

## **Toxic Metals Part 1: Mercurial Insights**

### **The Surprisingly Common Problem of Mercury Overload**

*New research suggests the average American body contains too much of the toxic metal, and that purging your body of mercury can reap major health dividends*

If you're like most people, you don't want to think about how much poison or toxic substance you have in your body. One group of substances that often gets short shrift from mainstream medicine is heavy metals. My clinical experience over the last two decades—which includes hundreds of tests of heavy metal levels—suggests that this problem is more ubiquitous than is commonly thought.

Heavy metals are non-essential trace elements naturally present throughout our environment, and they're among the most toxic substances known to humankind. Even in extremely small or “trace” amounts, they can affect everything from immunity to fertility to brain function.

Human contact with heavy metals is actually an old story. Lead is suspected as a major cause of the downfall of Rome: its extensive use in cooking utensils, cosmetics, wine vessels, and water pipes may have led to imperial madness, infertility, and miscarriage rates that kept the ruling class from replacing themselves. Lewis Carroll's Mad Hatter was caricatured after 19th century hat makers who used mercury in the production of hat felt. Mercury's effects were later seen in the tragedy of Minimata Bay, Japan, in which hundreds of people were afflicted with nervous system poisoning after eating mercury-tainted seafood.

These days, mercury and lead exact a huge yet largely hidden toll on our nation's mental health. Both steal away health and vitality, even when present at low concentrations that don't cause any outward signs of toxicity. In Part I of this article, however, I will focus only on mercury. The mercury that's presently seeping into American bodies is being linked with a host of health problems, mostly Autistic Spectrum Disorders in children and an increased risk of heart attacks in older people. Scientists know that chronic exposure

to mercury can cause immune, sensory, neurological, motor, and behavioral dysfunctions—all of which can lead to autistic-like signs and symptoms.

Now, it's important to remember that low levels of mercury (or lead, for that matter) can compromise your health. Yes, relatively high doses of mercury will result in your being poisoned outright—and dying. But for millions of Americans, a far subtler scenario is the norm—repeated exposures to tiny amounts of mercury over time, all of which can result in accumulations in brain tissue, causing behavioral and cognitive problems.

### **Everyday Sources of Mercury**

Much of our modern mercury load comes from two sources: the consumption of fish (especially larger fish such as tuna) and the restoration of dental amalgams, which results in the release of mercury vapors that are then readily absorbed. Also, many young children already have mercury in their bodies because of the MMR vaccinations they received in infancy.

Let's talk about your teeth first. Very few Americans do not have silver fillings, or amalgams, in their mouths. Dental amalgam, the material most commonly used for tooth fillings, consist of about 50% liquid mercury, 35% silver, and tiny amounts of tin, copper, and zinc. Only the mercury poses a toxic threat. (Nickel fillings, however, are also toxic.)

Older dental amalgams release more mercury compared to new, polished filings. As the amalgams are placed in your mouth (or taken out), they release mercury vapors. These vapors are also released when you chew—especially when chewing gum—and to a lesser extent when you brush your teeth or drink hot beverages. The mercury vapor enters your bloodstream after being inhaled into the lungs. The problem is that mercury is highly toxic to the brain

Next, let's consider diet. As noted above, fish is the most common dietary source of mercury. Major dietary sources of mercury include large fish that have been in the water for long periods of time, such as tuna, swordfish, grouper, king mackerel, sea trout,

saltwater bass, marlin, shark and bluefish. In 2008, tuna from six popular sushi restaurants in Los Angeles showed mercury levels that were about 88 percent higher than the reported Food and Drug Administration level of 0.383 ppm for all fresh and frozen tuna.

The bottom line is that, although fish is often a healthy choice when it comes to animal protein, you have to choose your fish wisely. Fish with longer lives carry more mercury than others, because they have been in the water longer. So it's best to eat fish that are short-lived, such as shrimp, tilapia, whitefish, anchovies, catfish, freshwater trout, salmon, and sardines. These are much lower in mercury and thus are better choices for regular consumption.

Now, you may be asking yourself, "Why not just avoid fish altogether?" The main reason is that fish is a perfectly good source of protein, and probably the healthiest source of animal protein, along with whey and egg whites. Additionally, fish can serve as a good source of healthy fats known as omega-3 fatty acids. In fact, no other food group provides such a reliable, high-quality source of fatty acids. A third reason to eat fish is that it is more ecological way to obtain animal protein: fish farms do not take up large areas of land, and they do not result in the kinds of pollution and environmental degradation that result from the raising of land animals for food (e.g., poultry, cattle or hog farming).

### **Recent Study Sheds Light on Your Mercury Burden**

People who visit alternative medicine doctors are often advised to undergo a prolonged course of chelation therapy, as this is an excellent way to get rid of heavy metals for supposed mercury intoxication. Ideally, the diagnosis of mercury toxicity is based on a "challenge" test, which is usually done by giving an oral dose of meso-dimercaptosuccinic acid (DMSA), a metal chelator. After the DMSA goes into the body, it binds to mercury and then makes its way out of the blood and into the urine. Since an actual toxicity level for urine mercury has not been determined, the preferred range is

indicated by population norms and background ranges; this range is used for comparison your own mercury levels.

Alternative medicine practitioners are often criticized for this practice, because the patient may appear to have no history of serious mercury exposure. For example, that individual may say he doesn't even eat fish and hasn't done so for a long time. It turns out, however, that the mercury you get from your dental amalgams is more than enough to show a positive DMSA challenge test with DMSA, as confirmed by a recent study conducted by medical toxicologists at Banner Good Samaritan Medical Center, in Phoenix, Arizona.

The researchers were interested in comparing mercury levels in the urine of healthy fish eaters to non-fish eaters, and to see how these levels changed after the DMSA challenge test. The expectation was that the urine mercury level would be higher for the fish eaters after the DMSA challenge compared to the non-fish eaters. A total of 24 healthy physicians were assigned to one of three groups based on fish consumption. Physicians in Group A were the non-fish eaters. Group B consumed 1 to 2 fish servings per week, and Group C consumed 3 or more servings per week.

When the urinary mercury levels were checked before the DMSA challenge test, there was no statistically significant difference between the groups. After the DMSA challenge all three groups demonstrated an increase in urinary mercury levels, though this was highest in Group A—the fish eaters. Also, for each individual, the best predictor of a rise in urine mercury following the DMSA challenge was the blood mercury level before the test. These findings were reported in the January 2009 issue of the medical journal, *Archives of Pathology and Laboratory Medicine*.

What I find most interesting about this study of healthy physicians is that the oral DMSA produced a rise in urine mercury levels for both fish eaters and non-fish eaters. Yes, the increase in chelated mercury excretion was higher in fish eaters, but even in non-fish eaters the DMSA was clearly doing its work, which is to say pulling out mercury. This would certainly suggest that mercury from other sources—and again, most likely dental

amalgams—can lead to an increase in the body's mercury burden. Although fish is an important source, it is not the only source.

I would like to see a larger study to check the mercury contribution of different types of fish. Presumably, those individuals consuming more of the high mercury-containing fish (tuna, shark, and swordfish) would have higher urinary mercury levels after the DMSA challenge than those consuming low mercury fish, such as salmon, shrimp, and shellfish. The point of such a study would be to drive home the point that, when you eat fish, it's important to be very picky, and to think beyond the freshness issue.

Earlier this year, Good Morning America ran a segment about the actor Jeremy Piven, who had recently been performing in a Broadway play. Unfortunately, he got sick and had to drop out of the play. Testing showed that he had mercury toxicity. Mr. Piven admitted to eating fish every day, saying that it was his primary source of protein. But Good Morning America's medical experts countered that there was no way Piven could have gotten mercury toxicity just from eating fish.

Based on the findings from the recent Arizona study, it is hard to deny that fish eating raises the body's mercury burden. And there's little doubt that the larger, fattier fish such as tuna and swordfish are the major contributors. What has gone overlooked, however, is the contribution of dental amalgams and possibly other sources, as suggested by the Arizona study.

### **Getting the Mercury Out**

Mercury and other heavy metals can be removed by several methods. At our clinic in Raleigh, we favor the use of chelators such as EDTA, DMPS, and DMSA, as well as certain natural chelators and detoxification promoters that can be taken as dietary supplements.

In chelation therapy, your body receives the chelating agents through an intravenous infusion; alternatively, you may use an oral or suppository medication that enters your body

and binds to the metals. Your body then eliminates the resulting mercury-chelator complex through the urine and stool. The length of chelation therapy varies according to how much mercury you have accumulated and your body's detoxification capacities. You can receive this treatment on a regular basis until the body burden of mercury is reduced to a level where clinical symptoms are improved or resolved.

Over the past two decade, I have favored a specific nutritional approach to further enhance the benefits of chelation therapy. Our strategy entails supplementing with hydrolyzed whey protein, lipoic acid, and N-acetyl cysteine (NAC), among other agents. Collectively, these supplements help boost the body's production of glutathione, the core antioxidant in our cells that's critical to liver detoxification and to the elimination of heavy metals through the feces. In addition, whey contains branched-chain amino acids, which help keep bound metals from being re-deposited in the brain. We also occasionally use a special mineral compound called a zeolite to speed up mercury removal and reduce the need for further chelation treatments.

These strategies, along with a high-fiber diet and other options such as biological dentistry (the biologically appropriate way to remove silver amalgams) and regular sweating through saunas and aerobic exercise, all add up to the most effective program for lowering your body's mercury burden. Finally, we provide our patients with up-to-date lists of the best sources of fish for minimizing mercury exposure. The potential benefits of this complete approach range from increased energy, vitality, and resilience to a lower risk of many chronic and life-threatening diseases.

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