

## Toxic Metals and Hair Testing

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We continue to receive many questions regarding toxic metals and their detection on hair mineral tests. This bulletin is a review of the principles involving toxic metals and hair testing.

### METABOLISM OF THE TOXIC METALS

Toxic metals are those minerals that have no known function in the human body and which are harmful. This is not an absolute definition, as any mineral may become toxic, and some toxic metals may have functions we have not yet discovered.

Toxic metals are ingested, inhaled or absorbed through the skin. However, another important source is toxic metals passed through the placenta from mother to child during gestation. These can remain in the body for a lifetime.

Once absorbed, toxic metals find their way into the bloodstream. As soon as this occurs, the body attempts to get rid of them through the normal elimination channels - the kidneys, the bile and the skin. The body also attempts to minimize toxic metal damage by sequestering or storing them away in fatty tissues, hair and other non-essential tissues.

Damage from toxic metals may occur due to their physical properties, their chemical properties or even electromagnetic interference. They often interfere with the absorption and metabolism of essential minerals and they displace vital minerals in enzyme binding sites. This can inhibit or completely disable the affected enzymes.

### TARGET ORGANS AND PREFERRED MINERALS

Each toxic metal has an affinity for particular organs and tissues. These are called the target organs. The target organ is different for each toxic mineral. For example, mercury migrates mainly to the kidneys and the brain, while cadmium settles in the arteries, kidneys and periosteum.

The effects of toxic metals are greatly magnified when there are simultaneous deficiencies of the vital minerals. In these cases, toxic metals can

substitute for vital minerals in critical enzyme systems, acting like "*replacement parts*". This keeps the body functioning, but not optimally. The process is called the principle of preferred minerals. The body prefers the vital minerals, but will use toxic metals if the vital minerals are not available.

For example, zinc is required in the arteries for flexibility and strength. If zinc becomes deficient in the diet, cadmium from the diet or the environment can replace zinc in the arteries. This will allow one to continue living. However, cadmium causes more brittle arteries and is associated with hardening and sclerosis of the arteries, high blood pressure and more serious cardiovascular disease.

True correction of cardiovascular disease with this cause must involve replacing the cadmium in the arteries with the preferred mineral, zinc. This is an essential aspect of nutritional balancing science.

### DETECTION OF TOXIC METALS

Blood, urine and hair are commonly used to detect toxic metals. No single test can detect all toxic metals in the body. Blood tests are excellent if the metal poisoning occurred within the last few days or perhaps weeks. However, toxic metals are removed from the blood quickly. Therefore, blood tests are not helpful for detecting chronic exposure.

Some holistic physicians detect toxic metals with a 6 or a 24-hour urine sample. This is useful only if it is preceded by a dose of a chelating agent such as EDTA or DMSA for mercury. The chelator grabs many minerals in the blood, including toxic metals, and causes them to be excreted in the urine. This test will only detect heavy metals that are in the blood and perhaps those in the artery walls. It cannot detect toxic metals that are sequestered deep within organs and tissues.

Studies by the US Environmental Protection Agency and the Atomic Energy Commission confirm the value of hair analysis for detecting chronic toxic metal exposure, the most common

type of exposure.

### **WHY DON'T ALL HEAVY METALS SHOW UP ON A HAIR ANALYSIS?**

Toxic metals are fixed in the protein structure of the hair tissue as the hair grows. This may reflect the total amount of toxic metals in the body, but not always. Some toxic metals accumulate in other organs and tissues.

To detect the metals in every organ would require a biopsy of every organ. For this reason, a person who was exposed to a toxic metal may not have an elevated reading of that metal on his first hair analysis. This just means the metal is not deposited in the hair tissue.

Fast oxidizers often have higher levels of toxic metals in their hair than slow oxidizers. This is not because fast oxidizers are more toxic. It is because fast oxidizers have more energy as a rule and are better able to eliminate toxic metals through the hair.

In fact, slow oxidizers, as a group, are more toxic because they have less ability to remove toxic metals, causing more accumulation of toxic metals in their bodies. As their body chemistry improves and their oxidation rate increases, many slow oxidizers begin to eliminate more metals through their liver, kidneys, skin and hair. This will often cause a temporary increase in the hair tissue readings. The toxic metal readings may fluctuate up and down as the body releases different deposits of the same toxic metal from various tissue storage sites.

Most people are so toxic, this process can go on for years. At times, one toxic metal reading may rise first and then a different metal will increase. This alternating elimination is how the body controls the process to avoid overloading the organs of elimination during detoxification. It is quite fascinating to observe.

### **HOW DO WE ASSIST TOXIC METAL ELIMINATION?**

Several methods are used to eliminate toxic

metals. Prescription synthetic chelating agents include penicillamine for copper, Deferroxamine for iron and aluminum, EDTA for many metals and DMPS or the less-toxic DMSA for mercury.

These chemicals are powerful, but have three drawbacks: First, they often remove vital minerals along with the toxic ones, causing vital mineral imbalances. Second, they remove the metals through the kidneys which can stress the kidneys. Third, the chemicals themselves may have some toxicity.

Vitamin C, sulfur-containing amino acids, foods such as cilantro and slow-cooked beans, herbs such as yellow dock and bugleweed, and algae such as chlorella can all help remove toxic metals. These agents are natural chelating agents or antagonists.

Mineral therapy can help remove toxic metals. Each toxic metal has specific mineral antagonists that inhibit its absorption or metabolism. For instance, cadmium antagonists include calcium and zinc. Mercury antagonists include selenium. The antagonists include the physiological minerals needed to replace the toxic metals.

Enhancing the organs of elimination such as the skin, liver, kidneys and colon may also greatly facilitate the elimination of toxic metals. This is why saunas, massage, skin brushing, colonic irrigation, herbs for the liver and kidneys, bowel cleansing and other detoxification procedures may help eliminate toxic metals.

The most important method of eliminating toxic metals, in our experience, is to balance body chemistry and enhance energy production. Energy is required to eliminate toxic metals. Also, a balanced body chemistry will support the metabolism in ways that will facilitate the elimination of toxic metals.

The goal of all hair mineral analysis programs based on mineral balancing science is to support body chemistry and thus facilitate the removal of all toxic metals, as well as other toxic chemicals that cannot be read on any mineral test.