



Minerals Health and Knowledge

What you need to know & what you thought you knew

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Looking Back

The history of scientific inquiry into the physiological effects of minerals and metals is one of ongoing discovery, debate and denial. Any serious study of nutrition and health is loaded with politics and distrust, where mainstream medical practitioners are contemptuous of alternative perspectives, especially the claims of scientists who remain uninfluenced by the petrochemical, genetic engineering and pharmaceutical industries. Likewise, those who study natural healing continue to be dismissed as “snake oil” vendors; on the other hand, modern orthomolecular scientists and complementary medical practitioners consider traditional medical experts to be dubious and old fashioned, closed-minded, and perhaps serially arrogant in the midst of repeated misplaced public confidence. It is adversarial science at its best and its worst, where truth sometimes takes a backseat to status quo and consensus. But slowly and inevitably we edge toward a better understanding of our earth and its life-sustaining connection to our bodies.

Even in the domain of natural health and geopharma, there are too many spurious claims. Numerous myths persist on the subject of minerals, vitamins, and what exposure levels are good or bad for you. Claims are plentiful, but any serious treatment of the topic should begin with an acknowledgment of the old adage, “everything in moderation, nothing in excess.”

With this in mind, one would expect that most biochemists and medical experts should be searching for the optimal amounts and combinations of all the elements in the periodic table to support our quest for good health and best-practices in supplementation. But there is little evidence that the various global health bodies are researching the optimal amounts of mineral absorption and intake. Rather, they seem preoccupied with establishing minimal standards based on old information and broad assumptions about the *average* needs of humans, regardless of the individual circumstances of people and their independent health needs. Moreover, many federally-sponsored scientists seem overly eager to research only the toxicity of mineral overdoses, rather than inquiring about whether we are biologically intended to consume certain minerals in copious, moderate or trace amounts. And of course, there appears to be little official curiosity about the differences between manmade and natural trace elements in attempting to gain an understanding the critical distinction between exposure and toxicity.

The chronicles of mineral discoveries are replete with accidental findings, strange epiphanies, unpredicted outcomes and an orthodoxy—often government managed, that refuses to admit the fact that our bodies need a greater variety of elemental minerals than has been officially recognized, and in larger doses. In fact, many minerals we know of today as being beneficial were once considered poisonous and were shunned. Minerals considered essential are being discovered and officially recognized all the time. Yet the FDA and USDA are far behind the research curve when it comes to acknowledging newly discovered beneficial minerals, and in fact behind other countries of the world in research and development in nutritional scientific advancements. Novel health products come to US markets sometimes decades after they are accepted in other parts of the world.

The Quest for Nutrition Knowledge

One great truth however is emerging. While most minerals are beneficial in specific dose ranges (that no doubt vary between individuals), all versions of any given mineral are not alike. Any given natural, colloidal mineral molecule is much safer for the body, than that same mineral after it has been chemically extracted, altered or changed by industrial processes. Therefore, much confusion exists when we make universal declarations about heavy metal toxicity. A clear example of demonizing some elements is the case of aluminum. Many smart people just “know” that “aluminum is bad for you”.

Yet scientists who study nutrition and physiology know that this is not true. A minute amount of natural trace aluminum—one of the most abundant compounds on earth, is beneficial and compatible with metabolic processes. Aluminum stabilizes enzymes, brain function, nervous function, sleep patterns, and is capable of balancing the intercellular environment. It is a natural antiseptic. Many people are surprised to learn that it is one of the most abundant elements on earth. But even as practically all soils, plants, animals and people have natural, health-supporting aluminum in them, many scientists and medical practitioners, and regulators hold the belief that any amount of aluminum is bad, and focus only on toxicity. The same frame of thinking dominates discussions of lead, mercury, and other metals, all of which play metabolic roles and can be toxic. What's missing from the debate is the balance...most minerals are both necessary and toxic depending on type, dose, and frequency of exposure.

Like economists and politicians, scientists disagree over many other things. The debate rages over which minerals are safe, beneficial, or toxic, and in what amounts. This is why it is more important than ever that you do not just blindly trust supposedly professional opinions about such vital things as nutrition and health. Here's an example of why. Very recently the American Academy of Pediatricians announced it was more than doubling its recommended intake (daily value) of vitamin D! The Canadian association of pediatricians increased the recommended amount for nursing mothers by 1000%! This must have been embarrassing for the FDA, which at the same time was telling people vitamin D could be toxic at the same doses. But the FDA's lack of humility raises some important public health questions. What makes them so certain the new dose is "right"? The answer is: the same certitude that caused them to proclaim that the previous recommendation was "correct". Only a week prior to the announcement, if you had been supplementing to double your vitamin D dosage, thousands of medical doctors and mainstream biochemists would have scoffed and ridiculed you for such reckless behavior as making up your own mind. They would have told you that you were wasting your money, or perhaps that you were risking your health by exposing your body to toxicity. My advice: don't just accept their opinions because you think they are smarter than you or possess some mystical expertise. You must inform yourself and make your own decisions. You must take charge of your health and nutrition needs. Doctors and government agencies simply cannot effectively manage your care without your active participation. They need to be held accountable.

Another phenomenon in the last 100 years is the increasing reliance on government funding and the influence of regulated mega-corporations over the open scientific process in health and nutrition. It is a fact that the government bureaucracy at all levels is decades behind the scientific community and hundreds of years behind ancient and traditional empirical knowledge of how natural products and healing earths can induce wellness. And because our political process is so unfortunately integrated with unsound business interests, the process of science...the quest for truth...is distorted by men and women who are dominated by other than your interests. Science is a process of trial and error, but no scientist wants any longer to admit their errors, especially when government programs have been set in motion based on a public health decisions that turn sometimes turn out to be wrong. These mistakes are far more easily obfuscated by dismissing the new research than by confessing. Admitting fault would invite class action lawsuits and would risk loss of political and consumer trust in the "experts". Too often there is little or no accountability to you.

Emerging Complexity

Biochemistry is anything but simple. The more we know about the function for the human cell, the more we realize how incorrect our knowledge was only a few decades or years ago, and how much more we have to learn. In the recent past, biologists were almost arrogant in their assumptions about the simplicity of cell function, perhaps out of a need to feel that evolutionary processes could not have created such complexity in so short a relative geological time span.

One scientist was recently asked to give us an analogy about what we now know as the complexity of a living cell relative to what we thought it was 100 years ago. The esteemed scientist said that if the human cell at the time of Darwin was a mud hut in terms of understood complexity, today it has the complexity of a galaxy! Full of interdependent

functionality and nano-robotic interaction, the intracellular “civilization” would boggle the mind if only it were taught correctly in schools. All of these interlocking intra and intercellular processes depend on a nutritional foundation of the basic mineral elements of the earth, and probably most earth elements are involved. Yet the orthodoxy of science has the audacity to proclaim, as they did when cells needed to seem so simple, that our bodies only require 17 out of the 94 non-gas elements which exist on the periodic table of elements, for optimal health.

A Hundred years ago, the human body was still believed to be composed of just 14 elements: oxygen, hydrogen, carbon, nitrogen, phosphorus, sulfur, calcium, magnesium, sodium, potassium, chloride, fluorine, silicon and iron. In recent times, we’ve added many metals and minerals to the list of the essential components of our existence, some of which you may have never even heard of. The most surprising findings have been the fact that we desperately require tiny amounts of hyper-trace elements to make the thousands of cellular processes work. Over the past 40 years the US FDA has created a list of such “essential” minerals. And since the tracking of such required minerals began, many additions have been made to this official list. Some elements with newly discovered health properties have been listed, other elements have been listed and then de-listed, some declined to be listed then listed, and some minerals have been considered poisonous, then found to be essential. Established RDA levels today have been changed many times over the years.

The search for the best understanding continues, and is by no means accurate or complete today. One consistent trend in the continued research is that the more we know, the more biologically complex we realize that we are, and the more we must accept how elementally tethered to the earth we are. You’d think such a history would make mainstream medical and science authorities humble about their “knowledge”, but in fact, they seem more certain than ever that the present generally accepted “knowledge” is supreme.

The Periodic Table of Elements

6

C

CARBON

12

Atomic Number = Number of Protons = Number of Electrons

Chemical Symbol

Chemical Name

Atomic Weight = Number of Protons + Number of Neutrons*

NON-METALS

METALS

1	2																	3	4	5	6	7	8	9	10																												
H HYDROGEN 1	He HELIUM 4																	B BORON 11	C CARBON 12	N NITROGEN 14	O OXYGEN 16	F FLUORINE 19	Ne NEON 20																														
11	12																	13	14	15	16	17	18																														
Na SODIUM 23	Mg MAGNESIUM 24																	Al ALUMINUM 27	Si SILICON 28	P PHOSPHORUS 31	S SULFUR 32	Cl CHLORINE 35	Ar ARGON 40																														
																		METALS																																			
19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36																																				
K POTASSIUM 39	Ca CALCIUM 40	Sc SCANDIUM 45	Ti TITANIUM 48	V VANADIUM 51	Cr CHROMIUM 52	Mn MANGANESE 55	Fe IRON 56	Co COBALT 59	Ni NICKEL 59	Cu COPPER 64	Zn ZINC 65	Ga GALLIUM 70	Ge GERMANIUM 73	As ARSENIC 75	Se SELENIUM 79	Br BROMINE 80	Kr KRYPTON 84																																				
37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54																																				
Rb RUBIDIUM 85	Sr STRONTIUM 88	Y YTTRIUM 89	Zr ZIRCONIUM 91	Nb NIOBIUM 93	Mo MOLYBDENUM 96	Tc TECHNETIUM 98	Ru RUTHENIUM 101	Rh RHODIUM 103	Pd PALLADIUM 106	Ag SILVER 108	Cd CADMIUM 112	In INDIUM 115	Sn ANTIMONY 119	Sb ANTIMONY 122	Te TELLURIUM 127	I IODINE 127	Xe XENON 131																																				
55	56																	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86																					
Cs CAESIUM 133	Ba BARIUM 137																	Hf HAFNIUM 178	Ta TANTALUM 181	W TUNGSTEN 184	Re RHENIUM 186	Os OSMIUM 190	Ir IRIDIUM 192	Pt PLATINUM 195	Au GOLD 197	Hg MERCURY 201	Tl THALLIUM 204	Pb LEAD 207	Bi BISMUTH 209	Po POLONIUM 209	At ASTATINE 210	Rn RADON 222																					
87	88																	104	105	106	107	108	109	110	111	112	113	114	115	116	117	118																					
Fr FRANCIUM 223	Ra RADIUM 226																	Rf RUTHENIUM 261	Db DUBNIUM 263	Sg SEABORGIUM 266	Bh BOHRIUM 268	Hs HASLIUM 271	Mt MEITNERIUM 272	Ds DARMSTADTIUM 277	Rg ROSGOLDIUM 278	Uub UNUBIUM 281	Uut UNUTRIUM 284	Uuq UNUQUADIUM 285	Uup UNUPENTIUM 288	Uuh UNUNHEPTIUM 291	Uuo UNUNOCTIUM 294																						

KEY

Solid at room temperature

Liquid at room temperature

Gas at room temperature

Radioactive

Artificially Made

The atomic weights listed on this Table of Elements have been rounded to the nearest whole number. As a result, this chart actually displays the mass number of a specific isotope for each element. An element's complete, unrounded atomic weight can be found on the IUPAC website: <http://education.jlab.org/elemental/index.html>

The truth is that all human and animal bodies require far more mineral nutrients from natural sources than is officially recognized. On top of that, many of the synthetically produced metals and alloys given to humans in products and drugs are terribly toxic, even as we are continually assured that there are no problems associated with them. These minerals may go by the same common name, but they are not the same in their final chemical structure; and they do not

produce the same in function. Even a natural form of any mineral in overdoses may be toxic when overdosed or when improperly balanced with other minerals, but minerals are especially risky in the form of man-made derivatives of manufacturing processes.

"The chemical form of a mineral is an important factor in its absorption and bioavailability...there is evidence that the form in which minerals are ingested affects absorption. For example, particle size, surface area, and solubility of a substance affects its dilution rate...In many solid foods, elements are not free, but firmly bound in the food matrix."

"—Yvette R. Schlusel, Ph.D

The Dose-Function Curve

Moreover, all minerals no matter how obtained are toxic in certain amounts under certain conditions in the body. And finally, minerals are both cooperative and antagonistic toward one another when combined for example in your digestive track. Various mineral and chemical interactions can cause them to compete for absorption and neutralize one another in metabolic processes. And your body throws in its own variables, like temperature, pH, and metabolic homeostatic and healing processes that create a seemingly chaotic, yet surprisingly orderly soup that is your body (and don't get me started on the mind-body variables that are increasingly apparent). But when all factors are considered and we acknowledge that our nutrition can also be our poison, we need to look at the dose-function curve and evaluate it against the "average" North American diet. In assessing our diets this way we can see a glaring inequality: The odds of our being under-mineralized are 100 times the chances of our being overdosed (the chief exception being the minerals in salt...sodium and chlorides, which we ingest in gluttonous amounts).

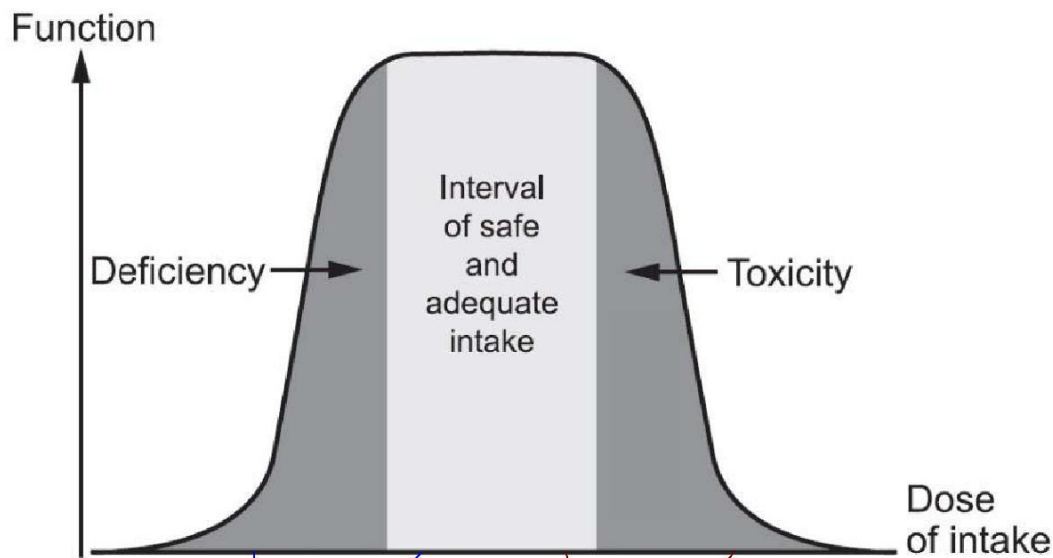


Fig. 3. Dose versus functional response. From Lindh (2005a,b).

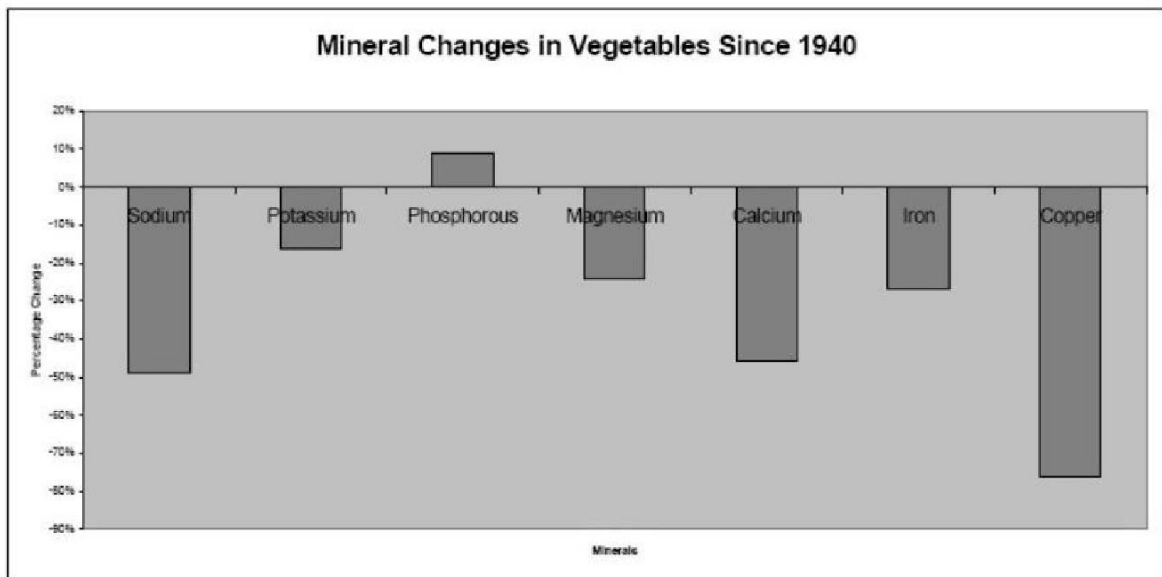
99% of Americans for most minerals

1% of Americans for most minerals

Logic Model

When thinking about minerals and healthy living, one consideration is paramount. You must accept the notion that we simply do not get sufficient quantities of most minerals in natural, absorbable form needed to fortify our bodies from our diets. Evidence for this crucial fact is overwhelming, and it is true of nearly every person and of every society on earth. Don't fool yourself by believing the age-old blatant untruth that you can get all the minerals and other nutrients your body needs for optimal health by "eating right". Nobody on earth knows what it means to "eat right" and nobody whom you or I know is accidentally doing that. All bodies are different, and all minerals and mineral sources are different. But if we've learned anything from the 20th century, the following facts and conclusions remain clear:

1. Our soils and thus the entire food chain are chronically nutritionally deprived. We are continually being depleted of necessary nutrients in a way that older societies did not have to confront. We now have the technology and methods necessary to grow good-looking crops that do not carry the nutrients needed in the food chain. Thus eating a balanced diet cannot deliver the quantities of nutrients desperately needed by your body. Modern farming practices are encouraged to repeatedly grow the same crops in respective plots of land. Farmers are driven by market prices, not what is good for the soil or the produce. It is widely acknowledged that we are not replacing vital trace minerals in the earth, and crops can grow each season with little more than NPK techniques that do not contribute to proper health in the food chain.
2. Our soils and crops are stocked with artificial chemical compounds and worse, increasingly with genetically modified produce and livestock. We are poisoning ourselves with pesticides, insecticides, fertilizers, fungicides, additives, industrial pollutants, pharmaceuticals and increasingly drug-resistant microbes. These substances are unavoidable and are overwhelming our food supplies. Rain runoff is leaching these toxins into our ground water and wetlands.



3. Therefore we need to take some informed action.
 - We must provide ourselves with natural, nontoxic sources of remineralization for our earth, our plants, our animals, and for us.
 - We must have effective methods of natural purification to remove the deadly toxins that are omnipresent and which can be cumulative.
 - We must avoid fighting one disease-inducing carcinogen with another, such as is the case in the pharmaceutical industry...there's a pill for every ill and an ill for every pill.

Each pill brings upon us a new side effect, resolved by more pills. There is only one winner in that game and it is not the customer...the patient...the consumer.

- We must not accept placebos or ineffective substances that are seemingly everywhere in the consumer marketplace. And we should not put up with exploitive prices for substances we know are good for us, simply in order to replace lost minerals in our tissue. This is a matter of survival.
- We must resist attempts by government authorities to regulate and dictate science and our health based on static knowledge or popular science. These entities are just are not good at solving individual problems; they are often wrong, behind the times, and in the pockets of big business.

Below is a partial list of chemicals, pesticides, fungicides, herbicides, and other anti-biologic toxins used commonly on our foods. These are chemicals that we were not designed to ingest and assimilate.

Petroleum oil, Mineral oil, 1/3-Dichloropropene, Ziram, Glyphosate, isopropylamine salt, Phosmet, Chlorpyrifos, Glyphosate, Diazinon, Oryzalin, Methyl bromide, Petroleum distillates, Oxyfluorfen, Iprodione, Paraquat dichloride, dimethylamine salt, Chlorothalonil, Simazine, Glyphosate, Cyprodinil, Captan, Bifenazate, Carbaryl, Propiconazole, Chloropicrin, Pendimethalin, Nicobifen, Methidathion, Norflurazon, Esfenvalerate, Tebuconazole, Methoxyfenozide, Permethrin, Hexythiazox, Clofentezine...the list goes on.

Minerals and the Nutritional Gap

Below is a list of minerals in alphabetical sequence that are generally accepted as essential or helpful in certain circumstances for health and function of the human body. Not all of these minerals are recognized by the various regulatory bodies of the US government as necessary, and some that are recognized have no established dietary intake levels established. The amounts listed as essential are from various sources including the FDA, but may not represent DV or RDI. Don't let anyone tell you that if the government has not sanctioned it or prescribed it, or provides it...it must be bad. You could be playing with your health and life. All elements can be toxic in amounts exceeding safe thresholds.

This list is accompanied by an indicator of the amount each element that exists in colloidal ionic suspension within 100% pure ION-MIN brands. Also shown is whether or not the US government considers the element and "essential" macro or micronutrient.

If you are considering taking minerals for medical treatment, consult your licensed physician or naturopath.

"It's not what you don't know that could kill you. It's what you 'know', that just ain't so."
--Will Rogers

Information provided here is for informational purposes only and is not a substitute for professional medical advice. Only your healthcare provider should diagnose your healthcare problems and prescribe treatment.

Statements regarding dietary supplements are provided solely to offer our customers additional information about alternative medicine. No health claims for these products have been evaluated by the U.S. Food and Drug Administration (FDA), nor has the FDA approved these products to diagnose, cure or prevent disease. You should consult your healthcare provider before starting any course of treatment.

The Big 50 Minerals

<u>Compound</u>	<u>symbol</u>	<u>essential</u>	<u>typical diet</u>	<u>amount in</u>	<u>amount in</u>
		<u>daily amt.</u>	<u>deficiency</u>	<u>average body</u>	<u>ION-MIN</u>

Aluminum (Al)	unknown	unknown	.0025 oz	inert*
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You've heard the scare stories about toxic buildup of aluminum causing dementia and health problems, but did you know that colloidal aluminum exists in small but significant amounts throughout nearly every food and plant in the world? While toxic aluminum from man-made sources is a public health danger, the fact remains that natural aluminum is one of the most abundant elements on the surface of the earth...more abundant than iron. Yet it is needed in the human body in extremely small amounts, in ionic, molecular form. Aluminum may be involved in regulating insomnia and sleep patterns, cerebral function, and mental development as well as the cellular environment. It may be involved in enzyme synthesis.

Nevertheless, many pundits proclaim fearfully that aluminum will accumulate in your body and cause disease, especially brain disorders. But think about the logic of this. The second most common element on earth is inherently toxic? While you're considering that, think about the fact that many people with osteoporosis also have calcium deposits on their arteries and calcium induced arthritis. So the reason the mineral calcium is being collected and deposited isn't certainly due to an overdose. Other factors are at work when your body cannot resolve an intake of minerals in their natural, colloidal form; and sometimes the body is rejecting the wrong kind of the mineral. In this regard, colloidal aluminum is widely considered safe in small amounts, yet many people have been exposed to too much non-colloidal aluminum from man-made sources.

* Moreover, ION-MIN is an alumina silicate, which is one of the most powerful natural and safe aluminum detoxifiers. Because of its strong anionic charge, ION-MIN does not release aluminum, but rather pulls it from your body, including the toxic forms of aluminum we are all exposed to. Aluminum has one of the highest cationic charges of all minerals. Like mercury, it is missing three electrons (chemists refer to it as being "positively trivalent", meaning it has a strong positive voltage). Therefore, it will not exchange for other minerals in the ION-MIN compound, but instead aluminum deposits in your colon will be drawn unconditionally into ION-MIN molecules. Taking ION-MIN can actually pull aluminum out of your body.

Antimony (Sb)	unknown	unknown	0 oz	<1 ppm; <5 mcg
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This element has always been considered both exotic and toxic. But recently, it has been discovered that trace amounts of antimony are needed to catalyze biological recovery processes for arthritis, osteoarthritis, bronchitis, prostate enlargement and rheumatism. Does that sound like a deadly poison? You need only tiny amounts of it, which are hard to obtain in processed foods. If you foolishly eat the metal form of it, you could die. But in trace amounts of colloidal, antimony contributes to natural health.

Arsenic (As)	unknown	unknown	.00015 oz	<5 ppm; <25 mcg
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Once again, found in basically all life forms, this element has received nothing but bad press. Trace amounts of the nontoxic colloidal form are needed to support cellular function, immunity, and healthy bones, teeth and hair. Metallic forms of it are deadly poisonous.

Barium (Ba)	unknown	unknown	.0008 oz	461 ppm; 2.3 mg
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A relatively unknown biocatalyst, this mineral is needed for regulation of blood pressure, among other systems. Typical of our mainstream nutrition science, there is no RDA or recognition of it as a nutrient even as research proves it is beneficial in trace amounts.

<u>Compound</u>	<u>symbol</u>	<u>essential</u> <u>daily amt.</u>	<u>typical diet</u> <u>deficiency</u>	<u>amount in</u> <u>average body</u>	<u>amount in</u> <u>ION-MIN</u>
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Bismuth	(Bi)	unknown	unknown	<u>unknown</u>	5 ppm; 25 mcg
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This mineral is the original active ingredient of Pepto-Bismol . It is a good anti-infectant and supports immune function. In combination with antibiotics it is now used for treatment of some stomach ulcers. It has even been used to successfully treat syphilis.

Boron	(B)	unknown	1-3 mg	<u>.002 oz</u>	108 ppm; 0.5 mg
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A hyper-trace element, boron plays a role in bone and muscle development, cerebral function, metabolizing macro-minerals, and secretion of hormones. It literally hardens our bones. In clinical studies, supplementation appeared to reduce the excretion of both calcium and magnesium, while estrogen and testosterone levels doubled. Boron is a vital element in all humans, yet it was not established as a health mineral until the 1980's! It is likely that most people do not get enough Boron.

Bromium	(Br)	unknown	unknown	<u>.008 oz</u>	6 ppm; 30 mcg
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Bromium is also a hyper-trace element found in the bodies of all higher animals and humans. It settles in the pituitary gland and works with membrane ionic exchanges and nervous function.

Cadmium	(Cd)	unknown	unknown	<u>.002oz</u>	5 ppm; 25 mcg
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A Hyper-trace element with unknown properties, cadmium seems to affect metabolic processes.

Calcium	(Ca)	(1200 mg)	400 mg	<u>2.5 lbs</u>	4.7%; 235 mg; 20%*
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Calcium is an absolutely essential macro-mineral that forms structural components of bone and tissue. It is the "master" element that also helps regulate cellular activity and pH and blood pressure, heart rate, and digestion. It supports healthy skin and tissue. Your body craves good sources of calcium, yet when it cannot assimilate this important substance, it begins to deposit the crystalline element on bones and in tissue in an unhealthy way.

* One serving of ION-MIN supplies at least 20% of the average essential amount listed for adults. ION-MIN is a highly bio-available form of calcium, delivered along with complementary trace elements that make the calcium operable for its purpose.

Carbon	(C)	N/A	none	<u>30-50 lbs</u>	Nil
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Carbon is an essential element, but it is abundant because all life is based on carbon chains. So the food chain is essentially a carbon chain, and many chemical elements are bound to carbon. If you are eating enough calories, you are not carbon deficient. Electrolyte minerals and trace elements are not "organic" and therefore are independent of carbon. If your mineral supplement contains carbon, it is because it has been exposed to decomposed animal and plant life. ION-MIN is a pure mineral complex in its native form, with little exposure to prehistoric plants and animals, which is why it has so little carbon in it.

Cerium	(Ce)	unknown	unknown	<u>unknown</u>	79 ppm; 395 mcg
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Another hyper-trace element that acts as a biocatalyst in unknown and complex ways. It may be helpful for eye problems and other organs. It is used in wrist ligament centrioles, which is why it helps some people adapt to overcome carpal tunnel syndrome; similarly it is needed to strengthen patella ligatures. Yet research on cerium's health effects is lacking.

<u>Compound</u>	<u>symbol</u>	<u>essential</u> <u>daily amt.</u>	<u>typical diet</u> <u>deficiency</u>	<u>amount in</u> <u>average body</u>	<u>amount in</u> <u>ION-MIN</u>
Cesium	(Cs)	unknown	unknown	<u>.00005</u>	12 ppm; 60 mcg

This trace element is a biocatalyst for your internal cellular environment, contained in the bodies of all mammals.

Chloride	(Cl)	(2300 mg)	none	<u>3.3 oz</u>	Nil
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Contained in relatively large amounts in body fluids, chloride is an electrolyte that is (along with potassium and sodium) necessary for cardiac rhythm and electrification of the body and pH balance. Digestive juices in the stomach contain hydrochloric acid. Chloride is an anion, so it does not adhere to ION-MIN's silica structure. Fortunately, most people get enough...indeed too much chloride with sodium in the form of salt.

Chromium (Cr)	(80-200 mcg)	40-100 mcg	<u>.00009 oz</u>	100 ppm; 500 mcg; 250%*
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Chromium is an essential nutrient required for normal glucose and fat metabolism and works primarily by ensuring insulin acts correctly. It is present in the entire body but with the highest concentrations in the liver, kidneys, spleen and bone. Chromium is needed for energy, as it maintains stable blood glucose levels. In cooperation with other substances, it controls insulin as well as certain enzymes. It is also required in synthesis of fats, protein and carbohydrates, and thus is important in regulating cholesterol. It competes with vitamin C and may be needed in larger amounts to combat adult onset diabetes. Yet this extremely important mineral was not even considered necessary for health until 1977!

It is important to note that only trivalent chromium (Cr03) is acceptable for human and animal ingestion. Hexavalent chromium (Cr06) is toxic. ION-MIN contains only trivalent chromium.

* One serving of ION-MIN makes available 250% of what many consider essential daily chromium amounts needed for adults.

Cobalt	(Co)	(10-50 mcg)	uncertain	<u>.000056 oz</u>	28 ppm; 140 mcg; 280%
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A hyper-trace element that makes up part of vitamin B12. It helps maintain muscle tissue and regulates hypertension, activates certain enzymes, and helps blood production.

Cobalt was found to be a key component of vitamin B12 in 1948. Grazing animals suffer in areas where there is little cobalt in the soil. Like other trace minerals, Cobalt has been depleted from our soils due to intensive farming and the overuse of NPK. Until the 1940's, most farmers returned essential minerals to the soil by mulching, adding manure, and crop rotation. Since modern farming, farm animals have needed to be supplemented. This implies that some people are likely underexposed to cobalt, such as vegetarians.

Copper	(Cu)	(2-5 mg)	2 mg	<u>.0028 Oz</u>	35 ppm; 175 mcg; 4%
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An important trace mineral that affects immunity, and has anti-infectant properties. Copper is required in the formation of hemoglobin, red blood cells, skin and bones. It helps with the formation of elastin as well as collagen - making it necessary for wound healing. Copper works closely with iron for these functions. Copper is a vital component of a number of essential enzymes. It is essential for energy production, connective tissue formation, iron metabolism, melanin formation and it also has an antioxidant function.

Copper's role in nutrition and health has been known since 1925. Yet it did not become recognized by orthodox medical community as an essential trace element until 1996!

<u>Compound</u>	<u>symbol</u>	<u>essential</u> <u>daily amt.</u>	<u>typical diet</u> <u>deficiency</u>	<u>amount in</u> <u>average body</u>	<u>amount in</u> <u>ION-MIN</u>
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Europium (Eu)	unknown	unknown	<u>nil</u>	1 ppm; 5 mcg
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This rare earth, hyper-trace mineral is not well studied. But it is found in minute amounts in eyes, veins, glands, bladder, and bile ducts. It seems to provide some antagonism to alcoholism, and forms part of a message-sensing bio-electric system in the body that regulates glucose. Experiments with rats in extremely small doses doubled their life expectancy. There are no known plants that grow well without some trace Europium.

Fluoride (Fl)	(2-3mg)	none	<u>.105 oz</u>	Nil
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Fluoride is essential for both teeth and bones. Calcium by itself won't build a molecule of bone. To use the calcium, your body has to have adequate supplies of at least 9 other minerals; and fluoride is one of those minerals. Deficiency is almost unknown, making one wonder why the water supply is filled with man-made forms of it. If anything, there may be localized overexposure to Fluoride from the drinking water supplies, although nobody in authority is admitting this, which is bizarre when you consider that under nearly all other circumstances, the US government places no trust in mineral supplementation to remedy a public health issue (in this case tooth decay). Yet even as most people are highly dosed from foods, they are also dosed with municipal water without any official concern for toxicity. All of this is odd, since fluoride and health are scarcely studied.

Fluoride is an anion, and does not adhere to the ION-MIN silicate, which is why none is present in the compound.

Gallium (Ga)	unknown	unknown	<u>unknown</u>	21 ppm; 105 mcg
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The role of Gallium is a mystery, yet it is a trace element because it is present in the body tissue of humans and animals in extremely small trace amounts. It seems to have a role as a metabolic catalyst of some kind, and likely works in coordination with other minerals to assist the efficiency of body processes. The amounts of gallium in normal body tissue and depletion rates are not studied.

Germanium (Ge)	unknown	unknown	<u>unknown</u>	10 ppm; 50 mcg
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A hyper-trace element that plays an important role in aging prevention of cells and perhaps the retardation of cancer cell growth. It improves oxygenation, supports immune function, and toxin elimination. Studies in Japan have shown improvements in cholesterol and arthritis from taking 100-300 mg of this rare substance. This is a classic case of an under-researched, yet emerging mineral of some importance, yet which latent orthodoxy has little interest in studying, analyzing, or registering as "required". Don't look for this element in your off-the-shelf multivitamin.

Gold (Au)	unknown	unknown	<u>.00028 oz</u>	5 ppb
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You don't have to be told that gold is an interesting and exciting mineral. But you probably did not know that it presents no danger of toxicity to humans. Like silver, it is a powerful infection prevention agent. It is present in all bodies and affixes to bone marrow, liver and spleen. It stimulates cellular immunity, acts as an antitoxin, heals wounds, and supports cardiovascular health. It's also expensive!

Iodine (I)	(150-250 mcg)	unlikely	<u>.00056 oz</u>	Nil
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Iodine is an important trace element that regulates thyroid function. Millions of people worldwide, and some at-risk groups in the US are deficient despite the act of adding it to our table salt supply. Adequate iodine levels slow aging processes and helps build healthy skin.

<u>Compound</u>	<u>symbol</u>	<u>essential</u> <u>daily amt.</u>	<u>typical diet</u> <u>deficiency</u>	<u>amount in</u> <u>average body</u>	<u>amount in</u> <u>ION-MIN</u>
Iron	(Fe)	(10-20 mg)	2-20 mg: situational	.17 oz	4.35%; 200 mg; 1000%*

Many people think we have a lot of iron in our bodies because they know that it makes our blood red. But it is a trace mineral, not a macro-nutrient. Nevertheless, even in our meat-eating culture, more than 25% of Americans are iron deficient! This is because they do not eat the right kinds of iron-rich foods, and they are not eating iron that is easily assimilated.

Iron is utterly indispensable for life because it is the principle mineral agent in cardiovascular function. The need for iron is very situational, based on age, sex, and timing. Iron deficiency is normally resolved with a proper diet; but most people have no idea if they are deficient or not. Toxicity can occur with extreme overdoses; however the FDA warning about iron has nothing whatsoever to do with iron after it is assimilated in your body. It is a warning about some forms of iron, such as ferrous sulfate that can be irritating to the lining of the stomach; kind of like the warning that aspirin can upset or cause stomach bleeding.

Because it is so critical for life, the human body maintains an efficient recycling process for its iron. However, Iron supplementation is a wise idea with little risk because of the body's self-regulation of iron uptake...the intestinal walls are highly selective as to how much iron is allowed to pass through. For example, when iron reserves are low, iron absorption from a meal may double.

The iron in ION-MIN is Fe₂O₃, a moderately absorbable form of iron that is held in ionic suspension. If the body needs more iron from ION-MIN, it will signal proteins to grab the iron oxide and utilize it; otherwise the iron in ION-MIN will stay bonded or re-bond to the anionic silicate and will pass through your body without being absorbed and without doing harm. In 40 years of commercial availability, no incidences of iron toxicity have occurred through the use of ION-MIN as intended.

Lanthanum (La)	unknown	unknown	<u>unknown</u>	45 ppm; 225 mcg
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Rare earth elements are found in relatively high concentrations in the earth's crust. And there are 17 of them in the periodic table of elements. Such elements is called a "rare-earth element" because they are more difficult to mine and extract than equivalent sources of transition metals (due in part to their very similar chemical properties), making the rare earth elements relatively expensive. The use of rare earth elements in modern technology has increased dramatically over the past years and their nutritional applications are only beginning to be discovered. Remember, as with all trace elements, very minute proportions are needed to catalyze numerous metabolic and enzymatic processes, many of which we are only beginning to comprehend.

Lead (Pb)	unknown	unknown	<u>.0048 oz</u>	Nil
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Lead has always existed in the environment and although today's exposure levels are greater than in the distant past, even prehistoric populations would have been exposed to tiny amounts of lead. In fact it is likely that lead plays a metabolic role, in very small amounts in the body. It has been identified as a critical, essential element in many animals...in very trace amounts.

It is unlikely that with inevitable universal exposure to this heavy metal, mankind was intended to be completely intolerant of it, or that toxicity rapidly builds up. It is more likely that there is a biological role for it than that is inherently harmful in tiny doses. Once again, CEMC believes natural, ionic, colloidal minerals behave differently in the body than man-made variants.

ION-MIN can adsorb and remove heavy metals from the body, and is a good source of calcium and iron, which are elements needed to guard against lead toxicity.

<u>Compound</u>	<u>symbol</u>	<u>essential</u> <u>daily amt.</u>	<u>typical diet</u> <u>deficiency</u>	<u>amount in</u> <u>average body</u>	<u>amount in</u> <u>ION-MIN</u>
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Magnesium (Mg)		(400 mg)	100-200 mg	<u>.76 oz</u>	2.88%; 144 mg; 36%*
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Magnesium is an important element for plants and animals. Chlorophylls (responsible for the green color of plants) are compounds known as porphyrins and are based upon magnesium. Magnesium is required for the proper working of some enzymes.

Magnesium plays a role in over 300 known important biological functions in humans, such as: enzyme synthesis, hormone balance, assimilation of calcium, potassium, phosphorus, thermal regulation, Vitamin C and E compatibility, immune function, reduced aging and pH control.

The latest government study shows a staggering 68% of Americans do not consume the recommended daily intake of magnesium. Even more frightening are data from this study showing that 19% of Americans do not consume even half of the government's recommended daily intake of magnesium.

Taking suggested servings of ION-MIN between meals will help deliver more magnesium in bio-available, ionic molecular form than eating serving of most magnesium-rich foods. * One serving of ION-MIN delivers 36% of the daily amount of magnesium many consider essential for adults.

Manganese (Mn)		(4-8 mg)	atypical	<u>.00056 oz</u>	.04%; 2 mg; 25%*
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Manganese intervenes beneficially in numerous enzymatic reactions, particularly in collagen formation, glucids and bone formation. It also reduces inflammation and allergic reactions in the intestinal tract. Considered a universal anti-allergen, it may be involved in remediating hay fever. It combines well with cobalt, copper, and Vitamin B's.

It is possible that people with autoimmune/ hyper-immune issues such as allergies would benefit from increased uptake of Manganese.

* One serving of ION-MIN provides 25% of the daily amount of manganese many consider essential for health. ION-MIN manganese is in a highly absorbable colloidal, ionic form.

Mercury (Hg)		unknown	unknown	<u>unknown</u>	Nil
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Mercury can act as an antiseptic and can be an effective treatment in urinary infections. It is used as a preservative in some vaccines. However it is also a known carcinogen at low doses. So its nutritional or medicinal value is likely dramatically sacrificed by its risks. ION-MIN contains no Mercury.

Molybdenum (Mo)		(200-500 mcg)	atypical	<u>.0003 oz.</u>	3 ppm; 15 mcg
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This interesting and hard-to-remember element is essential in minute amounts in human and animal organisms. It is needed to regulate sulfites that are present in foods. It plays a role in: protein synthesis, metabolizing iron and nitrogen. It harmonizes cellular function and reduces risk of asthma attacks. It is a component of several enzymes and helps maintain a healthy nervous system. Interestingly, it can be used to treat bad breath and mouth lesions. It can play a factor in impotence of elderly men, alcohol detoxification and has been identified in reduction of cancers. And to do all this, only extremely insignificant but necessary amounts are required, reminding us of the tremendous importance of trace elements and their nearly overlooked critical nature. Yet if the diet consists of mainly refined foods, the RDA of molybdenum will not be reached! This amazing mineral was added to the official list of "essential" elements in 1953.

<u>Compound</u>	<u>symbol</u>	<u>essential</u> <u>daily amt.</u>	<u>typical diet</u> <u>deficiency</u>	<u>amount in</u> <u>average body</u>	<u>amount in</u> <u>ION-MIN</u>
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Neodymium (Nd)		unknown	unknown	<u>unknown</u>	42 ppm; 210 mcg
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Neodymium is a “rare earth” mineral. This means it is not easily extracted in pure form. It plays an unknown role in humans and is difficult to find in tissue, yet it is a hypertrace mineral. It is used in the pleuras of our lungs. Lack of neodymium in the form of neodime acetyl latonate is a cause of Parkinson’s disease. This element has doubled the life expectancy of animals in lab experiments. Neodymium, having no recognized role in biology was until now totally ignored in biochemistry. In 1997, Ohmichi found that Neodymium works with a lead ion (Pb2+) in leadzyme to regulate the transcription of genes. The two minerals, lead and neodymium should be present in ratio of one to one to maximize the reaction the enzyme governs.

Nickel	(Ni)	(1-3 mg)	unknown	<u>.00029 oz</u>	51 ppm; 255 mcg; 12%*
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It’s not just a cheap coin. It’s a life saver. Nickel is a transformative agent in the internal cellular environment with important biological properties. It reinforces stressed duct cells, and is needed to support organ cells; it is a transistor crystal in our glands. Nickel is an effective component of treating dyspepsia—bloating and obesity; and it works with the spleen, liver, and pancreas. Animals raised with nickel deficiency experience liver dysfunction. It strengthens insulin and encourages vitamin A and C. Nickel is a component of human growth and development. Nickel is needed in the heart muscle, the liver and the kidneys. It is involved in hormone, lipid and membrane metabolism. Significant concentrations are found in DNA and RNA and it may contribute to the stabilization of nucleic acids. Nickel was finally added to the “essential” list in 1975.

Nickel deficiency in adults has been connected with cirrhosis of the liver and chronic liver failure. Yet still many contemporary descriptions of Nickel either consider it a “controversial” nutrition source, or unnecessary, or even toxic. It is amazing how backwards our consensus is regarding important topics of health.

A daily serving of ION-MIN supplies around 10 – 20% of what many sources believe is essential.

Phosphorus (P)		(800-1200 mg)	unlikely*	<u>1.8 lbs</u>	.15%; 7.5 mg
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While calcium gets all the attention, phosphorus is just as crucial and quite abundant in the body. It is an essential mineral that is required by every cell in the body for normal function, but it is present in bones, blood and in relatively large amounts in the nervous system. It acts in kidney function and helps the utilization of vitamins. It helps transform food into energy. It must be well mixed with calcium and magnesium in order to maintain good health.

As with many minerals, the phosphorus intake is more a matter of balance and ratios, rather than absolute amounts ingested. Since it is a primary fertilizer ingredient, it is present in many natural and processed foods. As a result phosphorus does not represent a deficiency problem in the US. However, some nutritionists believe that the optimal ratio of calcium to phosphorus should be maintained at over 2 to 1. Taking a colloidal supplement like ION-MIN helps maintain a dietary balance.

<u>Compound</u>	<u>symbol</u>	<u>essential</u> <u>daily amt.</u>	<u>typical diet</u> <u>deficiency</u>	<u>amount in</u> <u>average body</u>	<u>amount in</u> <u>ION-MIN</u>
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Potassium (K)		(3000-4000 mg)	1000-2000 mg	5.7 oz	2.8%; 140 mg; 5%*
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Potassium salts are essential for both animals and plants. Potassium is an electrolyte that interacts with sodium to conduct nerve impulses and many other functions in the cells. The potassium cation is the major cation in intracellular fluids (sodium is the main extra-cellular cation). It is essential for nerve and heart function, and it is the dominant mineral in controlling muscle contraction.

As with other minerals, such as calcium and phosphorus, potassium must be balanced with sodium for proper body pH and cellular rhythm. The cell's ability to take in nutrients depends on this electrolyte balance. Without a proper ration of sodium and potassium, heart, vascular, and cancerous diseases can develop. The problem is acute in Western diets because of all the sodium that is crammed into our processed foods. Taking potassium supplements is absolutely critical, which for many adults resolves a large degree of hypertension.

Determining the proper amounts and supplementation of potassium is very difficult, because in overdoses it can be quite toxic, alcohol and caffeine interfere with its absorption, and the amount of sodium in a diet can vary considerably, and because potassium is lost in perspiration it depends on the amount of heavy exercise one does.

Americans eat a lot of potassium-fertilized foods. Nevertheless, most Americans are deficient because it should be present in a 5-to-1 ratio to sodium...yet in many cases we take in less potassium than sodium, creating a huge imbalance. So before supplementing, cut your sodium!

* Individuals with kidney diseases or complications should not take supplemental potassium. Large potassium doses should only be taken under the care of a physician. ION-MIN daily supplements can account for 5% - 10% of an adult's dietary need for potassium.

Praseodymium

(Pr)	unknown	unknown	<u>unknown</u>	9 ppm; 45 mcg
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Little is known of this rare earth mineral, which has been involved in studies that indicate it increases life expectancy of laboratory animals.

Rubidium (Ru)	unknown	unknown	<u>.0129 oz</u>	129 ppm; 645 mcg
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Rubidium is one of the most electropositive and alkaline elements. And it is not rare. It is considered to be the 16th most abundant element in the earth's crust, and your body has a noticeable amount in it. Some scientists believe this element might play a very important role in cellular transport across membranes, specifically with regard to nervous function and motor end plates. This is a classic example of a mineral to which science has not paid proper attention.

Some people use it to improve alkaline pH in the body. But it is unwise to take such minerals with so little science devoted to understanding its metabolic effects.

Samarium (Sm)	unknown	unknown	<u>unknown</u>	7 ppm; 35 mcg
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This rare earth mineral is not well understood, except that it was involved in experiments in which it increased the life expectancy of laboratory animals. We know it exists in all animals and humans. In people it is found in white blood cells and in artery walls and in the abdominal muscles. This makes it essential, but unfortunately official biochemistry has little to say about necessary research to establish how much we should be taking.

<u>Compound</u>	<u>symbol</u>	<u>essential</u>	<u>typical diet</u>	<u>amount in</u>	<u>amount in</u>
		<u>daily amt.</u>	<u>deficiency</u>	<u>average body</u>	<u>ION-MIN</u>

Selenium (Se)	(60 – 200 mcg)	20-100 mg/situational	.00014 oz	3 ppm; 15 mcg; 15%*
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A metalloid that is closely related to sulfur, it is found in the body in varying amounts from 3 mg to 20 mg. Essential to mammals and higher plants, it is highly effective at protecting cells from damage by free radicals, a source of premature aging and disease. Deficiency in Selenium will cause an increase in susceptibility to virus. It works to balance metabolic processes, increases elimination, inhibits lipids, aids fertility, removes skin spots, and helps restore patients undergoing chemotherapy. Selenium was added to the “essential” list in 1957, then de-listed and listed again in 1989! Even the “experts” struggle with discovery and validation, and are sometimes slow to awaken.

* taking ION-MIN daily can contribute 15%-30% of what many dietary experts currently believe is required selenium intake.

Silicon	(Si)	unknown	unknown	.73 oz	55.3%; 2.77 grams
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Natural colloidal silicon, not to be confused with man-made silicon or silicone, is regenerative to the cells, and improves the health of skin, bones, hair and finger nails. Essential in higher plants and mammals, it encourages the growth of collagen and connective tissue. It helps balance the nervous system, rehydrate skin, promotes healing of tissue, and improves arterial flexibility.

Silicon is needed to support immune function and helps eliminate toxic aluminum, lead and mercury in your body. Yet silicon was not regarded as an essential nutrient for health until 1972!

Silicon, also known as silica is a natural blood thinner and should not be used by people expecting to have surgery. Natural silica is nontoxic in large amounts because it is inert. It is the one substance scientists know will not react with acids or bases. The body can use certain silicates that are in the form of natural clays, particularly Montmorillonite/ Bentonite and Kaolin. These silicates are used to soothe the stomach, eliminate intestinal bacteria and toxins and adsorb waste matter. Some forms of silica in the blood and intestinal tract can attract heavy metals and pathogens and trap them in their ionically charged surfaces, thus aiding internal healing. Note Silicon is not quartz. Quartz is not a health mineral and can irritate connective tissue and nerves. Silica powder, like all mineral powders should not be inhaled.

Silica is also the major platelet mineral that is used to retain mineral nutrients in soils. Thus it is an effective buffer and balancing agent for arable lands. The right silicates can also be used to carry trace minerals to your body in a balanced, buffered sustained release form.

ION-MIN is a premium, all-natural, colloidal calcium Montmorillonite compound that is 55% alumina silicate. This anionic substance is mostly inert and cannot be digested. It is used by nature to deliver and buffer the mineral nutrient supply. However it also holds some pure silicon in colloidal form, some of which can be assimilated into the body. Silica is responsible for the second critical function of ION-MIN . Its microscopic crystals have a powerful negative ionic charge to help detoxify the body. No other supplement can provide both functions in one safe, effective compound.

Silver	(Ag)	unknown	unknown	unknown	<1 ppm < 5 mcg
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A natural antiseptic and a catalyst for protection from infection within the body. It helps reduce infections and acts as a bactericide. Helps the body resist inflammation and supports immune function. Silver is only present in the body in extremely small amounts. It has become a phenomenon lately and many authorities want its popularity diminished. Yet in clinical studies, colloidal silver continues to prove its potency. It is not advisable to ingest large amounts of silver in any form. If you are trying to take high doses over long periods of time, perhaps the infection you are treating is only a symptom of another, deeper problem that needs resolution.

<u>Compound</u>	<u>symbol</u>	<u>essential</u> <u>daily amt.</u>	<u>typical diet</u> <u>deficiency</u>	<u>amount in</u> <u>average body</u>	<u>amount in</u> <u>ION-MIN</u>
Sodium	(Na)	(500mg)	unlikely	<u>3.98 oz</u>	1.11%; 55 mg; 11%

Sodium is an absolutely vital electrolyte mineral. While it has been demonized in recent years due to over-consumption, a person cannot live without fairly large intake. The problem is that it is overused as a food additive and Americans get way too much of it without compensating with other minerals, throwing their body's Ph off balance. The body jealously guards its intercellular pH, so it will create a cascade of other reactions to maintain this vital chemical context. Thus too much sodium affects cellular and kidney function and causes high blood pressure and edema, and causes calcium, magnesium and potassium to be excreted. While sports drink makers assert that you need sodium when you work out, for most Westerners this is not true.

The sodium cation is the main extracellular (outside cells) cation in animals and is important for nerve function in animals. Sodium must be balanced with potassium. Moreover the best form of sodium is natural sea salt that has sodium chloride and trace minerals. Likewise, ION-MIN has natural sodium in balance with higher amounts of compensating trace minerals and with other trace elements such as calcium, phosphorus, magnesium and potassium for proper metabolic interactions.

Strontium	(Sr)	unknown	unknown	<u>.012 oz</u>	2 ppm; 10 mcg
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Extremely small trace amounts are found in the body, and they do impact our health for bone and tooth health, and anabolic support.

Sulfur	(S)	unknown	unknown	<u>5.6 oz</u>	.05%; 2.5 mg
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Widely present throughout the body, this trace mineral acts to support hair, skin, nails and cartilage. It is a constituent of fats, body fluids, and skeletal cells. It ensures joint flexibility and helps stabilize the intercellular environment. It has antiallergenic properties and is a building block for many amino acids and therefore proteins. It is a good blood purifier and antitoxin.

Many vitamins and amino acids contain or require sulfides in order to function. Our visual cortex needs a lot of sulfur compounds, as do our bone cells. In fact our bodies use over 250 different sulfuron molecules.

Thulium	(Tm)	unknown	unknown	<u>unknown</u>	2 ppm; 10 mcg
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No known biological role, but stimulates metabolism

Tin	(Sn)	(10-20mg)	5-15 mg	<u>.00056 oz</u>	5 ppm; 55 mcg
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Tin is a trace element that seems to impact energy, well-being and mood. Studies have shown supplementing with tin produces benefits with certain types of headaches, insomnia, asthma, or improvements with digestion, skin, or various aches and pains. Animal studies have shown that tin-deficient diets resulted in poor growth, reduced feeding efficiency, hearing loss, and bilateral (male pattern) hair loss. Tin is found in the aorta, brain, heart, kidney, liver, muscle, ovary, spleen, testes, pancreas, stomach, uterus, and prostate. Symptoms associated with significantly below-normal levels of tin typically include depression and/or fatigue. Natural, colloidal tin is not the same as tin found in manufactured packaging, which is likely harmful. Tin is used as a natural antibacterial for germs such as staphylococci. It even encourages hair growth. Tin was finally recognized as essential in 1975. Even though many people are exposed to tin in processed foods, it is the wrong form of tin and can be toxic. Ionic, colloidal tin is not toxic, and helps supply the body with the trace amounts of tin needed for proper metabolism.

<u>Compound</u>	<u>symbol</u>	<u>essential</u> <u>daily amt.</u>	<u>typical diet</u> <u>deficiency</u>	<u>amount in</u> <u>average body</u>	<u>amount in</u> <u>ION-MIN</u>
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Titanium	(Ti)	unknown	unknown	<u>.023 oz</u>	.68%; 34 mg
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The human body contains approximately 700 mg titanium, and our daily intake is approximately 0.8 mg. Only a small part of the total daily intake is absorbed by the body. But even as all bodies contain plenty of titanium, its role as a trace element is unknown. What is known is that it is quite compatible with body organs and bones; the body can tolerate relatively high doses and it does not accumulate. Neither does it cause allergic nor rejection when used as an implant.

Tungsten	(W)	unknown	unknown	<u>unknown</u>	.3 ppm; 15 mcg
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Perhaps the only time you've ever heard about this mineral is from razor blade commercials popularizing the benefits of 'Tungsten steel'. But what is not evangelized properly by modern nutrition scientists is that tungsten is absolutely needed in trace amounts to help cause a myriad of metabolic processes in the body.

Vanadium	(V)	(0.5-1 mg)	probable .5+ mcg	<u>.000085 oz</u>	127 ppm; 635 mcg; 75%
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This hyper-trace element is becoming recognized for its health-supporting role in human growth, cholesterol, diabetes, metabolic catalysis, bone structure, tooth health and fertility. It stabilizes blood glucose levels for all types of diabetes, and is proven to reduce LDL ("bad") cholesterol. It is likely that many Americans are somewhat deficient in this important element. It was listed officially as "essential" in 1975.

Ytterbium	(Yb)	unknown	unknown	<u>unknown</u>	2.8 ppm; 14 mcg
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The physiological role of Ytterbium is unknown but is said to stimulate the metabolism.

Yttrium	(Yb)	unknown	unknown	<u>.023 oz</u>	34 ppm 170 mcg
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Yttrium is found in most humans and seems to be a natural hyper-trace element; but its function is not known. Some specialists believe it can improve certain eye disorders and immune function. It is a very interesting mineral in that when heated, it can transport energy without resistance, making it an ideal semiconductor.

Zinc	(Zn)	(10-20 mg)	8-10 mcg	<u>.092%</u>	97 ppm; .49 mg; 5-10%*
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Zinc is the key component of many enzymes, and is important in the formation of protein, insulin, keratin and collagen. Zinc plays a role in reproduction and also sexual maturation. Zinc deficiency results in stunted growth and in male sexual immaturity. This is reversed on the addition of zinc in the diet. Zinc helps tissue heal, acts as an antioxidant and improves immune function.

Zinc deficiency in soils around the world is a significant and worsening nutrition problem.

* A daily dose of ION-MIN adds between 5 and 10% of the zinc many nutrition experts believe is necessary for health. ION-MIN minerals are highly bio-available on demand. This is because they are colloidal, ionic compounds of nano-molecular size, and because they are delivered in a buffered silicate, so that substances which are needed by the body can be readily assimilated, and substances that are not needed can be safely carried through the system. ION-MIN safely attracts and removes cationic toxins and heavy metals that the body discards through the bile and colon.

Conclusions

Even a casual review of the elements above—all of which are present in varying amounts within healthy bodies, will help you understand the key conclusions of dietary supplementation.

1. Health is an ongoing science, in which new discoveries are being made every day. No scientist can tell you that they fully understand the various interoperating and conflicting roles of the metals and minerals that keep you alive and well.
2. We all have unique needs. There is no way that modern science can impart certainty as to the amount of minerals in your body that is optimal in every circumstance for every individual. This is not a one-size-fits-all reality. Learn the mineral combinations and intake ranges proven to be safe, and make decisions about your supplement needs..
3. Statistics can be misleading. Averages in statistics are especially deceptive and probably do not represent your condition at any given point in time. This includes the average daily intake, the average deficiency level, and the total amount in an average diet.
4. Assimilation is not the same as ingesting. Intake and uptake are completely different concepts. Just because you ingest a mineral does not mean it makes it safely into your body and becomes bio-active.
5. Consider the source. Not all forms of the same chemical element are interchangeable, nor beneficial. Natural, colloidal, ionically charged, toxin-free, and sustained-released sources are better sources because they are more absorbable. The daily allowance values established by the FDA are based on guesstimates of bio-availability and simultaneous complementary and antagonistic compounds. ION-MIN is a safe way to provide an infusion without worrying about toxicity when used as suggested.
6. Ignorance of beneficial attributes does not make something bad. There are many rare and hyper-trace elements that we simply do not understand, that may yet turn out to be required for good health. The list never shrinks. We are always expanding the list by adding new minerals over time as we learn how vital even hyper-trace elements are.
7. One person's remedy is another's poison. The range of minimal (or essential) to maximum (or toxic) may be wide. One should be careful in choosing supplements, but should understand that natural, colloidal minerals do not have the same risks as rock mineral forms, and can be used more liberally.
8. The world's soils are increasingly being depleted of many trace minerals, weakening the food chain. When a mineral is gone from the soil, it's gone. Traditional fertilization techniques restore only nitrogen, potassium and phosphorus, leaving the soil deficient and unable to deliver healthful nutrients to us. We must supplement our entire food chain, beginning with the soil. Livestock and pets need access to colloidal minerals and people need better mineral supplements.
9. Educate yourself; make informed decisions. Take control of your health decisions. For most people in the world, including most North Americans by far, the risk of toxicity in over-ingesting minerals is dramatically less than the health risks clearly evident in deficiency that are manifested across the population.
10. The final conclusion is a rhetorical question. What does this knowledge demand from you personally? How must you seek to restore your mineral health and help others live healthy?

Information provided here is for informational purposes only and is not a substitute for professional medical advice. Only your healthcare provider should diagnose your healthcare problems and prescribe treatment.

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