



#### SIGNIFICANT RATIOS 4 60 4 40 8 20 16.00 8.00 15.00 2.30 3.40 6.20 12.00 11.00 1.60 3.60 6.00 ACCEPTABL ACCEPTABL 2.60 2.40 4.20 8.00 4.00 7.00 .90 1.60 2.20 4.00 2.00 3.00 1.40 .20 8 Ca/P Ca/K Zn/Cu Na/Mg Ca/Mg Fe/Cu 1.69 .90 2.20 13.64 .32 .79 .91

**TOXIC RATIOS** 168.0 88 44.0 1.6 1000.0 400.0 56900 142251 11380 40CEPTABL 126.0 6.6 33.0 1.2 750.0 300.0 42675 106688 8535 22.0 0.8 500.0 200.0 28450 71126 5690 84.0 44 42.0 2.2 11.0 0.4 250.0 100.0 14225 35563 2845 Ca/Pb Fe/Pb Fe/Hg Se/Hg Zn/Cd Zn/Hg S/Hg S/Cd S/Pb 1500.0 451600 322571 45160 220.0 10.0 100.0 9.0 1071.4

# ADDITIONAL RATIOS

	Current	Previous	Ĭ
Ca/Sr	733.33		131/1
Cr/V	4.17		13/1
Cu/Mo	550.00		625/1
Fe/Co	1000.00		440/1
K/Co	10000.00		2000/1
K/Li	10000.00		2500/1
Mg/B	95.52		40/1
S/Cu	4105.45		1138/1
Se/TI	180.00		37/1
Se/Sn	9.00		0.67/1
Zn/Sn	1500.00		167/1

# **LEVELS**

All mineral levels are reported in milligrams percent (milligrams per one-hundred grams of hair). One milligram percent (mg%) is equal to ten parts per million (ppm).

### **NUTRITIONAL ELEMENTS**

Extensively studied, the nutrient elements have been well defined and are considered essential for many biological functions in the human body. They play key roles in such metabolic processes as muscular activity, endocrine function, reproduction, skeletal integrity and overall development.

# TOXIC ELEMENTS

The toxic elements or "heavy metals" are well-known for their interference upon normal biochemical function. They are commonly found in the environment and therefore are present to some degree, in all biological systems. However, these metals clearly pose a concern for toxicity when accumulation occurs to excess.

# ADDITIONAL ELEMENTS

These elements are considered as possibly essential by the human body. Additional studies are being conducted to better define their requirements and amounts needed.

### **RATIOS**

A calculated comparison of two elements to each other is called a ratio. To calculate a ratio value, the first mineral level is divided by the second mineral level

EXAMPLE: A sodium (Na) test level of 24 mg% divided by a potassium (K) level of 10 mg% equals a Na/K ratio of 2.4 to 1.

### SIGNIFICANT RATIOS

If the synergistic relationship (or ratio) between certain minerals in the body is disturbed, studies show that normal biological functions and metabolic activity can be adversely affected. Even at extremely low concentrations, the synergistic and/or antagonistic relationships between minerals still exist, which can indirectly affect metabolism.

# **TOXIC RATIOS**

It is important to note that individuals with elevated toxic levels may not always exhibit clinical symptoms associated with those particular toxic minerals. However, research has shown that toxic minerals can also produce an antagonistic effect on various essential minerals eventually leading to disturbances in their metabolic utilization.

# **ADDITIONAL RATIOS**

These ratios are being reported solely for the purpose of gathering research data. This information will then be used to help the attending health-care professional in evaluating their impact upon health.

# REFERENCE RANGES

Generally, reference ranges should be considered as guidelines for comparison with the reported test values. These reference ranges have been statistically established from studying an international population of "healthy" individuals.

Important Note: The reference ranges should not be considered as absolute limits for determining deficiency, toxicity or acceptance.

# Health history for hair test 521

- **1. What are your current symptoms and health history?** Speech disorder, ADD, ADHD, autism, frequent ear infections as infant, lead exposure in military housing in Hawaii, has had phenol toxicity symptoms, very sensitive to foods, metabolic disorder.
- 2. Dental history (Wisdom teeth removed and when? Any other extractions. First root canal placed? Braces? First amalgam etc...) N/A
- 3. What dental work do you currently have in place? What part of the dental clean-up have you completed? None
- 4. What dentistry did your mother have at any time before or during pregnancy? 1 amalgam
- 5. What vaccinations have you had and when (including flu and especially travel shots)? Too many to list, all of them 2002-2006 schedules.
- 6. Supplements and medications (including dosages) taken at time of hair test, or for the 3-6 months before the sample was taken? high doses of magnesium, epsom salt baths, IP6.
  - 7. What is your age, height and weight? 9 years old, normal size
- **8. Other information you feel may be relevant?** both parents were in military. Mom had 3 dose mercury-containing Hep B vaccine series during year of conception. Father is a welder.
- 9. What is your location city & country (so that we can learn where certain toxins are more prevalent). Honolulu Hawaii, then Pacific Northwest (Oregon and Washington)