloating with a history of diarrhoea and now constipation. She was also on thyroid medication due to a bout of autoimmune thyroid disease, and suffered recurrent yeast and bacterial infections. An MRI revealed no sign of angiopathy in the carotid and vertebral arteries but did reveal evidence of deep white matter disease, demyelination and possible multiple sclerosis.

Nervanne had many mercury amalgams and gum disease as revealed by bleeding upon flossing and oral examination. She also had three root-filled teeth, one with obvious apical pathology. Her children suffered from dental malocclusions and attention behavioral problems. One of her sons was autistic.

DETOXIFICATION

The body deals with toxins in a very ordered fashion:

♦Protective barriers and secretions (skin, ♦Immunologically (inflammation, immunoglobulin response)

♦Biotransformation (activation of cytochrome P450 enzyme detoxification systems)

♦Raising blood lipids (HDL, LDL and VLDL cholesterol and tryglycerides.)24,25

By doing a comprehensive blood chemistry, based on the principles of Free Radical Therapy,26 we can gain a fairly accurate idea of which toxin or combination of toxins we are dealing with, where the toxin is located, how much is there and how it is being transported, and thereby gain some idea of how best to neutralize the toxins and get them out.

The protocol we use to help the patient get rid of mercury is a multi-step process. The first step involves changing the diet to enhance the body's ability to handle contaminant materials. The next step adds specific supplementation and chelation therapy. We then do a comprehensive survey of the mouth to determine the best order for removal of amalgams and the most compatible type of dental material with which to replace them. Only then do we proceed with the removal of amalgam fillings.

Upon examining Nervanne's blood results the following findings were of particular interest: her total serum cholesterol was very low at 150 mg/dl with HDL-cholesterol at 48 mg/dl; and her total protein and albumin levels were low, the globulin was high normal.

Nervanne's total cholesterol, HDL-cholesterol and total protein levels had never before been this low. So I asked her what sort of dietary regimen she had been following. Nervanne had not eaten eggs, red meat or dairy products (except skim

AVERAGE DAILY INTAKE OF MERCURY PER SOURCE

Dental amalgam fillings (mercury vapor), according to the American Dental Association
1.0-2.0 mcg/day

Dental amalgam fillings (mercury vapor), according to the World Health Organization
3.0-17.5 mcg/day average
10 mcg/day extreme
100 mcg/day
Fish (methylmercury)
2.4 mcg/day
Non-fish food (inorganic mercury)
0.3 mcg/day
Air, water and food
3.09 mcg/day absorbed
2.26 mcg/day
Other sources negligiblesweating, making bile or having bowel movements, the mercury accumulates. Also, foetal haemoglobin has a greater affinity for mercury than the mother's haemoglobin.18

milk or soy milk on her cereal) for several years prior to her devastating decline in health. She had reduced her diet to salads, pasta, fruits, an occasional serving of skinless chicken and frequent canned tuna due to convenience and her desire to increase her omega-3 intake. She regularly consumed "cholesterol-free" crackers with margarine and "lite" cheese as a snack. She also consumed many other sources of *trans* fatty acids—margarine, pastries, breads, cereals and chocolate.

Did Nervanne's health fail as a result of her new eating habits, or was it mere coincidence that her recent health decline followed the adoption of an extremely low-fat, low-cholesterol, low-animal-protein diet? I believe it was the latter and the scientific literature confirms my beliefs.

Nervanne's reduction in cholesterol and total serum protein had made her vulnerable to bacterial and viral infection by promoting T-cell suppression. This is especially so in the presence of mercury, which has been shown to reduce resistance to viruses, cancer and autoimmune disease.27,28 Low levels of cholesterol also make T-cell proliferation more difficult,29,30,31,32 and the excretion of mercury nearly impossible.

The onset of emotional depression and irritability is frequently reported in people who suddenly lower their cholesterol levels. These symptoms have occurred in all of the longer-term studies on cholesterol lowering, but rarely do physicians link their patients' depressive symptoms with the sudden change in diet or cholesterol level.

Neurotoxins are transported throughout the body attached to protein components of lipoproteins, and therefore require cholesterol for their transport and elimination. These neurotoxins also have a strong affinity for lipoidal tissue of the nervous system and brain. A rise in cholesterol levels and triglycerides in response to neurotoxins protects by preventing permanent attachment of the neurotoxin to the nerve and brain cells. Symptoms of neurotoxicity are most likely to occur when the cholesterol is lowered suddenly or when the affected patient goes on a low-fat, low-cholesterol, low-protein diet.

In a human trial, a high-protein, low-carbohydrate diet was compared to a low-protein, high-carbohydrate diet. The researchers found greater clearance of toxins with the high-protein, low-carbohydrate diet and diminished clearance when the ratio was reversed.33,34 To utilise the protein correctly, the fat on the "lamb" needs to be eaten. The use of additional butter or lard in cooking is of paramount importance. By having adequate fat, bile production is stimulated, absorption of minerals increased and the excretion of mercury facilitated as long as constipation is avoided.

In my practice, I have found that people who are sturdy in structure recover more quickly and have less reactivity during their treatment, compared with people who are extremely thin or who lose the most weight or undergo ill-advised fasting procedures concurrently while having been exposed to toxins such as mercury.35 This observation is supported by recent studies published in the *Journal of Obesity.*36

A correct cholesterol response is fundamental to move mercury and other neurotoxins to sites where they can be excreted. A Danish study of 50,318 users of statin (cholesterol-lowering) drugs revealed a higher risk of peripheral neuropathy related to the percentage of drop in total cholesterol. In other words, lowering cholesterol increases risk of reactivity to nerve toxins37 resulting in pain, paraesthesia, numbness and demyelinating effects. Six additional studies since 1994 have indicated the same rise in polyperipheral neuropathy symptoms for users of statin drugs,38,39,40,41,42,43 supporting our clinical findings that low cholesterol levels in the presence of a potent neurotoxin such as mercury found in amalgam fillings or any other source, is a recipe for disaster. Nervanne's history was characteristic of this pattern.

THERAPY

Our treatment for Nervanne involved a radical change in her diet followed by the careful removal of her amalgam fillings (as well as her root-filled teeth). Proper diet is fundamental to clearing toxins, as well as to regaining the best of health. We advised Nervanne to eliminate tuna and other seafoods from her diet, but to incorporate a variety of meats, eggs and whole milk dairy products. The only seafood allowed is cod liver oil to provide vitamins A and D.

Protein deprivation has been shown to decrease the liver content of several of the cytochrome P450 enzymes, the enzyme system the body calls upon to remove toxins.44 Mercury also blocks the P450 system.45 *Trans* fats also interfere with the P450 detoxification enzyme system, according to research carried out by Dr. Mary Enig, so these must also be eliminated from the diet.46

The proteins in the diet must be animal proteins, providing a complete specturm of amino acids. A study of Asian vegetarians with incomplete amino acid intake showed reduced clearing of xenobiotics.47 Low levels of hydrochloric acid have an adverse impact on the availability of dietary amino acids, even in a higher protein diet, so stimulating the pancreas using lacto-fermented foods is crucial. Our protocol makes the use of cultured dairy products rich in whey protein. Not only will whey provide the complete protein needed for metabolization of xenobiotics and mercury, it has also been shown to increase glutathione content in the liver.48,49 We recommend sheep's milk yoghurt, rich in lauric acid, whey and glutathione.

By April of 2002, Nervanne's migraines had completely ceased and her gastrointestinal symptoms had abated. For the first time in many years, she can string a sentence together without stuttering. Her inability to cope, internal irritability and feelings of helplessness had resolved and she was now able care for her family and support her husband's efforts.The children's behaviors were also improving and the parents were ready to commence a program for the child with autism.

CONCLUSIONS

Most individuals can protect themselves against mercury by avoiding unnecessary exposure. That means using only composite dental fillings—never amalgam—and avoiding vaccines and pharmaceuticals that may contain thimerosal. Occasional fish consumption is fine in a healthy person who also consumes a diet rich in animal protein and fat, but tuna, swordfish and larger predatory species should be consumed only on rare occasions.

The pregnant and nursing woman represents a special case. The foetus has no way to eliminate mercury that may cross the placental barrier and is therefore very vulnerable. It has been clearly documented that mercury in the developing infant and foetus can lead to permanent and irreversible brain damage. Thus, it is highly recommended that all amalgam fillings be removed before conception and imperative that none be put in place during pregnancy and lactation. Pregnant and lactating women should avoid consumption of tuna, swordfish and similar species completely. RH-negative women should insist on vaccines that are thimerosal-free.

Many unnecessary uses of

mercury combined with the burning of coal and other fossil fuels (the most significant source of air-borne mercury) can contaminate our food chain and pollute our environment to an extent that threatens the health of everyone. Mercury is the most toxic of the heavy metals. Thus, if we are to protect our own health as well as that of future generations, it's imperative that we and the scientific community pass legislation soon at the state, local, federal and international levels for reducing or halting the indiscriminate use of mercury in all of its various forms; especially the conscious act of implanting mercury directly into people like you and your child by using mercury dental fillings and mercury-containing vaccines.

Dr Davis is principal physician of a large and busy dental practice and is well known in the Health Care Industry as a leader in the field of Biological Dentistry. Dr Davis is also the clinical director of Nutrition Diagnostics. He has pursued post-graduate studies in the areas of clinical nutrition, medical acupuncture, neural therapy, homotoxicology and electro-acupuncture. He was a founding member and past president of the Australian Society of Oral Medicine and Toxicology. In 1996 Dr. Davis was made a fellow of the Australian College of Nutritional and Environmental Medicine. He has lectured in the areas of Biological Dentistry and Nutrition both nationally and internationally. Visit his website at www.ericdavisdental.com.

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