



## Metal Profile Testing

There are 35 metals that concern us because of occupational or residential exposure. Of these, 23 are the heavy elements or "heavy metals": antimony, arsenic, bismuth, cadmium, cerium, chromium, cobalt, copper, gallium, gold, iron, lead, manganese, mercury, nickel, platinum, silver, tellurium, thallium, tin, uranium, vanadium, and zinc. Interestingly, small amounts of these elements are common in our environment and diet and are actually necessary for good health, but large amounts of any of them may cause acute or chronic toxicity. Heavy metal toxicity can result in damaged or reduced mental and central nervous function, lower energy levels, and damage to blood composition, lungs, kidneys, liver, and other vital organs. Long-term exposure may result in slowly progressing physical, muscular, and neurological degenerative processes that mimic Alzheimer's disease, Parkinson's disease, muscular dystrophy, and multiple sclerosis. Allergies are not uncommon and repeated long-term contact with some metals or their compounds may even cause cancer.

The symptoms indicative of acute toxicity are not difficult to recognize because they are usually severe, rapid in onset, and associated with a known exposure or ingestion. The symptoms include cramping, nausea, and vomiting; pain; sweating; headaches; difficulty breathing; impaired cognitive, motor, and language skills; mania; and convulsions. The symptoms of toxicity resulting from chronic exposure (impaired cognitive, motor, and language skills; learning difficulties; nervousness, emotional instability, insomnia, nausea, lethargy, and feeling ill) are much more difficult to associate with their cause. Symptoms of chronic exposure are very similar to symptoms of other health conditions and often develop slowly over months or even years.

Heavy metals can also contribute to autoimmune disease, skin diseases and allergies.

### BENEFICIAL VS. TOXIC HEAVY METALS

In small quantities, certain heavy metals are nutritionally essential for a healthy life. Some of these are referred to as the trace elements e.g., iron, copper, manganese, and zinc. These elements, or some form of them, are found naturally in foodstuffs, in fruits and vegetables, and in commercially available multivitamin products.

Heavy metals become toxic when they are not metabolized by the body and accumulate in the soft tissues. Heavy metals may enter the human body through food, water, air, or absorption through the skin when they come in contact with humans in agriculture and in manufacturing, pharmaceutical, industrial, or residential settings. For some heavy metals, toxic levels can be just above the background concentrations naturally found in nature.

### COMMONLY ENCOUNTERED TOXIC HEAVY METALS

The following are metals that are most likely encountered in our daily environment.

#### Arsenic

Arsenic is released into the environment by the smelting process of copper, zinc, and lead, as well as by the manufacturing of chemicals and glasses. Manufacturing of pesticides may produce arsine gas as a by-product. Arsenic may be found in water supplies, exposing

shellfish, cod, and haddock to this toxin. Other sources are paints, rat poisons, fungicides, and wood preservatives. Target organs are the blood, kidneys, and central nervous, digestive, and skin systems.

#### Lead

Lead accounts for most paediatric heavy metal poisoning. It was used in pipes, drains, and soldering materials for many years. Lead is used in batteries, cable coverings, plumbing, ammunition, fuel additives, paint pigments, PVC plastics, x-ray shielding, crystal glass production, pencils, cosmetics, hair dyes and pesticides. Target organs are the bones, brain, blood, kidneys, and thyroid gland.

#### Mercury

Mercury is generated naturally in the environment from the degassing of the earth's crust, from volcanic emissions. Mining operations and paper industries are significant producers of mercury. Atmospheric mercury returns to the earth in rainfall, accumulating in aquatic food chains and in fish. People who consume more than two fish meals a week show higher serum levels of mercury. Mercury compounds were added to paint as a fungicide until 1990. Mercury continues to be used in thermometers, thermostats, and dental amalgam and medicines such as mercurochrome and merthiolate. Algicides and childhood vaccines are also potential sources. Target organs are the brain and kidneys.

#### Cadmium

Cadmium is a by-product of the mining and smelting of lead and zinc. It is used in nickel-cadmium batteries, tobacco smoke, PVC plastics, and paint pigments. It can be found in soils because insecticides, fungicides, sludge, and commercial fertilizers that use cadmium are used in agriculture. Cadmium may be found in reservoirs containing shellfish. Cigarettes also contain cadmium. Lesser-known sources of exposure are dental alloys, electroplating, motor oil, and exhaust fumes. Target organs are the liver, placenta, kidneys, lungs, brain, and bones.

#### Iron

Iron is a heavy metal of concern, particularly because ingesting dietary iron supplements may acutely poison young children. Ingestion accounts for most of the toxic effects of iron because iron is absorbed rapidly in the gastrointestinal tract. Sources of iron are supplements, drinking water, iron pipes, and cookware. Target organs are the liver, cardiovascular system, and kidneys.

#### Aluminum

Aluminum is readily available for human ingestion through the use of food additives, antacids, buffered aspirin, astringents, nasal sprays, and antiperspirants; from drinking water; from automobile exhaust and tobacco smoke; and from using aluminum foil, aluminum cookware, cans, ceramics, and fireworks. Studies suggest that aluminum might have a possible connection with developing Alzheimer's disease, degenerative muscular conditions and cancer. Target organs for aluminum are the central nervous system, kidney, and digestive system.

### SIGNIFICANCE OF INDIVIDUALIZED TREATMENT REGIMENS

It is very important to note that treatment regimens vary significantly and are tailored to each specific individual's medical condition and the circumstance of their exposure. Providing a complete history of the person, including their occupation, hobbies, recreational activities, and environment, is critical in diagnosing heavy metal toxicity. A possible history of ingestion often facilitates a diagnosis, particularly in children.

Conventional and alternative medical treatment includes chelation therapy, supportive care and decontamination, often used in combination. These procedures typically require the expertise of trained and experienced professionals and treatment in a clinical setting. Follow-up is required with laboratory testing until reference levels are within and remain in



the normal range, particularly when the exposure was acute or if the person continues to have symptoms after treatment. Self-diagnosis and treatment is not appropriate.

## CHELATION THERAPY

In the medical environment, chelation is used to treat heavy metal toxicity. Chelation therapy, is the process by which a molecule encircles and binds to the metal and removes it from tissue. Once the bound metal leaves the tissue, it enters the bloodstream, is filtered from the blood in the kidneys, and then is eliminated in the urine.

## TESTING

A Condensed Metal Profile tests only the six most toxic and common heavy metals, including Aluminium, Arsenic, Cadmium, Lead, Mercury and Nickel. This test requires 2 urine samples collected at 2 hour intervals after having taken a specific dose of chelating agent.

\*Condensed Metal Profile 6 Toxic Metals R 504.80 (Incl. VAT)

A Full Metal Profile tests 24 essential and toxic elements including heavy metals. It also requires 2 urine samples collected at 2 hour intervals after having taken a specific dose of chelating agent.

\*Full Metal Profile R 1515.00 (Incl. VAT)

\*Hair Mineral Analysis R 1350.00 (Incl. VAT)

To have any of the above metals tests done please contact our receptionist on 0117871221 to make an appointment with Dr Davidson or Dr Botha to discuss your case and to have the test done.