

## Concerning Possible Toxic Minerals

"Poisons in small doses are the best medicines; and the best medicine in too large doses are poisonous."

A famous quote by Wm. Withering

Consumption of plant derived mineral fulvic complexes by humans for many years has shown that they will not build up in the body tissues as do metallic minerals. The following observations and theories describe the reasons why: Cells have the ability to accept or reject minerals, including *aluminum, lead, arsenic, mercury*, etc., at their discretion when presented as organic fulvic acid complexes. It should be considered that these minerals may not necessarily be present to "nourish" cells, but are needed to act as "electrodes" in the fulvic electrolyte solution. In that capacity they are probably most essential for bio-reactions, electron transfer, catalytic reactions and transmutations.

Fulvic acid chelates (binds) and carries complexed minerals in "trace" amounts only, and should not be confused with metallic minerals. Fulvic acid has the ability to complex and remove toxic metals and other minerals from the system. Fulvic acid mineral solutions have been ingested by people for many years, yet have never been shown to cause toxic mineral build-up in humans.

It is obvious that when metals, minerals and trace elements become complexed into fulvic acid, they take on an entirely new property of availability, unlike their original form.

It is when fulvic acid is not present that one should seriously worry about toxic buildup from any source. This could account for the health problems that are causing concern today in our "fulvic starved" society.

Aluminum makes up 12% of the Earth's crust, and is the most abundant metallic element. Aluminum is found in biological quantities in most plants grown in soil. Most of our food crops contain 20 – 200 ppm or more of aluminum. In crops today this concentration would normally be in the absence of fulvic acid.

Known biological function of Aluminum is to activate the enzymes succinic dehydrogenase. It increases survival rate of newborn infants, and according to professor Gerhard Schrauzer, head of the department of chemistry at UCSD, is an essential mineral for human nutrition.

In a study that appeared November 5, 1992 in the science journal, NATURE, Frank Watt, et al (University of Oxford) used a highly accurate laboratory technique to quantify the levels of aluminum in the brains of Alzheimer's patients. To their great surprise, they found the same levels of aluminum in the brains of the non-Alzheimer's control as they did in their Alzheimer's patients. Watts believes that aluminum contaminated stains gave faulty results in the early studies that highlighted aluminum as a health risk.

Science is just learning about other supposedly toxic minerals.

### Arsenic

It is now generally accepted that arsenic in trace levels, is an essential element for optimal health and longevity. The levels of arsenic that most people ingest in food or water are not usually considered to be a health concern.

Despite all the adverse health effects associated with arsenic exposure, there is some evidence that low levels of exposure may be beneficial to good health. Test animals maintained on a diet deficient in arsenic did not gain weight normally, and they became pregnant less frequently than the control animals maintained on a diet containing a more normal (but low concentration) of arsenic. Arsenic has been found to be essential for survival of newborn babies and also neonatal growth. Arsenic has been shown to promote the growth rate in animals and prevent carpal tunnel syndrome in humans.

### Smokers and cadmium

Like most plants, tobacco contains trace amounts of cadmium and lead. It is interesting to note that people that smoke tobacco have about twice as much cadmium in their bodies as do nonsmokers. Higher levels of lead are also found in smokers. It would stand to reason that burning converts the natural organic plant forms to a metallic or toxic form causing buildup in the body. This also could be direct evidence proving the safety of natural organic plant forms of these metals.

### Mercury and Selenium

The metabolic antagonism between mercury and selenium results in the protection from selenium poisoning by mercury, and the protection against mercury poisoning by selenium.

### Zinc

Taking too little zinc is at least as important a health problem as taking in too much zinc. Without enough zinc in the diet, people can experience loss of appetite, decreased sense of taste and smell, slow wound healing, and skin lesions. In severe cases in children, too little zinc can cause poorly developed sex organs and dwarfism.

## **The Heavy Metal Content of Mineral Logic's Products:**

### **Arsenic:**

The serving size of our liquid products is 0.5 mL (10 drops from a standard medical dropper) that is 1/2000th of a liter -- so if you divide any analyte value by 2,000 the (or milligrams per liter) you can calculate and arrive at what would be in each serving of liquid minerals.

Arsenic for example ranges from 2 – 10 ppm million in our liquid products. If you divide 10 ppm (10 mg) by 2,000 you 5 mcg (parts per billion) per serving and this is the maximum amount one would ingest daily. The EPA standard for arsenic in drinking water is 10 mcg per liter and most people consume more than one liter of water daily.

Despite the notoriety of arsenic as a poison, arsenics play an important role in medicine, and even today, arsenilic acid and nitrophenyl forms of arsenic are used to enhance the growth, health, and feed efficiency of pigs and poultry (Venugopal and Luckey, 1978; Underwood, 1977).

An average serving of shrimp contains 40 ppm (40 mg) per serving of arsenic. Brown rice contains an average of 0.30 mg of arsenic per serving.

Most of the arsenic in Mineral Logic's liquid products is in the organic compounded form, not the metallic and very toxic form.

### **Aluminum:**

Our liquid products contain an average of 4000 ppm aluminum. That is 2 ppm per serving.

According to the agronomy handbook; the average serving of beans or celery contain some 300 mg of aluminum – or 300 ppm.

Our product does not contain metallic aluminum as that found in soft drinks or beer, it is an organic origin aluminum silicate. Easily metabolized just like the aluminum in plants like beans and celery --

So you see it really is a non-issue. It's all perception. Eating beans and taking the fulvic minerals will not be harmful to your health.

The table on the next page is taken from the Agronomy Handbook. It demonstrates the surprising content of aluminum in certain foods.

Keep in mind that this is organic plant processed colloidal aluminum and is non-toxic.

**PLANT ANALYSIS GUIDE  
NUTRIENT SUFFICIENCY RANGES\***

VEGETABLES (Field Crops)

CROP		N	S	P	K	Mg	Ca	Na	B	Zn	Mn	Fe	Cu	Al	Mo
		PERCENT (%)								PARTS PER MILLION (p.p.m.)					
Asparagus	From	2.40	0.25	0.30	1.50	0.15	0.40	0.01	25	20	10	50	10	20	
	To	3.80	0.50	0.75	2.40	0.50	1.00	0.10	75	60	180	300	50	200	
Beans	From	3.60	0.25	0.30	2.00	0.35	1.00	0.01	25	35	50	50	8	20	
	To	6.00	0.70	0.70	4.00	1.00	3.00	0.05	70	60	100	200	30	250	
Brussels Sprouts	From	2.50	0.20	0.25	2.50	0.25	3.00	0.01	70	40	200	125	10	20	
	To	5.00	0.50	0.50	3.50	0.40	5.00	0.10	100	80	500	200	25	150	
Celery	From	3.00	0.60	0.40	4.00	0.30	1.50	0.01	25	30	50	60	8	20	
	To	4.80	1.20	0.80	6.00	0.50	4.00	0.25	50	80	150	200	20	300	
Cucumbers	From	3.50	0.30	0.30	2.50	0.60	1.25	0.01	25	30	50	50	10	20	
	To	5.50	1.00	0.70	6.00	1.50	5.00	0.20	80	70	200	200	25	200	
Head Crops	From	2.50	0.30	0.40	3.50	0.30	1.50	0.01	25	25	50	50	5	20	
	To	4.50	1.50	1.00	5.00	0.50	2.50	0.10	50	45	100	200	10	200	
Leaf Crops	From	3.50	0.30	0.40	3.50	0.30	1.25	0.01	25	30	25	60	6	50	
	To	6.00	0.75	1.00	8.00	1.00	2.50	0.20	50	50	40	200	20	150	
Melons	From	2.00	0.30	0.20	2.50	0.50	2.00	0.01	25	20	50	60	5	20	
	To	6.00	1.00	0.80	5.00	1.00	3.50	0.20	75	80	100	120	20	150	
Peas	From	4.50	0.20	0.30	1.80	0.35	1.10	0.01	15	40	40	50	10	10	
	To	6.00	0.60	0.60	2.50	0.80	1.80	0.20	45	80	70	150	30	80	
Peppers	From	3.00	0.30	0.40	4.00	0.50	0.75	0.01	30	30	60	100	15	50	
	To	6.00	0.60	0.80	6.50	1.00	2.50	0.50	75	60	200	250	50	200	
Potatoes	From	4.00	0.25	0.30	3.50	0.50	0.70	0.01	25	30	60	100	10	50	
	To	6.00	0.50	0.70	6.50	1.10	2.00	0.15	60	70	200	200	25	250	
Root Crops	From	3.50	0.30	0.25	3.00	0.25	1.50	0.01	20	25	50	75	5	20	
	To	6.00	0.75	0.80	7.00	1.00	4.00	0.20	80	60	200	250	20	300	
Tomatoes	From	3.00	0.50	0.30	2.50	0.50	2.00	0.01	40	35	100	100	8	20	
	To	6.00	0.90	0.80	5.00	1.00	6.00	0.10	60	50	200	200	20	200	

**Cadmium**

Evidence that trace amounts of cadmium (Cd) may be essential for normal growth, comes from studies of Schwarz and Spallholtz (1976), who found consistent, small (up to 13%), dose-dependent growth-enhancing effects of 0.05—0.5 ppm cadmium in rats on "ultraclean diets"; and very recent studies in goats by Anke et al. (1990). These observations are consistent with an essential role of the element in the mammalian organism, although at this time, it is not generally accepted that cadmium is essential.

Mineral Logic's liquid products contain an average of 0.5 ppm cadmium which translates to 0.25 mcg (parts per billion) of this element per serving. One is exposed to far more cadmium from breathing the air around highways since all rubber tires contain cadmium.

**Lead**

Animal experiments by Kirchgessner and Reichlmayr-Lais (1981; Reichlmayr-Lais and Kirchgessner, 1990) support earlier suggestive evidence (Schwarz et al., 1970) that even this trace element is required in small amounts for normal growth and health. A deficiency induced by feeding rats 50 ppb lead in the diet (versus 1000 ppb in controls) over one or more generations had its most pronounced effects on the hematopoietic system, producing a microcytic, slightly

hypochromic anemia, accompanied by decreased iron stores in liver and spleen, as well as decreased growth (Kirchgessner and Reichlmayr-Lais, 1981); Other possible changes observed were decreases in liver catalase (a heme iron enzyme) and in liver concentrations of glucose, tri-glyceride, and phospholipid (not cholesterol).

An average slice of pizza contains 5 ppm lead. This is far more than one would ingest from consuming Mineral Logic's fulvic mineral products. Lead content in our products averages 2 ppm which translates to 1 mcg (parts per billion) per serving of 0.5 ml. Far less than the 5 ppm (5,000 mcg contained in a slice of pizza)

### **Conclusion:**

There is ample evidence that small trace amounts of these metals play a role in healthy cellular function. The tiny amount of these naturally occurring organic origin compounds contained in fulvic minerals pose no threat to maintaining a healthy body and mind.

### **References:**

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Kehoe, R.A., et al.: Manganese, Lead, Tin, Aluminum, Copper and Silver in Normal Biological Material. J. Nutr. July 1940. Pages 85 – 98.

### **Human Experiments With Fulvic Minerals**

The Healing & Regenerative Influences of Low Molecular Weight Humic Substances (Fulvic Acid) On Human Tissues and Cells

Tests<sup>17</sup> were conducted by Dr. W. Schlickewei<sup>18</sup> and five associates<sup>19</sup> at the University Hospital in Freiburg, Germany, on human patients requiring transplantation or replacement of bone during surgery. The transplantation of bone tissue is required in about 15% of all cases of replacement surgery of the locomotor apparatus, and it is generally applied to reconstitute and repair actual defects in bone.

Human donor tissues have become scarce due to special legal requirements and necessary additional testing because such tissues have a high danger of transmitting the HIV virus and hepatitis. There are also obvious disadvantages to using bone grafts from other areas of the same patient's body because they require a second operation and prolong the length of time in surgery. The only other known substitute source available in large enough quantities for clinical use, was animal bone in the form of inorganic calcium compounds (bovine calcium hydroxyapatite), and although these were well tolerated by the body, they showed no signs of being resorbed.

Remarkable bone regeneration and resorption characteristics were identified when the animal bone implants were impregnated with a low molecular weight humic substance (fulvic acid) prior to transplant into patients. The bone implant then became highly osteoconductive, and served the host tissue as a “guide-line” for the deposition of newly developing bone tissue. The same transplant procedure without the fulvic acid showed no signs of regeneration during the course of the experiment.

While on the lookout for a new group of active agents with the ability to promote wound healing, the doctors came across the humic substances. The doctors said that the bone resorption is most easily explained by the known ability of humate to induce the activation of leucocytes. They said that previous experiments had established that the humic substances are able to bind to calcium-containing compounds, stimulate granulocytes, and block the infectivity of the HIV virus.

**Summary:** In this clinical test and previous experiments, fulvic acid has been shown to activate and stimulate white blood cells, promote healing, turn inorganic calcium into an organic bio-active cellular regenerative medium conducive to new bone growth, stimulate cellular growth and regenerate, and inhibit the HIV virus.

### *Animal Experiments with Fulvic Acid Minerals*

Early studies with livestock animals were conducted by Dr. Charles S. Hansen, D.V.M. in the state of California from the early 1960’s through 1967 on an experimental basis. Dr. Hansen’s test included a blend of fulvic and humic acid used as a feed additive. He also used fulvic acid alone as a treatment for specific ailments in livestock. The results of supplement feeding and treatment included:

## **Dairy Cows**

- After 2 months of supplement no bacterial or viral infections
- Herd of over 300, after 3 months on supplement increased butterfat production of 15%
- Herd on supplement cut back on high protein rations with no decrease in production
- All cows on supplement experienced more complete digestion
- Cows with bacterial infection (mastitis) treated with 1 pint fulvic acid solution recovered to full production in 12 to 24 hours
- When using antibiotics to treat mastitis the recovery was only 50% - 70% after 2 to 3 weeks.

## **Hogs**

- Animals on the supplement experienced better and more complete digestion

- The free choice supplement in 36 hrs acted as an excellent vermifuge (de-worming agent)
- The supplement completely eliminated Necro, a bloody diarrhea in hogs

## **Mink**

- Animals on the supplement experienced more complete digestion
- When on the supplement were less vicious, more docile
- Supplemented animals ceased fur chewing
- Successfully eliminated most diseases common to mink herds

## **Poultry**

- Supplementing to feed acted as a vermifuge
- Pullets given supplement were free of most diseases
- Pullets on supplement experienced more complete digestion of other feeds in diet
- Pullets on supplement produced eggs of superior shell hardness and quality

*The results of these early tests support the known benefits which fulvic acid provides to all living systems, plant or animal. They indicate that fulvic acid may very possibly become the most important factor in health management in the future.*

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