Nutrient and Toxic Elements in Blood

Erythrocyte element levels are good indicators of body pools of essential elements as well as the toxic elements aluminum, arsenic, cadmium, lead, and mercury. The Metametrix **Nutrient and Toxic Elements Profile** is an especially accurate way of determining whole body status of potassium and selenium.

Whole blood generally reflects increased or recent exposure to toxic elements. The Metametrix **Toxic Metals Profile** shows levels of aluminum, arsenic, cadmium, lead, and mercury.

Nutrient Elements

Often referred to as minerals, the chemical elements are fundamental to every function in the body. They join together in crystalline structures to form bone. They shuttle independently across membranes, resulting in nerve impulses, or serve at the heart of many enzyme molecules to direct chemical processes.

The importance of calcium and phosphorus to bone formation and the electrolyte role of sodium and potassium are commonly understood. Magnesium is involved in over 300 chemical reactions in the body, including all ATP transformations and therefore all cellular energy production. Depletion from food sources has resulted in a near epidemic of magnesium insufficiency. Selenium is required by the enzyme glutathione peroxidase, which maintains the oxidative balance in all tissue. Low selenium, therefore, can directly influence an individual's antioxidant protection. Chromium and manganese are especially important in insulin insensitivity and Metabolic Syndrome. Zinc deficiency has been implicated in a variety of disorders, including sexual impotence, retarded growth, hair loss, and immune system depression.

Because of rapid depletion of all elements, erythrocyte analysis should be standard protocol before and throughout chelation therapy. Nutrient element analysis is critical for identifying both the need for and monitoring the adequacy of either oral or IV supplementation.

It is because of their diverse and vital roles that nutrient element imbalances are frequently found to be factors in degenerative diseases. Since the body cannot manufacture the elements—and daily losses are unavoidable—the nutrient elements are all "essential" and must regularly be taken in through the diet. But they are easily lost in food processing, so it's easy to see how deficiencies can occur.

Toxic Elements

Some elements can accumulate in tissues causing toxic effects. Metal toxicity is a significant environmental health concern. A toxic load of lead, cadmium, mercury or arsenic is capable of rendering considerable damage to the brain and nervous system, particularly in children. Toxic elements produce their many negative effects through various mechanisms.

One mechanism, irreversible enzyme inhibition, is illustrated by the anemia caused when lead binds to enzymes in the hemoglobin synthesis pathway. The cancer-inducing effect of arsenic seems to be due to an inhibition of DNA repair. Genotoxicity, in which chromosomes are damaged, is linked to the free radical generation abilities of cadmium, lead and nickel. Mercury causes enzyme poisoning.

Metametrix element analysis features:

- Testing with the latest advances in technology (ICP/MS), which can guide therapy by pinpointing imbalances of these important substances.
- A cost-effective approach for monitoring nutrient and toxic elements.
- Metametrix quality and reliability backed by over 20 years of experience.

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Nutrient & Toxic Elements - Blood

Test #0022, 0037(NY) Nutrient & Toxic Elements - Erythrocytes

Specimen Requirements
Whole blood, room temperature

Method: ICP/MS

Turnaround Time: 7-14 days, 11 days average

CPT Codes

CPT #	Description
82108	Aluminum
82175	Arsenic
82300	Cadmium
82310	Calcium
82495	Chromium
82525	Copper
83655	Lead*
83735	Magnesium
83785	Manganese
83825	Mercury
84255	Selenium
84630	Zinc
84311 x2	Spectrophotometry, NES: Potassium Vanadium

Analytes Reported

Aluminum
Arsenic
Cadmium
Calcium
Chromium
Copper
Lead*
Magnesium
Manganese
Mercury
Potassium
Selenium
Vanadium
Zinc

Test #0026, 0039(NY) Toxic Metals - Whole Blood

Specimen Requirements
Whole blood, room temperature

Method: ICP/MS

Turnaround Time: 7-14 days, 14 days average

CPT Codes

CPT #	Description
82108	Aluminum
82175	Arsenic
82300	Cadmium
83655	Lead*
83825	Mercury

Analytes Reported

Aluminum
Arsenic
Cadmium
Lead*
Mercury

* Lead is not included in New York profile.