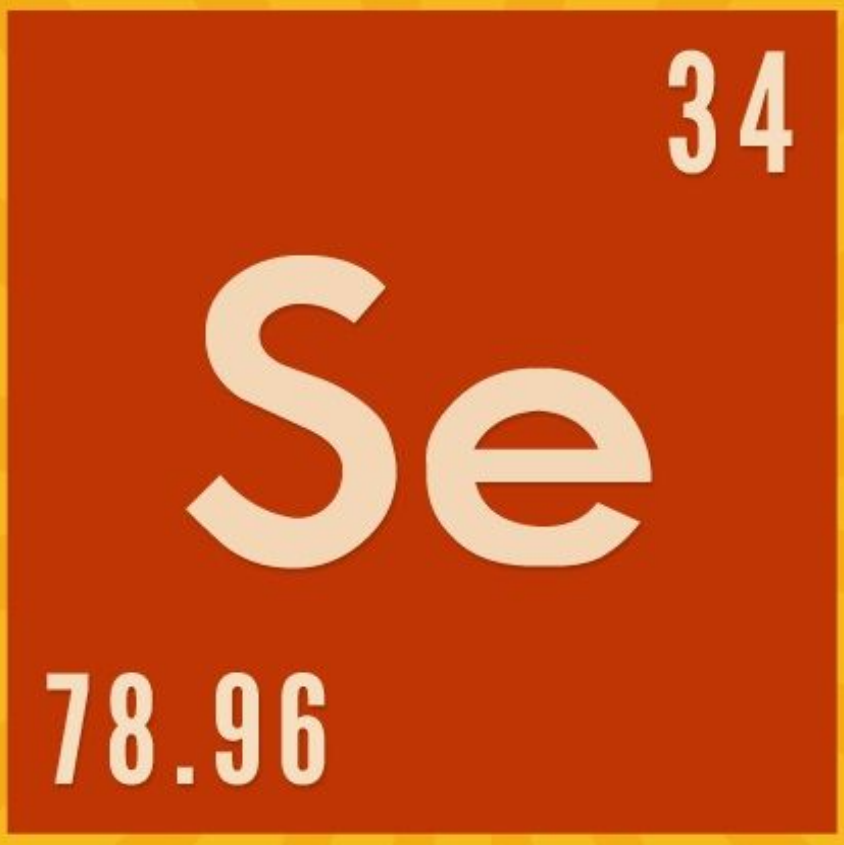
# SELENIUM MEDICINE

## AND THE RISING TIDE OF MERCURY




Dr. Mark Sircus

# SELENIUM MEDICINE

## AND THE RISING TIDE OF MERCURY

MARK SIRCUS, AC., OMD, DM (P)

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# About Dr. Sircus and His Methods (Protocol)

Dr. Mark Sircus, Ac., OMD, DM (P) (acupuncturist, doctor of oriental and pastoral medicine) is a prolific writer and author of some astounding medical and health-related books. Dr. Sircus's methods are based on medical science and long years of clinical experience, not only his own but experiences of doctors from around the world who have been practicing brilliant medicine.

His books are heavily referenced, but the layperson finds little difficulty in understanding his presentation of medical topics. For many years Dr. Sircus has been researching into the human condition and into the causes of disease; he has distilled many of the divergent medical systems into a new form of medicine that he has coined *Natural Allopathic Medicine*.

*Natural Allopathic Medicine* represents a new therapeutic principle that revolutionizes both allopathic and naturopathic medicine offering a radical shift in medical thought and practice. Dr. Sircus's protocol addresses foundational physiology. It focuses on pH management, cell voltage, magnesium and iodine medicine, cannabinoid medicine, carbon dioxide medicine, re-mineralization of the body, increasing oxygen transport and

oxygenation of the tissues, opening up of blood vessels, saturation and healing of cells with concentrated nutrition via superfoods, breathing retraining, emotional transformation processing, detoxification and removal of heavy metals and radioactive particles.

The exciting part of Dr. Sircus's protocol is that it is easy to learn and anyone can start implementing it even while being treated by other approaches. Secondly, with a recent medical breakthrough—a *legalized* form of medical marijuana now available throughout the world—Dr. Sircus's protocol is entirely legal.

With the publication of Dr. Sircus's *Treatment Essentials* book, which actually teaches people to put into practice this medical approach, anyone will now have access to the information that will enable them to take charge of their own health.

Dr. Sircus's approach is humanitarian because it pays attention to the majority who cannot afford expensive medical treatments or pharmaceutical drugs. With the Natural Allopathic Medicine protocol, people with limited funds can make use of the top three medicinals mentioned above—magnesium chloride, sodium bicarbonate (baking soda), and iodine—to inexpensively treat most health problems. Add breathing retraining, CBD, superfoods, vitamin C, plenty of water good enough to be called a medicine, enough sun, daily magnesium massages and one will improve or cure almost any ailment.

# Contact / Consultation

## Consultation

For consultations with Dr. Sircus please visit the consultation page.

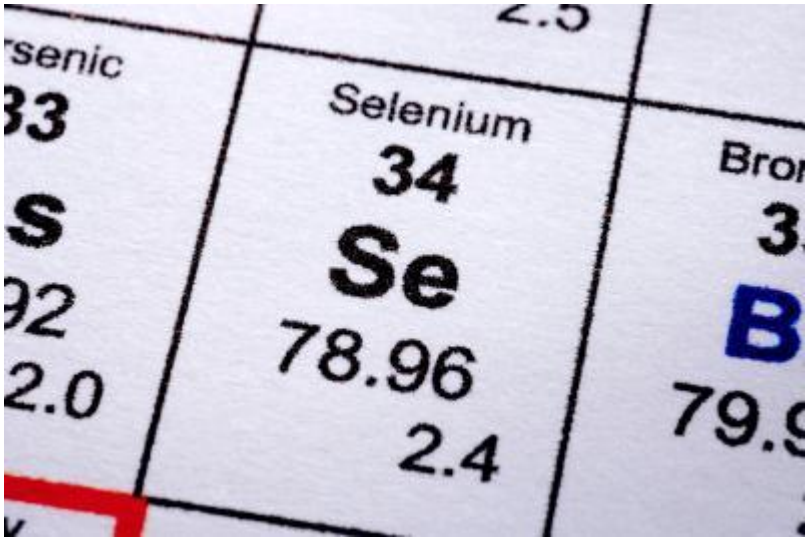
# FAQ

To see the Frequently Asked Question please go to the FAQ Page.

# Emails

If you need direct contact, please send your emails to
support@drsircus.com

# Selenium Medicine




This book digs into why selenium matters and how it works, revealing some discoveries and secrets that need to come to light. Selenium is one of the most fascinating trace elements critical for life, health and outliving your cancer. If you have cancer you do not want to exclude selenium from your treatments no matter what else you do.

If you want to prevent cancer the same advice holds, don't do without your selenium supplements of the type that have been shown to work. Selenium is possibly the most powerful anticancer nutrient there is. Dr. E. J. Crary says, "Selenium is the most potent broad-spectrum anti-carcinogenic agent." It is also one of the least expensive and safest.

*Cancer patients with low selenium levels tend to*
*have a wider spread of the disease, more recurrences*
*and die sooner.*
*- Dr. Harold Foster*[1]

Doctors tend to forget this unsexy mineral and so do the rest of us. But selenium is hugely important atom in very important genetically programmed molecules called selenoproteins. There are 25 known selenoproteins with glutathione being the most important enzyme that the body needs to detoxify itself. There are five types of glutathione dependent on selenium for function. Of the 40 nutrients currently recognized as essential for human nutrition, Selenium was the last to be recognized in 1957. Selenium provides the body with antioxidant protection in concert with vitamin E and C and is required for normal thyroid hormone metabolism.

Most doctors and patients don't have the slightest idea that selenium is also an important emergency room and intensive care medicine joining magnesium salts, sodium bicarbonate and iodine as safe fast acting medicinals that are not pharmaceutical in nature. Since 1980, there have been major developments in the clinical usage of selenium for various disease indications other than in cancer. As new information became available, it demonstrated selenium deficiency in intensive care, sepsis, reperfusion and inflammation. Inflammation has shown to be treatable by the administration of selenium compounds [2]

Selenium is also reported to play a role in reducing the oxidative stress associated with diabetes (Stapleton, S. R. (2000) Cell MoI Life Sci. 57(13-14):1874-9), thereby **retarding the progression of the secondary complications of diabetes such as neuropathy, retinopathy and cataracts**.

Scientists have reported that the controversy surrounding whether selenium can fight cancer in humans might come down to which form of this essential micronutrient people take. It has been discovered that not all "seleniums" are the same. The researchers have discovered that one type of

selenium supplement may produce a possible cancer-preventing substance more efficiently than another form of selenium in human cancer cells.

**Protection against reperfusion injury, myocardial infarction, ischemic stroke and vascular surgery, are all alleviated with selenium injections**. Plastic/reconstructive surgery, hypovolemic shock, resuscitation are also helped with administration of selenium. Tissue damage due to ischemia/reperfusion correlates routinely with selenium status.

The clinical investigations in sepsis studies indicate that higher doses of selenium are well tolerated as continuous infusions of selenium as sodium selenite (4,000 µg Selenium as sodium selenite pentahydrat on the first day, 1,000 µg Selenium/day on the nine following days) and had no reported toxicity issues. In view of this new information Biosyn introduced the 1,000 µg dose vials for such high Selenium clinical usage.

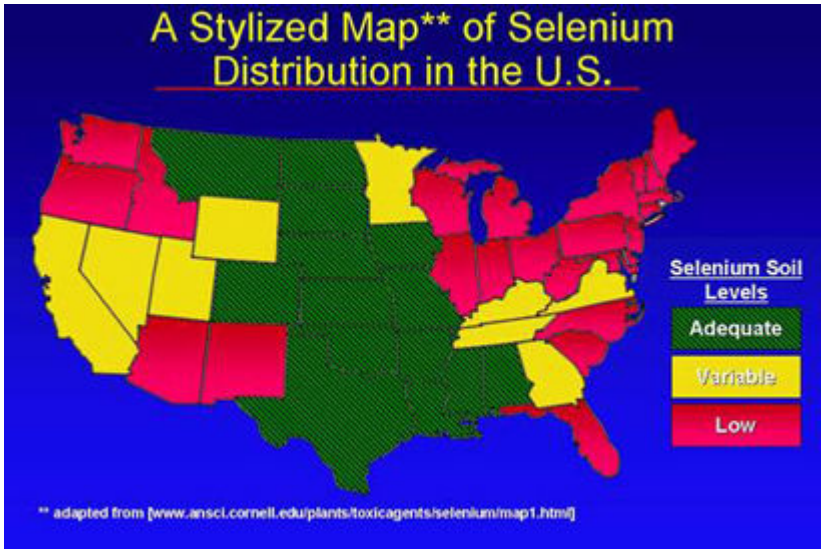
In this book we will introduce several types of selenium and a special type of selenium that can be taken in very high dosages without all the fear and concerns that people and doctors normally have with selenium supplementation. The second best selenium, besides Brazil nuts, is yeast selenium because it delivers the selenium in a bio-absorbable form. But there is another that is a cousin to liposomal Vitamin C that I have personally tested at 100 times normal dosage without any ill effect, a selenium developed by Dr. Emanuel Revici.

And as we shall see gene p53, the guardian of the genetic code is worthless without selenium, no selenium, no tumor suppressing gene function. Selenium activates p53 and p38 pathways and induces caspase-independent cell death in cervical cancer cells. Selenium has already been proven to reduce a person's chances of getting cancer and we will introduce in this book selenium as a treatment for cancer.

[1] Foster HD. "Landscapes of Longevity: The Calcium-Selenium-Mercury Connection in Cancer and Heart Disease," *Medical Hypothesis*, Vol. 48, pp 361-366, 1997.

[2] Leyck et al., Agents Actions. 1990 Jun;30(3-4):426-31

# Selenium - Geography - Cancer




Those who have studied geographical differences have seen that in low-selenium regions, higher death rates occurred from malignant lymphomas and cancers of the tongue, esophagus, stomach, colon, rectum, liver, pancreas, larynx, lung, kidneys and bladder. Dr. Harold Foster has stated that **death rates in the USA for breast, colon, rectal and lung cancer are lower when blood selenium levels are high. Dr. Foster is the one to have reported that cancer patients with low selenium levels tend to have a wider spread of the disease, more recurrences and die sooner.**[1] This is critical information that fits rationally into the entire picture of selenium being compiled by medical science and is the principle reason I list selenium as the number four agent in our cancer protocol.

Most of the selenium we consume is obtained through eating plants, but selenium levels in individual plants vary widely from area to area and depend entirely upon the selenium content of the soil. Areas that have low soil selenium levels naturally have plants that contain low levels of

selenium; the people who live in these areas often have overt symptoms of selenium deficiency unless they receive regular selenium supplementation.

One area of very low selenium levels is the Keshan province of China where a form of heart failure called Keshan Disease was first discovered. Once it was found that the heart condition was caused by selenium deficiency, local medical authorities instituted an inexpensive and effective selenium supplementation program which eradicated the deadly heart condition.

The West African country of Senegal is dominated by high concentrations of selenium in the soil and thus in their foods and as expected we find that Senegalese males had the world's lowest rates for cancer of the trachea, bronchus and lung; stomach and colon; the fourth lowest for prostate cancer and sixth lowest for esophageal cancer. Senegalese women had the lowest incidence of cancers of the trachea, bronchus, lung, esophagus, stomach and colon and second lowest for breast cancer and fifth lowest for cancer of the uterus.

In China, where the selenium levels in the soils varies much more dramatically than in the United States and the population is less mobile, an ecological study in 1985 showed dramatic results in linking cancer with selenium deficiencies. Dr. Shu-Yu Yu measured the selenium content of blood stored in blood banks in 30 different regions in China, and classified the regions as high selenium, medium selenium, and low selenium. They then compared death rates from cancer to the selenium rates and found there was an exact correlation. **In the low selenium classification, three times as many people died from cancer as in the high selenium classification.**

There is no doubt that selenium is essential for human health and that these elements may protect against cancer and other diseases. For this reason

people in regions which are naturally rich in selenium tend to live longer. Selenium, especially when used in conjunction with vitamin C, vitamin E and beta-carotene, works to block chemical reactions that create free radicals in the body (which can damage DNA and cause degenerative change in cells, leading to cancer). Selenium also binds strongly with mercury protecting us from its damaging effects.

Dr. Richard Donaldson of the St. Louis Veterans' Administration Hospital conducted a clinical trial with terminally ill cancer patients. **He found that when he could raise the patients' blood levels of selenium into the normal range, their pain and tumor sizes were often reduced.**In a 140 patient study of cancer victims treated with selenium, Dr. Donaldson reported in 1983 that some patients deemed terminal with only weeks to live were completely free of all signs of cancer after four years; all the patients showed a reduction in tumor size and in pain.[2]

Studies clearly show that selenium can alter the growth of L1210 leukemic cells. This retardation in tumor growth as induced by selenium supplementation and indicated by increased longevity of L1210 tumor-bearing mice is without apparent ill consequences to the host. **The efficacy of selenium therapy against L1210 cells was dependent upon the dose and form administered**.[3]

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[1] Foster HD. "Landscapes of Longevity: The Calcium-Selenium-Mercury Connection in Cancer and Heart Disease," *Medical Hypothesis*, Vol. 48, pp 361-366, 1997.

[2] Richard A. Passwater, Cancer and Its Nutritional Therapies (New Canaan, CT: Keats Publishing, 1983), p. 149.

[3] **Inhibitory Effects of Selenium on the Growth of L1210 Leukemic Cells1; Milner, A and Hsu, C.V.;** Cancer Res May 1981 41; 1652; http://cancerres.aacrjournals.org/content/41/5/1652

# Selenium & Cancer

Thiol- or selenol-containing compounds, e.g., cysteine, cysteamine, glutathione, selenocysteine, and selenocysteamine are known protective agents that are all associated with each other. They are all effective in reducing the unwanted side effects of chemo- or radiotherapy, known to improve cardiovascular function, preventing mutagenesis as well as slowing the aging process.

New Thiol- or selenol-containing compounds, e.g., cysteine, cysteamine, glutathione, evidence also links these compounds to altered gene expression and enhanced cellular repair processes.

The activity of these thiol- or selenol-containing compounds is mainly due to the sulfur and selenium atoms participating in nucleophilic attack on toxic electrophiles, scavenging free radicals, effecting repair of damaged targets through hydrogen atom donation, altering the redox status of the cell, or affecting gene transcription or protein function.

Selenium helps stop damaged DNA molecules from reproducing thus acting to prevent tumors from developing. "It contributes towards the death of cancerous and pre-cancer cells. Their death appears to occur before they replicate, thus helping stop cancer before it gets started," says Dr. James Howenstine.

Selenium at moderate doses of 200-1,000 micrograms **selectively triggers apoptosis** while causing no harm to normal cells. This remarkable fact has been repeatedly verified for all forms of cancer. As an essential trace element, **selenium provides a safe and non-toxic form of selective chemotherapy free of adverse side effects**.

The last 25 years the average daily selenium intake has fallen from 60µg/day to 35µg/day.[1] The UK government has established a Reference Nutrient Intake (RNI) level of selenium at 75µg/day.[2] It is the same story with all the major minerals the body needs like iodine, magnesium and even bicarbonate as the body ages and as the quality of food consumption continues to decline. This is compounded by the rising toxicity exposures people are suffering from, which demands even more of these minerals to detoxify poisons like fluoride that are deliberately fed to the public.

If you are not frightened by cancer you should have your head examined unless you are not frightened because you know exactly what to do if you get it. But if you knew that you would not get cancer in the first place so in reality there is no need to be afraid unless one doesn't give a hoot about health and prevention. Acting on the information on this chapter/protocol component itself will reduce your chances of getting cancer by half and recovering from it if you have it if selenium, iodine, magnesium, bicarbonate, and vitamin C and E are taken in the correct dosages.

**It is actually relatively easy to avoid cancer** and selenium is one of the anticancer mineral musclemen that have the scientific credentials to shame everyone in orthodox oncology. Magnesium is also overlooked as is iodine by contemporary medicine and when they forget the bicarbonate too then we know for sure that most doctors are not actually practicing medicine, not really.

"Our study is the first intervention trial specifically designed to evaluate the efficacy of the selenium-based antioxidant compound on the risk of developing metachronous adenomas," said Dr. Luigina Bonelli at the National Institute for Cancer Research. "Our results indicated that individuals who consumed antioxidants had a 40% reduction in the incidence of metachronous adenomas of the large bowel," Bonelli said. "It

is noteworthy that the benefit observed after the conclusion of the trial persisted through 13 years of follow up."


Researchers at the University of Leuven studied 178 selenium case-controlled subjects along with 362 control subjects. The researchers accounted for variables such as sex, age, smoking and occupational exposure in regards to possible bladder cancer onset. Researchers calculated that the risk of bladder cancer had been reduced by 70 percent in the case-controlled subjects. The actual bladder cancer reduction occurred in subjects that had 96 micrograms per liter or more of selenium in their systems, while those with serum levels of less than 82.4 micrograms per liter did not show the reduction.

Cornell University and University of Arizona, studies showed that after five years, those who took 200 mcg of selenium a day were:

63% less likely to develop prostate tumors
58% less likely to develop colorectal cancers
46% less likely to develop lung malignancies
39% less likely to die from cancer.

Dr. Richard Passwater tells us about these gold-standard clinical trials about selenium and if you want more proof that gravity exists and that selenium is absolutely essential then I wish you luck. “A large randomized trial showing that selenium yeast (methylselenocysteine) dramatically cut the incidence of various cancers (e.g. **prostate reduced by 63%, colon by 58%**, etc.). Overall deaths from cancer are 50 % lower when only 200 micrograms are administered,” said Dr. Passwater.

In an older University of Arizona study lead by Dr. Larry Clark of 1,300 older people, the occurrence of cancer among those who took 200 micrograms of selenium daily for about seven years was reduced by 42 percent compared to those given a placebo. Cancer deaths for those taking the selenium were cut almost in half, according to the study that was published in the Journal of the American Medical Association on December 25, 1996. In addition, the people who had taken selenium had 63 percent fewer prostate cancers, 58% fewer colorectal cancers, 46 percent fewer lung cancers and overall 37% fewer cancers.**Selenium was found to reduce the risk of lung cancer to a greater degree than stopping smoking.**[3]

Scientists reporting in the September issue of *Cancer Epidemiology, Biomarkers & Prevention* say that adults with low blood levels of the mineral selenium are more likely to develop bladder cancer. The lower your levels of selenium, the higher your risk. Dr. Nuria Malats of the Genetic and Molecular Epidemiology Group of the Human Cancer Genetics Program and colleagues found a **39% decrease in bladder cancer** risk was associated with the highest levels of selenium.

Dr. Passwater said, “Many may be spared from cancer if they are informed of selenium’s role in preventing cancer. Unfortunately, the U.S. Food and Drug Administration (FDA) regulations make it difficult to inform people of this health benefit. The biochemistry of selenium is different from other

nutrients, which makes it difficult for many to understand. With all due respect, this apparently includes our good friends at the FDA, who write health claims opinions. A key point is that although selenium has historically been classified simply as a "mineral," most of its biological actions are due to the fact that **most dietary selenium is converted into the 21st human amino acid (selenocysteine) and thence selenoproteins**. Selenocysteine is the active biochemical site within selenoproteins."

Do you know of any chemotherapy that has any of this science or positive statistics behind it? Other selenium pills (e.g. selenomethionine and sodium selenite), while useful have not been shown to have this dramatic effect though they are still helpful. It is very difficult to talk about the medical and health benefits of selenium without having the FDAs swat teams pull up at your door showing us again that the FDA is not there to protect the population's health but to protect big companies bottom lines.

The FDA is a hate organization primed to squash the little guy making sure only the most dangerous and toxic medicines are available while hiding as much as possible anything healthy/anti-cancerous. Chemo and radiation are anti-human not anti-cancerous. Selenium is a truly anti-cancerous substance that will make a big difference in treatment outcome. The FDA states that only pharmaceutical drugs can prevent or cure disease and we all know that this simply is the biggest lie in the universe.

# Conclusion

Dr. Richard A. Passwater, who has been researching antioxidant nutrients since 1959 and he is the scientist who discovered biological antioxidant synergism in 1962. In 1970, at Toronto, he presented his evidence to the Gerontological Society's Annual Scientific Congress that antioxidant nutrients offered a practical means of increasing human lifespan. He was the first to show that practical combinations of antioxidant nutrients increase the lifespan of laboratory animals (Chemical & Engineering News 1970).

When it comes to selenium I would listen to Dr. Passwater not the FDA or the American Cancer Association or anyone else. And I would listen to the medical scientists who were so successful at reducing cancer deaths with selenium that researchers were forced to terminate the biggest study earlier than planned, as they considered it unethical to continue with the placebo supplementation. Those receiving no selenium, they soon saw, had a death sentence fifty percent higher than those receiving 200 mcg of selenium and this was just too cruel for the researchers to continue.

When we fully address selenium and its importance in medicine we have to suffer some humiliation because the information has been staring us right in our faces for years. I published some of this information in my *Winning the War on Cancer* book five years ago but it drifted from my attention and that shows in terms of its position in my protocol where it ended up in the number seven slot.

It is now going back where it belongs in the number four slot in terms of priority, which places it in front of even vitamin C in terms of importance and power of health and anticancer effect. I should write at least a booklet

about selenium for the information runs like a deep gold mind. It is the same with iodine, magnesium, bicarbonate and even cannabinoid medicine. The science is almost endless and thus it was easy to write full length books about each of these important substances in the Natural Allopathic Medicine protocol.

One will find very interesting things other medical scientists have said about selenium and its use as a medicine. “In order to achieve successful prostate tumor elimination a protective coat should be prevented from the deposition around the cancer cells. This can be achieved by the administration of sodium selenite that blocks sulfhydryl groups, and thus prevent disulfide exchange to occur between fibrinogen and albumin, and their deposition on the surface of cancer cells,” wrote Boguslaw Lipinski from Harvard Medical School.

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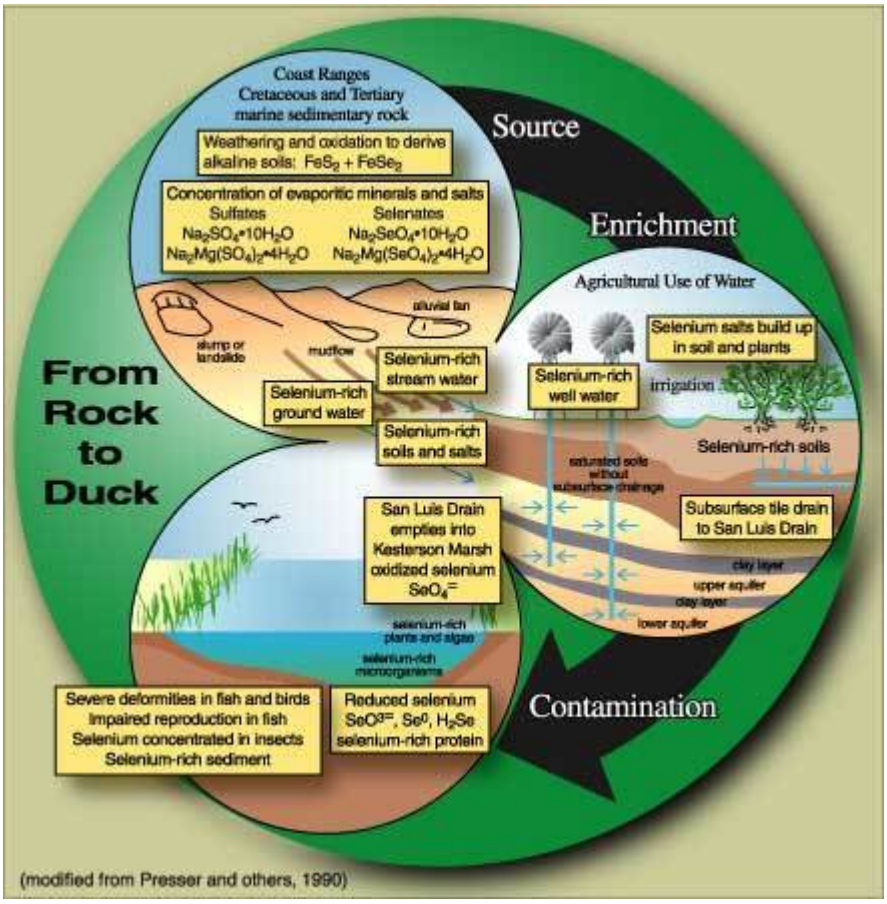
[1]of Agriculture Fisheries Food Surveillance Sheet, No 126. London: Joint Food Safety & Standards Group, UK Ministry and Food (MAFF), October 1997

[2] McPherson, A. et al. NRC Research Press 1997: 203-205

[3] Clark LC. The epidemiology of selenium and cancer. Fed Proc 1985; 44:2584-2590.

# General Information on Selenium




**Selenium deficiency impairs thyroid hormone metabolism** by inhibiting the synthesis and activity of the iodothyronine deiodinases, which convert thyroxine (T4) to the more metabolically active 3,3'-5 triiodothyronine (T3). In rats, concurrent selenium and iodine deficiency produces greater increases in thyroid weight and plasma thyrotrophin than iodine deficiency alone, indicating that a concurrent selenium deficiency could be a major determinant of the severity of iodine deficiency.[1]

Later studies showed that serum T4 was maintained at control levels when both dietary iodine and selenium were low, but not when iodine alone, or selenium alone, was low. Activity of thyroidal GSH-Px (erythrocyte

glutathione peroxidase**)** was lowest in rats fed a diet containing high iodine and low selenium. The results suggested that high iodine intake, when selenium is deficient, may permit thyroid tissue damage as a result of low thyroidal GSH-Px activity during thyroid stimulation. A moderately low selenium intake normalized circulating T4 concentration in the presence of iodine deficiency. [2]

Adequate selenium nutritional status may help protect against some of the neurological effects of iodine deficiency. Researchers involved in the Supplementation en Vitamines et Mineraux AntioXydants (SU.VI.MAX) study in France, which was designed to assess the effect of vitamin and mineral supplements on chronic disease risk, evaluated the relationship between goiter and selenium in a subset of this research population. Their findings suggest that selenium supplements may be protective against goiter.[3]

Selenium (Se) in the form of **selenocysteine is an essential component of the family of the detoxifying enzymes glutathione peroxidase** (Gpx) and of the iodothyronine selenodeiodinases that catalyze the extrathyroidal production of tri-iodothyronine (T(3)). Thus, Se deficiency may seriously influence the generation of free radicals, the conversion of thyroxine (T(4)) to T(3) and a thyroidal autoimmune process.

Recent studies concluded that a positive effect of Se on thyroidal autoimmune process was shown[4] and indicated that high serum Se levels (>120 ug/l) may also influence the outcome of GD. (Graves disease). [5] A recent study testing the various dosages of selenium confirmed that doses greater than 100mcg of selenium (as L-selenomethionine) were required to maximize glutathione peroxidase activities in autoimmune thyroiditis.[6]

Selenium is also essential for the production of estrogen sulfotranserfase which is the enzyme which breaks down estrogen. A deficiency of selenium

can thus lead to excessive amounts of estrogen, which may depress thyroid function, and also upset the progesterone-estrogen balance. Animal studies have shown that **the addition of selenium supplementation will alleviate the effects of excess iodine intake**.[7] Iodine and selenium deficiencies must both be resolved for iodine treatment to be effective.

*Selenium (Se), one of the essential trace elements,*
*plays a major part in many metabolic functions.*

For magnesium to be retained inside cells you need good antioxidant status. Selenium is the main mineral antioxidant. Foods are unreliable because food content is dependent on soil levels of selenium. Foods rich in selenium include whole grains, organ meats, butter, garlic and onion. Seafoods are rich in selenium and obviously not dependent on soil levels.

Ironically, until approximately 40 years ago, selenium was known only as a poison. It is now known that selenium is essential for the normal function of many of the systems of the body and selenium deficiency can have adverse consequences on these systems. Selenium can act as a growth factor; has powerful antioxidant and anticancer properties; and supports normal thyroid hormone homeostasis, immunity, and fertility.

Two of the 22 primary amino acids are distinguished by their possession of selenium: selenomethionine and selenocysteine. Selenomethionine is biochemically equivalent to methionine and is chiefly regarded as an unregulated storage compartment for selenium. In contrast, selenocysteine is tightly regulated and specifically incorporated into numerous proteins that perform essential biological functions.

# Selenium, Chromium and Heart

Dr. Majid Ali and Dr. Omar Ali write, **“**Deficiency of selenium and chromium are established risk factors of IHD (Ischemic Heart Disease). Selenium-dependent antioxidant systems are important parts of human antioxidant enzyme systems, especially in the regeneration of glutathione and other thiol antioxidants. An association between low serum selenium levels and atherogenesis, lipid peroxidation in vivo, and progression of carotid atherosclerosis has been reported.

Salonen et al. observed that selenium deficiency was associated with an excess risk of myocardial infarction as well as morbidity and mortality from other expressions of coronary artery disease and other variants of cardiovascular disease in Eastern Finland. In this study, cardiovascular death and myocardial infarction were associated with low serum selenium levels in a matched-pair longitudinal study. Chromium supplementation in patients with type II diabetes results in improved glucose tolerance, lower total cholesterol and triglycerides levels and higher HDL cholesterol levels.”[8]

# Daily Intake and Safety

In 1980, the National Academy of Sciences stated that a safe and effective range for selenium intake is 50 to 200 micrograms. In 1989, a daily RDA of 75 micrograms for men and 55 micrograms for women was established. The FDA has not as yet set a USRDA for selenium. Conventional supplementation practices are to add 50 to 200 micrograms of selenium to the daily diet.

In my three-part 1986 series on selenium safety, I discussed that many natural diets contained more than 600 micrograms of selenium daily. In Northern Greenland, many residents consume about 1,300 micrograms of selenium daily. And, in China, some residents were found who took 1,000 micrograms of selenium daily when they found out that it protected them from certain selenium-deficiency diseases (including Keshan disease) endemic to their area. They developed thickened fingernails and a garlic-like breath. Now we have a report that a woman took 2,400,000 micrograms of selenium daily for seventy-five days with only mild and reversible side effects. This is 12,000 times the recommended upper limit for supplementation for healthy people.

High doses of vitamin C (over 1 gram) may reduce the absorption of selenium. This mineral is best taken one hour before or 20 minutes after taking vitamin C supplements.[9]

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[1] The role of selenium in thyroid hormone metabolism and effects of selenium deficiency on thyroid hormone and iodine metabolism; Biol Trace Elem Res. 1992 Apr-Jun;33:37-42

[2] Dietary Iodine and Selenium Interact To Affect Thyroid Hormone Metabolism of Rats; The Journal of Nutrition Vol. 127 No. 6 June 1997, pp. 1214-1218

[3] Selenium Fact Sheet: http://ods.od.nih.gov/factsheets/selenium.asp#h5

[4] L-selenomethionine substitution suppresses serum concentrations of thyroid peroxidase antibody (TPOAb) in patients with AIT, but suppression requires doses higher than 100 microg/day which is sufficient to maximize glutathione peroxidase activities.

[5] Serum Selenium levels in patients with remission and relapse of Graves Disease; Wertenbruch T, et al; Med Chem. 2007 May;3(3):281-4.

[6] **Selenium treatment in autoimmune thyroiditis: 9-month follow-up with variable doses.** J Endocrinol. 2006 Jul;190(1):151-6. Entrez PubMed

[7] Selenium supplement alleviated the toxic effects of excessive iodine in mice. Biol Trace Elem Res. 2006 Summer;111(1-3):229-38

[8] Ali M, Ali O. AA Oxidopathy: the core pathogenetic mechanism of ischemic heart disease. J Integrative Medicine 1997;1:1-112. From the Departments of Medicine, Capital University of Integrative Medicine, Washington, D.C., and Institute of Preventive Medicine, New York (MA and OA), and Department of Pathology, College of Physicians and Surgeons of Columbia University, New York (MA).

[9] Am J Clin Nutr. 1989 May;49(5): 862-9

# Forms of Selenium


The standard of recommended intake levels of selenium is under debate. The UK reference nutrient intake (RNI) is 75 µg per day for men and 60 µg per day for women. The American recommended dietary allowance (RDA), set at 55 µg per day for both men and women. These numbers should be looked at as the bare minimum and do not take into account the increased need for selenium because of the rising tide of mercury in the environment and thus our bodies. Also dosage would be in part dependent on the type of source of selenium used since absorption rates would vary widely.

Current selenium supplements rely on inorganic forms, such as sodium selenite (Na2SeO3) or sodium selenate (Na2SeO4). While these forms have some value, they are considered more toxic than necessary, and are unlikely to be useful in cancer prevention or treatment. It is very clear from the research that the form in which selenium is introduced consistently shows a marked influence on biological outcomes, including cancer prevention and toxicity.

Back in 1998 Dr. Stephen B. Strum said, “We recommend selenium supplements be given as an organic, rather than an inorganic form. Organic

sources of selenium such as selenomethionine, selenocysteine or mixtures of organic forms found in brewer's yeast have a better safety profile. Recent research indicates higher doses of selenium can be safely given and may possess additional anticancer activity. We currently use daily selenium doses in the 400-800 mcg range in our patients. Other investigators are studying the effects of selenium at much higher doses (1,000-3,000 mcg/day) for prostate cancer and claim to have had little or no toxicity. Clearly, this area is controversial and requires further study."[1]

Getting better forms of selenium because of the difference in absorption and bioavailability in the various forms of selenium is a good idea. The Universtiy  University of Miami study utilized selenomethionine which has 3 times the bioavailability of the sodium selenite form that is less expensive and more commonly used. Nutritionist Christopher Barr recommends a 100 per cent Whole Food selenium, which he says he has used for decades, from Innate Response which he says has more than 100 times the bioavailability of selenomethionine.

Selenium in its inorganic form is poorly absorbed by the body. Most of the body's selenium comes from organic sources, where selenium is bonded with sulphur-containing amino acids, the commonest being L-selenomethionine. Many nutritional supplements contain the poorly absorbed inorganic selenium. Selenium formulations containing L-selenomethionine are good choices but the ideal delivery system is provided by spirulina and perhaps by yeasts and even now by probiotics. (This is an area the IMVA is dedicated to studying.) When spirulina is grown in ponds with selenium added, the spirulina absorbs the inorganic selenium transforming it into organic selenium. The selenium becomes protein bonded to the amino acids in spirulina, which are present in abundance.

Selenium is a vital component of the metallo-protein enzyme glutathione peroxidase. This is a major component in the body's free radical defense system. Thus the availability of selenium is the limiting factor in the production of glutathione peroxidase.

These past years I have been recommending a natural chelation formula from Science Formulas called Chelorex in part because it is the only chelation formula with selenium. Dr. Alan Greenberg, the developer of this well tested chelator, put together a comprehensive formula that drives glutathione levels higher and mercury levels down. It contains more than several substances on the top ten list of our cancer protocol starting with magnesium, ALA, selenium, and Vitamin C.

# Dr. Richard A. Passwater

The following information is provided by Dr. Richard A. Passwater, who has been researching antioxidant nutrients since 1959 and he is the scientist who discovered biological antioxidant synergism in 1962. In 1970, at Toronto, he presented his evidence to the Gerontological Society's Annual Scientific Congress that antioxidant nutrients offered a practical means of increasing human lifespan. He was the first to show that practical combinations of antioxidant nutrients increase the lifespan of laboratory animals. [2]

**Selenium Yeast:**

Selenium yeast is produced when selenium is naturally incorporated into the protein of growing yeast under optimum conditions. The resultant yeast has a high concentration of the selenium-containing proteins, selenomethionine and selenocysteine. Products that are created by mixing yeast with inorganic selenium are still merely inorganic selenium products.

Beneficial nutritional brewer's yeast (Saccharomyces cerevisiae) does not contribute to yeast infections such as Candida albicans. Food yeasts are not infectious. Nutritional yeasts are not live yeast cells. If they were, live yeast cells would actually compete with one another and nutritional yeasts would actually suppress Candida albicans yeast growth. However, selenium yeast is carefully dried after it is grown. This kills the yeast and it can no longer grow or multiply. Brewer's yeast has been a staple of the health food industry since its inception. The famous health teachers all advocated brewer's yeast in one form or another because it is rich in the B-complex vitamins and other nutrients that were not available as purified nutrients in

the past. Brewer's yeast still may contain nutrients that we have yet to discover.

Selenium yeast was found to out-perform inorganic selenium in increasing the amount of selenium in the milk of lactating mothers and the blood of their infants. The researchers concluded, "Selenium yeast was safe and more effective than selenite."

In another test, 150 micrograms daily of selenium as selenium yeast was effective in raising blood selenium levels of healthy adults, whereas the same amount of inorganic yeast failed to raise blood selenium levels. Dr. Gerhard Schrauzer of the University of California-San Diego concludes "since a ten-fold lower oral dosage of organic selenium produced a two-fold greater increase in selenium levels in the blood, organically-bound selenium is at least twenty-fold more effective in providing the body with the trace element."

“Selenium-enriched yeast (Se-yeast) is a common form of Se used to supplement the dietary intake of this important trace mineral. However, its availability within the European Union is under threat, owing to concerns expressed by the European Community (EC) Scientific Committee on Food that Se-yeast supplements are poorly characterised and could potentially cause the buildup of Se in tissues to toxic levels. Selenomethionine is the largest single species, accounting for 54-74 % of total Se. Se-yeast is capable of increasing the activity of the selenoenzymes and its bioavailability has been found to be higher than that of inorganic Se sources in all but one study. In a dozen supplementation studies, none has shown evidence of toxicity even up to an intake level of 800 microg Se/d over a period of years.” [3]

Selenium levels in the red blood cells of subjects treated with selenomethionine (in the form of selenium yeast) increased by 100% after

16 weeks supplementation. Neither selenite nor selenate supplementation produced significant increases under the same conditions. Thus selenomethionine and yeast containing selenomethionine are the appropriate forms of selenium for use in nutritional supplements and foods including infant formulae.[4]

**Selenomethionine**

Selenomethionine is a purified selenium-containing amino acid. There is no yeast in selenomethionine. Selenomethionine is a naturally occurring component of food. Selenomethionine is similar to the essential amino acid methionine but with an atom of selenium instead of an atom of sulfur.

The form of selenomethionine that the body can use is L-selenomethionine. L-selenomethionine is better absorbed and better incorporated into body components than any other known form of selenium. Experiments comparing inorganic selenium with DL-selenomethionine found that DL-selenomethionine was not as effective as the inorganic selenium. D-selenomethionine is degraded to inorganic selenium and returned to the inorganic selenium body pool, and thus is only one-fifth as bioavailable as L-selenomethionine.
I have been using various forms of selenium in my animal studies for thirty years and find that the selenium-containing amino acids (selenomethionine and selenocysteine) and the methylated selenides are far superior to the inorganic forms of selenium (selenite and selenate) in terms of overall health, longevity and freedom from cancer.

In studies in New Zealand, it was found that selenomethionine was at least 75 percent bioavailable, compared to 59 percent for sodium selenite. Blood selenium levels rose more quickly and didn't plateau as early with selenomethionine than with sodium selenite.

In a Finnish study, again selenomethionine raised blood selenium levels higher and remained in the blood longer than inorganic selenium. [33] In a later Finnish study, it was found that as much as 3,500 micrograms of inorganic selenium had to be given to raise their blood selenium levels to match that of typical Americans. The long-term safety of such a high dose of inorganic selenium is not known.

In 1984, a MIT study determined that organic forms of selenium are able to increase the body pool size about 70 percent more effectively than inorganic selenite.

Dr. P. Whanger of Oregon State University has spent several years studying the effectiveness of several forms of selenium supplements. He has published several papers on this subject through the years utilizing various laboratory animals and human clinical trials. His latest research was published in the MArch issue of the American Journal of Clinical Nutrition. Some of his findings include, "The selenium concentrations in all blood fractions increased at a faster rate (two- to three- fold) in women taking selenomethionine than in those taking selenate...About 95 percent of the selenium was associated with hemoglobin in women taking selenomethionine - interestingly, most of the GPX activity was also associated with hemoglobin...This suggests that selenium increases in these fractions only when selenomethionine is supplied and that the increase is restricted to hemoglobin."

**Selenoproteins and selenium transport**

We now know that several selenium-containing proteins exist, so selenium is essential in more ways than we knew in 1973. Earlier I discussed two new enzymes, PHGPX and iodothyronine deiodinase. Enzymes are proteins. But there are many other selenium-containing proteins, including muscle proteins and other selenium-containing enzymes. Dr. Roger Sunde

of the University of Missouri-Columbia has classified selenoproteins into four distinct groups.

Selenomethionine can furnish the required form of selenium for all four, whereas inorganic selenium has to be converted into selenomethionine or selenocysteine to be incorporated into two of the classes of selenoproteins. Notice in figure 1 that selenomethionine is incorporated directly into the selenomethionine-specific proteins. Selenomethionine can also be converted in the body into selenocysteine to form the selenocysteine-specific proteins. Also, selenomethionine can be catabolized into selenium ions to form the selenium ion-specific selenoproteins. It is easier for selenomethionine to provide selenium ions than it is for inorganic selenium to be converted into selenomethionine.

The transport protein for selenium ions is selenoprotein-P.

**Inorganic selenium**

As discussed earlier, inorganic selenium forms (selenate and selenite) are not as well absorbed as organic selenium-containing amino acids (selenomethionine and selenocysteine). However, inorganic selenium dissolved in the drinking water of laboratory animals has been effective in preventing various cancers. However, this is not how humans normally get most of their selenium; it is in their food, not their water.

Inorganic selenium, at low doses, is better than no selenium at all. However, larger doses of inorganic selenium has an oxidative effect that increases undesirable lipofuscin production. The selenium in inorganic selenite is in the plus four valance state which is very oxidative. The selenium of selenomethionine is in the minus two valance state. The lipofuscin accumulation in the liver can be accounted for by the fact that in order for selenium to go from the inorganic plus four valance state to the plus minus

valance state, six electrons must be obtained from liver cells. The safety of inorganic selenium is about one-third that of selenomethionine.

Inorganic sources of selenium do not find their way to muscle protein to an appreciable extent. If laboratory animals are fed selenomethionine, selenium soon increases in all organs, muscles, GPX and hemoglobin. When inorganic selenium is fed to animals, it accumulates in the liver, kidneys and GPX.

Inorganic selenium reacts spontaneously with sulphydryl groups to form selenotrisulfides. This can severely disrupt the structure of proteins. Inorganic selenium reacts with the sulfhydryl groups of glutathione to form selenopersulfide and free selenide. Inorganic selenium, due to its free-radical promoting oxidative nature, is mutagenic and has caused cataracts at high doses in mice. In contrast, selenium-containing amino acids are stable, less toxic, and do not have mutagenic or oxidizing activity.

# Alternative Forms

In a letter to NEXUS Magazine in mid-2005 we find an interesting report of the use of selenium and cancer. We read that a woman comes up to a farmer who cured himself of his cancer:

> "Your doctor is my doctor and he tells me you cured yourself of bowel cancer. I have bowel cancer and I've come to ask you to share the treatment." The farmer said, "Woman, it would be worth more than my farm for me to start acting like a doctor! But I know how desperate you are. I'll put the ingredients out and will show you what I mixed up, but I can't give it to you! My wife and I have to do the evening chores – feed the fowls and milk the cows and so on. While we're gone, you can steal the ingredients if you like but I can't give it to you!" That is exactly what the lady did, and she treated herself as instructed. Several months later, she returned with bouquets and presents. She told her farmer friends she was cured and given a clearance from their mutual doctor.
>
> The treatment as worked out by the farmer is with SELENIUM DRENCH CONCENTRATE, which anyone can purchase from veterinary product suppliers. It is liquid selenium. The active constituent is 10 mg of Selenium per mL as sodium selenite. The dosage: is one teaspoonful to two litres of water, of which mixture you drink 226 mL or two-thirds of a 400 mL breakfast cup each morning on an empty stomach.

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[1] Steven Strum the MD author is with the Prostate Cancer Research Institute.

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# Selenium


*Selenium, is a reddish-brown solid Metalloid, somewhat translucent, and of dull metallic glance, insoluble in water, and alcohol. It exists crystalline, and vitreous; at water's boiling heat it melts and boils, evolving odour like stale horse-radish.*

*- J. Carrington Sellars, Chemistianity, 1873*

Selenium is a potent immune stimulator – the most potent immune stimulator of all some think. **Selenium** is an essential component of thyroid metabolism and antioxidant defense, as well as immune function. It may improve activation and proliferation of B- lymphocytes and enhance T-cell function.[1] Selenium is essential for our immune system to function at optimal performance. Thus we should not be surprised to find out those **cancer patients with low selenium levels tend to have a wider spread of the disease, more recurrences and die sooner.**[2]

*Blood selenium levels often indicate the presence of cancer and even the severity of cancer in a patient*

*Repeat, remove in above essay.*

Selenium influences both the innate, "nonadaptive" and the acquired, "adaptive" immune systems[3]_[4]_[5]_[6]_[7] The innate immune system includes barriers to infection and nonspecific effector cells such as macrophages. Both the T and B lymphocytes form the major effector cells of the acquired system that mature with exposure to immune challenges. **Selenium-deficient lymphocytes are less able to proliferate** in response to mitogen, and in macrophages, leukotriene B4 synthesis, which is essential for neutrophil chemotaxis, is impaired by this deficiency. These processes can be improved by selenium supplementation. The humoral system is also affected by selenium deficiency; for example, IgM, IgG and IgA titers are decreased in rats, and IgG and IgM titers are decreased in humans. In endothelial cells from asthmatics, there is a marked selenium deficiency that results in an increase in expression of adhesion molecules, which causes greater adhesion of neutrophils.[8]

Selenium is also involved in several key metabolic activities through its selenoprotein enzymes that protect against oxidative damage.[9] Further, **selenium deficiency may allow invading viruses to mutate and cause longer-lasting, more severe illness**.[10] Animal research has shown selenium and vitamin E have synergistic effects, enhancing the body's response to bacterial[11] and parasitic infections.[12]

Proving the point that selenium is a potent immune stimulator is a 18-month study of 262 patients with AIDS found those who took a daily capsule containing 200 micrograms of selenium ended up with lower levels of the AIDS virus and more health-giving CD4 immune system cells in their bloodstreams than those taking a dummy pill. These **AIDS patients who took selenium were able to suppress the deadly virus in their bodies and boost their fragile immune systems, adding to evidence that**

**selenium has healing powers we need to pay attention to in treating cancer patients.**[13] Those with severely compromised immune systems due to AIDS had dramatically better immune system response with selenium supplementation and this finding is consistent with the information presented by the NIH on their selenium web site.

*Selenium is an important weapon against cancer.*

As an antioxidant nutrient, selenium prevents the action of free radicals which are believed to be causative agents behind degenerative diseases such as premature ageing, cancer and atherosclerosis.[14] Clinical trials have also indicated that selenium can have a role to play in combating oxidative diseases[15], enhancing the immune response[16], increasing male fertility[17], improving psychological mood scores[18] and reducing the pain and stiffness in arthritis sufferers.[19]

*The implicit importance of selenium to human health is recognised universally. Selenium is incorporated as selenocysteine at the active site of a wide range of selenoproteins.*

Dr. Emanuel Revici, a Romanian-born physician, scientist, author, and humanitarian[20] had five major papers on lipids, pain, and cancer deposited

by the Pasteur Institute into the eminent National Academy of Sciences during the Second World War. By 1948, Revici had begun exploring the use of selenium in treating cancer and as a means for rendering radiation less harmful. Dr. Revici's use of selenium in the treatment of cancer predates mainstream interest in this mineral by more than twenty years. Selenium is one of the major trace elements always found deficient in cancer-prone populations. Research has shown that it is of value not only in preventing cancer **but also in treating it**.[21]

Revici uses a special molecular form of selenium (bivalent-negative selenium) incorporated in a molecule of fatty acid. In this form, he can administer up to 1 gram of selenium per day, which corresponds to 1 million micrograms per day, reportedly with no toxic side effects. In contrast, too much selenite (hexavalent-positive selenium) has toxic effects on animals, so human intake of commercial selenite is limited to a dosage of only 100 to 150 micrograms by mouth. Dr. Revici often administered his nontoxic form of selenium by injection, usually considered to be four times more powerful than the form given orally.

The amount of selenium needed to obtain normal blood levels varied from person to person. Normal healthy people usually were seen to have normal blood selenium levels on normal diets however it seemed that cancer patients had lower selenium levels on similar diets. (As we will see below this could in great part be due to more intense mercury toxicity in cancer patients.) Apparently they could not get enough without supplements. Dr. Donaldson found that he had to supplement the cancer patients with at least 200 to 600 micrograms of selenium per day and in some cases 2,000 micrograms of selenium per day were required to obtain normal blood selenium levels.

*There are now seven population studies in the past six years that examined the possible connection between selenium and prostate cancer. All but one of them has found selenium protective.*

*- Karen Collins, R.D.*

In one recent study, men with the highest levels of selenium in their blood were about half as likely to develop advanced prostate cancer as the men with the lowest blood selenium. The "Nutritional Prevention of Cancer Project" (NPC) was a controlled, randomized cancer prevention trial in which 1,312 patients received a daily 200 mcg dose of selenium or a placebo for up to 10 years.[22]

It is noteworthy, that the Food and Drug Administration has determined that there is sufficient evidence to warrant a qualified health claim for Se and cancer. Furthermore, the recent discovery that defects in the SECIS-binding protein 2 (SBP2), which is an indispensable protein for the incorporation of Se into the selenoproteins, result in thyroid dysfunction.[23]

*Much of what selenium does you can't feel while it is doing it, but if you don't have it, then you will feel it later and you won't like the feeling at all – especially if the feeling of dying is not a turn-on to you.*

*- Christopher Barr*

*Health & Nutrition Historian*

One important study found that high blood levels of selenium is associated with a four- to fivefold decrease in the risk of prostate cancer. Scientists at Stanford University studied 52 men who had prostate cancer and compared them to 96 men who didn't.[24] One surprising finding was that blood levels

of selenium generally decreased with age. It is well known that the risk of prostate cancer increases dramatically as one ages.

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# Selenium & The Rising Tide of Mercury

*Tuna is uniformly rich in selenium. Nearly 300 scientific studies have demonstrated that this essential element protects against mercury exposure. Any group carping about mercury in fish without also talking about selenium is hiding half the story.*

One of the main areas of my research through the years is about mercury and its toxicity. Although the majority of attention has been given to fish in the media as posing the great health threat in regards to mercury toxicity we have to entertain the possibility that because of selenium, which is an antidote for mercury, fish could be not be as much of a problem as dental amalgam, mercury injected via vaccines, or direct absorption through the air, water and other foods which are becoming increasingly contaminated. The way things are now public attention is focused mostly on fish consumption as the main danger from mercury and this is actually a red herring removing us from focusing on the total threat that mercury has become. It moves our attention away from the combined effects from all sources put together.

*Selenium binds strongly with mercury protecting us from its damaging effects.*

The first report on the protective effect of selenium against mercury toxicity appeared in 1967. Since then, numerous studies have shown selenium supplementation counteracts the negative impacts of exposure to mercury, particularly in regard to neurotoxicity, fetotoxicity, and developmental toxicity. The ability of selenium compounds to decrease the toxic action of mercury has been established in many species of mammals, birds, and fish.

**The detoxifying effect of selenium on *mercury* toxicity is due to a formation of a biologically inactive complex containing the elements in an equimolar ratio. The complex is unable to pass biological barriers, placenta and choroid plexus and is stored in the liver and the spleen, even in the brain in a nontoxic form.**

It is well recognized that mercury and sulfur bind together to form complexes. This binding property is the basis of chelating therapy used as a treatment in cases of acute and chronic mercury poisoning. **The complexes between mercury and selenium are less generally known but of much higher affinity.** Physiologically, sulphur is far more abundant than selenium, yet because of selenium's higher affinity, mercury selectively binds with selenium to form insoluble mercury selenides. This interaction has been assumed to be a 'protective' effect whereby supplemental selenium complexes the mercury and prevents negative effects in animals fed otherwise toxic amounts of mercury.

When selenium and mercury are found together, they connect forming a new compound making it difficult for the body to absorb the mercury separately. Scientists have also tagged cysteine in fish binding with mercury also making it safer to eat. **When mercury "binds" to selenium or cysteine it is no longer free to "bind" to anything else -- like brain or kidney tissue.**

*Selenium deficiency results not only in a decrease of GSHPx activity, but also in a decrease of GSHPx protein.*[1]

Dr. Laura Raymond and Dr. Nicholas Ralston of the University of North Dakota tell us that, "Measuring the amount of mercury present in the environment or food sources may provide an inadequate reflection of the potential for health risks if the protective effects of selenium are not also

considered. **Owing to the extremely high affinity between mercury and selenium, selenium sequesters mercury and reduces its biological availability. It is obvious that the converse is also true; as a result of the high affinity complexes formed, mercury sequesters selenium.** This is important because selenium is required for normal activity of numerous selenium dependent enzymes."[2]

*Selenium's involvement is apparent throughout the*
*mercury cycle, influencing its transport,*
*biogeochemical exposure, bioavailability,*
*toxicological consequences, and remediation.*
*- Dr. Raymond and Dr. Ralston*

Glutathione happens to be the most important of these selenium dependent enzymes. Mercury is highly toxic but mercury's toxic ruin varies greatly with selenium and glutathione levels. These are the key variables that determine the harm done or the power each individual has to escape the poisonous effect of mercury and other dangerous toxins in the environment. Our defensive shields against both acute and chronic exposure to mercury depend very much on selenium and glutathione.


*Selenium is useful as a controlling agent for*
*mercury, which attacks insulin and its binding sites.*

Selenium is a hugely important subject for more reasons than easily meets the eye. Mercury binds with selenium reducing its availability for other functions i.e., for glutathione production in the cells. Thus it is not unreasonable reasoning to see a chain of events starting with mercury contamination passing from mother to child in utero (via mercury vaccines for mother and mothers dental amalgams and fish consumption) stripping the yet to be born of selenium. Newborns receiving more contamination through mother's milk add to the profile of babies having their selenium levels depleted and thus their glutathione levels set too low to resist childhood vaccines containing thimerosal (fifty percent ethyl mercury) and other toxic elements.

**The last 25 years the average daily selenium intake has fallen from 60µg/day to 35µg/day.**[3] **The UK government has established a Reference Nutrient Intake (RNI) level of selenium at 75µg/day.**[4] Therefore a nutritional gap now exists between the actual recommended level of daily selenium and what people are actually achieving through their diets. When we calculate in the Rising Tide of Mercury and the extra demands that makes on our selenium stores/nutritional intake we can now see the disaster that has been in the making for decades.

*Studies have implicated reactive oxygen species (ROS) and depletion of intracellular glutathione as major contributors to mercury-induced cytotoxicity*
*Sanfeliu et al., 2001*

**Selenium is absolutely essential in the age of mercury toxicity for it is the perfect antidote for mercury exposure.** It is literally raining mercury all over the world but especially in the northern hemisphere. And of course with the dentists poisoning a world of patients with mercury dental

amalgam and the doctors doing the same with their mercury laden vaccines, selenium is more important than most of us imagine.

Selenium offers online in real defense time against mercury. **As mercury enters our bodies, if there is sufficient selenium it will mop up the mercury before it can bind to its favorite sulfur sites or pass through the blood brain barrier.** Taking more selenium reduces the level of "free" mercury doing damage. Minerals and trace elements, the basic building blocks of our bodies, are just not as readily available in our diet as they once were and in the case of selenium this is compounded by the fact that certain vast areas of the world have low selenium contents in the soil and thus the food.

*An excess of a toxic metal and/or a relative deficiency of a nutritional element can be found as significant contributors to every disease.*

*- Dr. Garry Gordon*

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# Natural Food Sources of Selenium

The amount of selenium benefits in certain plants varies depending on the region it is grown due to differences in soil quality and mineral content. Unfortunately, poor farming practices have left much of our topsoil mineral deficient, a fact widely recognized since the 1930s. This is one of the reasons organically produced produce should contain more nutrients, including selenium, than produce from agribusiness.

Eggs and poultry also provide selenium, as does seafood including tuna, salmon, shrimp, and halibut. However, due to contamination from polluted waters, plant sources are a safer option.

Selected food sources of selenium are provided below in Table 1.[1]

**Table 1: Selected Food Sources of Selenium**

| Food | Micrograms (mcg) | Percent DV* |
|---|---|---|
| Brazil nuts, dried, unblanched, 1 ounce (6-8 nuts) | 544 | 777 |
| Tuna, light, canned in water, drained, 3 ounces | 68 | 97 |
| | | |

| | | |
|---|---|---|
| Cod, cooked, 3 ounces | 32 | 46 |
| Turkey, light meat, roasted, 3 ounces | 27 | 39 |
| Bagel, egg, 4 inch | 27 | 39 |
| Chicken breast, meat only, roasted, 3 ounces | 24 | 34 |
| Beef chuck roast, lean only, roasted, 3 ounces | 23 | 33 |
| Sunflower seed kernels, dry roasted, 1 ounce | 23 | 33 |
| Egg noodles, enriched, boiled, ½ cup | 19 | 27 |
| Macaroni, enriched, boiled, ½ cup | 19 | 27 |
| Ground beef, cooked, broiled, 3 ounces | 18 | 26 |
| Egg, whole, hard-boiled, 1 large | 15 | 21 |
| Oatmeal, instant, fortified, cooked, 1 cup | 12 | 17 |
| Cottage cheese, low fat 2%, ½ cup | 11 | 16 |

| | | |
|---|---|---|
| | | |
| Bread, whole-wheat, commercially prepared, 1 slice | 11 | 16 |
| Rice, brown, long-grain, cooked, ½ cup | 10 | 14 |
| Rice, white, enriched, long-grain, cooked, ½ cup | 6 | 9 |
| Bread, white, commercially prepared, 1 slice | 6 | 9 |
| Walnuts, black, dried, 1 ounce | 5 | 7 |
| Cheddar cheese, 1 ounce | | |

*DV = Daily Value. DVs are reference numbers developed by the Food and Drug Administration (FDA)

# Brazil nuts

Brazil nuts are loaded with selenium. Brazil nuts, which are also rich in magnesium, provide the most selenium with 1917µg (2739% DV) per 100 gram serving, 2550µg (3642% DV) per cup, and 96µg (137% DV) in a single kernel or nut.

*Scientists at the University of Otago in New Zealand found that eating just two Brazil nuts a day is effective in increasing selenium status and enhancing glutathione peroxidase activity.*

A randomized controlled trial was conducted with 59 New Zealand adults. Participants consumed 2 Brazil nuts, selenomethionine, or a placebo. Plasma selenium and plasma and whole blood glutathione peroxidase activities were measured at baseline and at intervals following treatment.

Changes in plasma selenium and glutathione peroxidase activity in the Brazil nut and selenomethionine groups differed significantly from the placebo group but not from each other. The change in whole blood glutathione peroxidase activity was greater in the Brazil nut group than in the placebo and selenomethionine groups.

Remember, though, that the patients in the above studies were taking 200 mcg daily in addition to whatever selenium they obtained from foods. Therefore, some experts suggest that a combined total of **300 mcg daily is the minimum amount** to ingest for cancer preventive benefits.

Regardless if you take it for cancer prevention, it shows that the average adult requires at least 55 micrograms (mcg) per day. This is believed to be enough for minimal anti-cancer effects. Women who are pregnant, should get 60 mcg a day, while a woman who is breastfeeding should get 70 mcg a day. These are minimum amounts. For optimum benefits, 200 mcg is ideal.

Different studies show different amounts that can cause toxicity as a result of too much selenium, so it is advised not to exceed 400 mcg when taking over long periods of time. If you do exceed an amount that your body is comfortable with you might feel an upset stomach and in more severe toxic reactions hair loss, hyperactivity or white blotches on your nails.

Alergy and toxicity are not the same thing and it should be noted that some people are allergic to a protein in Brazil nuts and should avoid them altogether. An allergy to Brazil nuts is not an allergy to or toxicity from selenium

# Healthy Brazil Nut Smoothies

Here's two recipes for delicious brazil nut smoothies. You start out by making this Brazil nut milk and then add it into your smoothies with other fruits and natural flavorings as desired.

**Brazil Nut Milk**

- 1 C Brazil Nuts
- 4 C Water

Place in high speed blender. Blend well, Pour through a nut milk bag or cheese cloth. Refrigerate. This will only last a few days in the fridge.

**Cacao Banana Pick-Me-Up**[2]

- 1 C Brazil Nut Milk
- 1 C Ice
- 1 Banana

- 1 T Raw Honey or Agave
- 2 T Cacao Powder

Place all ingredients in blender, blend until smooth.

**Cherry Brazil-nut Smoothie**

Ingredients:

- 1 cup Brazil-nut milk
- 1 frozen banana, broken into chunks (easier to blend and enhance creaminess)
- 1 cup pitted cherries, fresh or frozen
- 1 tablespoon carob powder

Instructions:

1. To prepare this smoothie, you will need to gather all the above ingredients and place them into a blender.
2. Blend until you get a nice smooth consistency.
3. Note: You can also swap carob and mesquite in this recipe

# Walnuts are Important .

According to recent findings published in the British Journal of Nutrition, walnuts may help reduce prostate cancer risk. Researchers at the University of California – Davis and the U.S. Department of Agriculture Western Regional Research Center in Albany, California found that prostate tumors in mice fed the human equivalent of three ounces per day of walnuts were approximately **50% smaller and grew 30% slower than prostate tumors in control mice**.

In addition to lower plasma Insulin-like growth factor 1 (IGF-1), a biomarker strongly associated with prostate cancer, walnut fed mice had lower LDL (bad) cholesterol as well as distinct differences in their liver metabolome, a chemical inventory of what the liver – a major source of both IGF-1 and cholesterol – is doing.

"These results make me very hopeful that walnuts may be beneficial both in terms of avoiding cancer and **slowing cancer growth and therefore should be included in a balanced diet with lots of fruits and vegetables**," states

Dr. Davis.  Walnuts are widely recognized as being heart-healthy and now, this research in prostate cancer along with previous published research from Marshall University reporting that walnuts slow the development and growth of breast cancer tumors in mice, show that walnuts are a weapon in the fight against cancer.

Lead researcher Dr. Paul Davis believes that their findings are not a result of one isolated component, but due to the **multiple ingredients found in walnuts that work together**. "Walnuts are a whole food that provides a rich package of healthful substances, including omega-3 fatty acids, gamma tocopherol (a form of vitamin E), polyphenols, and antioxidants. These likely then work synergistically," states Dr. Davis.

Karen Collins, RD a nutrition consultant for American Institute for Cancer Research (AICR), suggests these findings offer further support to include plant-based foods, such as walnuts, regularly in the diet. "**Nutrition is a key factor in the prevention and treatment of cancer**," states Collins.

Natural Allopathic Medicine goes beyond normal nutrition to concentrated nutritional medicine, which is the application of high dosages of very concentrated nutrients like magnesium chloride, sodium bicarbonate, iodine and cannabinoids, as well as super food formulas.

To make healthy Walnut Milk and a Walnut Date Smoothies see:

http://screen.yahoo.com/easy-to-make-walnut-smoothie-30477404.html

Other nuts and seeds that are high in selenium include sunflower seeds, flax seed, sesame seeds and cashews.

# Selenium, Iodine, Vitamin C and E are Synergistic

Selenium supplementation in people who have an underactive thyroid due to iodine deficiency can actually make their thyroid problems worse. If you have iodine deficiency, do not take selenium supplements without supplementing with iodine.

Earl Mindell RPh PhD suggests in his book *Earl Mindell's Supplement Bible* that the reason fewer Japanese men die from prostate cancer than American men is because their diet has four times the amount of selenium than American diets do. Others point out the same fact about iodine, which the Japanese consume exponentially more than Americans.

**Selenium is involved in the production and utilization of thyroid hormones and <u>should be used</u> in conjunction with iodine**. Selenium is necessary for the conversion of T4 to T3. (Incomplete conversion results in high levels of reverse T3, an inactive hormone.) Selenium has also been shown to reduce autoimmunity against the thyroid (i.e. to treat the underlying cause of Hashimoto's thyroid disease.)

# Synergism with Vitamins C and E

Vitamin E partners with selenium in protecting body components against oxidative free radicals. Both vitamin E and selenium have their own specific modes of stopping free radicals, plus they have common modes. The two are "synergistic" which means that the activity of both together is greater than the sums of the activity of each by itself. It's a case of nutritionally adding one plus one and getting more than three. Vitamin E and selenium are a powerful combination and the body needs both together. Add iodine and Vitamin C (not corn-derived ascorbic acid) to the mix and then one has a super antioxidant formula.

Vitamin C increases the absorption of selenomethionine and organic selenium-containing yeasts. Two differing reports exist concerning vitamin C and inorganic selenite. One report shows that vitamin C inhibits inorganic selenium absorption, while the other shows that vitamin C enhances inorganic selenium absorption. The confusion may result from the fact that if vitamin C mixes with inorganic selenium in the food, the inorganic selenium is reduced to insoluble and biologically inert metallic selenium.

A new study in the *Journal of Hygiene Research* suggests that taking selenium supplements or eating selenium-rich foods may help reduce the damage to neurons and minimize memory loss induced by fluoride. Z. Zhang of Zhejiang Normal University in Jinhua, China and colleagues conducted the study and found supplementation of **selenium in a moderate dose can decrease the toxic effect of fluoride**.

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[1] http://ods.od.nih.gov/factsheets/Selenium-HealthProfessional/#en11

[2] recipe from: http://www.rawmazing.com/brazil-nuts/

# Sulfur, Garlic, Selenium & ALA

This entire category is more important than most doctors realize. For cancer patients and everyone else who is suffering from advanced stage diseases, sulfur offers a lifeline for many reasons, including helping to get oxygen to the cells.

What do garlic and glutathione have in common? Sulfur! Sulfur is commonly used in Asia as an herbal medicine to treat inflammation and cancer. Organic sulfur has been studied in connection with oral and other cancers and has been found to have remarkable benefit in anti-cancer therapy.[1]

Sulfur is an essential element for all life, and is widely used in biochemical processes. In metabolic reactions, sulfur compounds serve as both fuels and respiratory (oxygen-replacing) materials for simple organisms. Sulfur in organic form is present in the vitamins biotin and thiamine, the latter being named for the Greek word for sulfur. Sulfur is an important part of many enzymes and in antioxidant molecules like glutathione and thioredoxin.

Organically bonded sulfur is a component of all proteins, such as the amino acids cysteine and methionine. Disulfide bonds are largely responsible for the strength and shape of proteins. Since sulfur bonds are required for

proteins to maintain their shape, and these bonds determine the biological activity of the proteins, we can see why sulfur is critical for health and life itself. There is no doubt that sulfur helps us battle cancer so it's a good time to become more familiar with this basic element.

Sulfur is required for the proper structure and biological activity of enzymes. If you don't have sufficient amounts of sulfur in your body, the enzymes your body produces or those you consume cannot function properly. This can cascade into a number of health problems since, without biologically-active enzymes, your metabolic processes cannot function properly.

*Sulfur enables the transport of oxygen across cell membranes.*

Because sulfur is directly below oxygen in the periodic table, these elements have similar electron configurations. Sulfur forms many compounds that are analogs of oxygen compounds and it has a unique action on body tissues. It decreases the pressure inside the cell. In removing fluids and toxins, sulfur affects the cell membrane. Sulfur is present in all cells and forms sulfate compounds with sodium, potassium, magnesium, and selenium. Organic sulfur, in addition to eliminating heavy metals, regenerates, repairs and rebuilds all the cells in the body.

# Sulfur & Garlic

As early as 1550 B.C., Egyptians realized the benefits of **garlic** (**a high-sulfur food**) as a remedy for a variety of diseases. Many epidemiological studies support the protective role of garlic and related allium foods against the development of certain human cancers. Natural garlic and garlic cultivated with selenium fertilization have been shown in laboratory animals to have protective roles in cancer prevention.[2]

Dr. Budwig fed terminal cancer patients a mixture of skim milk protein (a sulfur-containing protein) and flaxseed oil. The Budwig diet and the Gerson Therapy diet are two leading anti-cancer diets. **The badly needed sulfur protein L-methionine is found in cottage cheese.** L-methionine is the essential amino acid responsible for breaking down omega-3 fatty acids.

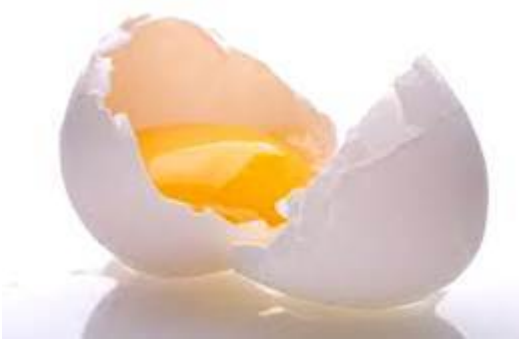
Sulfur is essential for the metabolism of carbohydrates. Sulfur is required for proper assimilation of the alpha amino acids methionine and cysteine. There is no recommended daily allowance (RDA) for sulfur, though it is believed that most of us ingest about 9 g/day from our diets with more needed in cancer treatments.[3] There are no known toxic effects from organic sulfur.

Cysteine, cystine, and NAC possess powerful antioxidant properties and work best when taken in combination with selenium and vitamin E. They promote liver detoxification by binding toxins and heavy metals such as mercury and lead and facilitating their removal from the body. These amino acids also reduce free radical damage and, in combination with their "liver repair" services, are important for detoxification and chelation.

The first scientific report to study sulfur-laden garlic and cancer was performed in the 1950s. Scientists injected allicin, an active ingredient from garlic, into mice suffering from cancer. Mice receiving the injection survived more than six months whereas those that did not receive the injection survived only two months.[4]

The National Cancer Institute found that individuals who ate the most allium vegetables (red onions, scallions, garlic, chives and leeks) had a **nearly 50% lower cancer risk than those who ate the least**.[5]

A large-scale epidemiological Iowa Women's Health Study looked at the garlic consumption in 41,000 middle-aged women. Results showed that women who regularly consumed garlic had 35% lower risk of developing colon cancer.[6]



Sulfur-rich foods help to give you healthy hair, skin and nails. Sulfur foods are important as this mineral is present in every one of your cells. **Sulfur deficiency is a big threat to vegans and vegetarians who do not**

**consume any eggs or dairy food.** Sulfur foods are primarily found in unprocessed animal foods and seafood. It is also found in great abundance in raw egg yolks.

# Sulfur Deficiency Symptoms

- Fatigue and sluggishness
- Brittle nails and hair
- Hair loss and slow growth of hair
- Poor growth of fingernails
- Joint problems like arthritis
- Skin problems like rash
- Dermatitis and eczema
- Skeletal and growth problems
- Varicose veins and poor circulation
- Increased aging of skin
- Inability to digest fats
- Blood sugar problems
- Inability to digest food
- Increased allergies
- Parasitical infestations

Several population studies show an association between increased intake of garlic and reduced risk of certain cancers, including cancers of the stomach, colon, esophagus, pancreas and breast. The European Prospective Investigation into Cancer and Nutrition (EPIC) concluded that higher intakes of onion and garlic were associated with a reduced risk of intestinal cancer.[7]

Several studies conducted in China centered on garlic consumption and cancer risk. In one study, investigators found that frequent consumption of garlic and various types of onions and chives was associated with reduced risk of esophageal and stomach cancers, with greater risk reductions seen for higher levels of consumption. Similarly, in another study, the

consumption of allium vegetables, especially garlic and onions, was linked to a reduced risk of stomach cancer. In another study, greater intake of allium vegetables (more than 10 g per day vs. less than 2.2 g per day) was associated with an approximate **50% reduction in prostate cancer risk**.
Evidence also suggests that increased garlic consumption may reduce pancreatic cancer risk.[8] A study conducted in the San Francisco Bay area found that pancreatic cancer risk was 54% lower in people who ate larger amounts of garlic compared with those who ate lower amounts.

In addition, a study in France found that increased garlic consumption was associated with a statistically significant reduction in breast cancer risk.[9] After considering total calorie intake and other established risk factors, breast cancer risk was reduced in those consuming greater amounts of fiber, garlic and onions.

# Glutathione & Sulfur

Oxyradicals are involved in multiple mutational events and can contribute to the conversion of healthy cells to cancer cells. Glutathione (GSH) and the GSH-replenishing enzymes keep the antioxidant status of normal cells at a level where they can avert oxyradical-derived mutations. When we talk about sulfur pathways and sulfur sufficiency we are at the same time touching on glutathione because **glutathione is a sulfur enzyme**.[10]

Selenium compounds have been shown to have powerful anticarcinogenic activity. In view of certain similarities between selenium and sulfur biochemistry, scientists tested selenocystamine/ cysteamine, semethylselenocysteine/ S-methylcysteine and selenobetaine-sulfobetaine. In these sulfur compounds only cystamine and S-methylcysteine produced anticancer activity. These sulfur-selenium compounds are active in cancer protection and may have a multi-modal mechanism in preventing cellular transformation as well as in delaying or inhibiting the expression of malignancy after carcinogen exposure.[11]

*Garlic also contains selenium, which is crucial for glutathione enzymes.*

**Glutathione, the most important antioxidant in the body, is that place where sulfur and selenium meet up to protect us from cancer.** The immune system cannot function properly without it and antioxidants such as vitamins C and E rely on it to function properly within the body. The glutathione and cancer connection has been well established. Patients with cancer, serious chronic illness, AIDS and over 60 other diseases have **reduced glutathione** levels. Glutathione plays a specific role in the

detoxification of many well known cancer-causing and cell-damaging substances in our environment.

A Japanese study showed that even low concentrations of DMSO (sulfur) had radio-protective effects through the facilitation of DNA double-strand break repair, providing protection against radiation damage at all cellular levels in the whole body.[12] Boosting your body's antioxidant levels is a key to surviving cancer. DMSO can be used for various medical applications.

In my Natural Allopathic Medicine protocol I suggest two principle products for sulfur supplementation. The first is organic sulfur and I have found a company with the best-priced and highest-quality product. Second I am recommending a new product from LL Magnetic Clay—magnesium oil with MSM (sulfur) added. It is a very nice transdermal way of driving sulfur into our systems and it makes the magnesium oil even oilier and better for the skin.


*8 oz $29.00*

Ancient Minerals Magnesium Oil Ultra incorporates the unique synergistic benefits of MSM and magnesium. MSM (methylsulfonylmethane) has long been revered as a superior form of sulfur supplementation, but as a topical it

enhances cell membrane permeability and facilitates more efficient uptake of magnesium ions. Ancient Minerals Magnesium Oil Ultra contains approximately 1.6 g elemental magnesium and 3.6 g of MSM per fl oz. I'm sure my readers will like this new magnesium oil formula. It's gentler on the skin—the MSM counteracts the itching.


The organic sulfur company I have chosen is one of the best in terms of quality and very competitive price.

Organic sulfur (MSM) is an acid-forming mineral that is part of the chemical structure of the amino acids methionine, cysteine, taurine, and glutathione. Sulfur disinfects the blood, helps the body to resist bacteria, and protects the protoplasm of cells. It aids in necessary oxidation reactions in the body, stimulates bile secretion, **and protects against the harmful effects of radiation and pollution**. It is found in hemoglobin and in all body tissues and is needed for the synthesis of collagen, a principal protein that gives the skin its structural integrity.

You can add it to your morning smoothie, with bananas, pineapple, fruits and berries. You can add it to a big glass of water and add the juice of 1/4 to 1/2 lemon (or less, depending on your taste). Some people use apple cider vinegar instead of lemon juice. Find the amount that works best for you by

experimenting. You can also dilute it further in water (I personally dilute 1-2 tablespoons in about a gallon of water and drink it throughout the day. This dilutes the slightly bitter taste, as well as saving me time, in that I don't have to wait for it to dissolve in a glass of water). There are other ways to take it such as adding it to orange juice or tea. One health professional recommends a teaspoon in a 12-ounce glass of water with one teaspoon to one tablespoon of honey plus a pinch of cream of tartar (sold in the spices section of many stores, or online). That mixture takes away the bitter taste pretty well. Avoid hot liquids as too much heat breaks down the molecule.

**Dosage:** We recommend about 10 grams of organic sulfur per day on average, though many people take quite a bit more. For an average person with no specific health issues, a rounded teaspoon (about 5 grams) twice a day is about right, as the excess organic sulfur is cleared from the body in about 12 hours.

I have been recommending sodium thiosulfate for a number of years now. I find it helpful for removing heavy metals and as an antioxidant to help with sleep. I recommend about 8 drops a day in water or I have people make a 10% sodium thiosulfate solution (see next paragraph). Sodium thiosulfate is also used in much larger amounts as an IV buffer or a flush after a cancer patient has had chemotherapy. Sodium thiosulfate removes arsenic as well as cyanide from the body and helps considerably with calcification. It is actually very useful stuff as all pet fish lovers know.

To make the 10% ST solution, just add 10 grams ST to 90 grams (ratio 1:9) of water and you will have the 10% solution so you can use drops if you want.

http://www.chemistrystore.com/Chemicals_S-Z-Sodium_Thiosulfate.html

E-bay also sells ST and ships worldwide.

**Dosage:** Follow directions of product used. Most retailers of sodium thiosulfate do not give recommended dosages for human use in diseases, only for water purification or photography use. Dr. Oleg Yasko in Russia recommends about 1-2 drops twice a week in a cup of tea or water… or if the granular is obtained, only one grain added is recommended. It is very potent stuff. If one feels to take more increase dose with caution.

Selenium at moderate doses of 500-1,000 micrograms selectively triggers apoptosis while causing no harm to normal cells. This remarkable fact has been understood and repeatedly verified for all forms of cancer over the past 30 years. As an essential trace element, selenium provides a safe and non-toxic form of selective chemotherapy free of adverse side effects. For utilizing selenium more powerfully in terms of killing cancer cells, higher dosages are needed.


Pharma Nord Selenoprecise Tablets

150 tablets cost $23.50

This works out to 15 cents a day for 200 mcg or fifty dollars for a year's supply or enough for intensive treatment collapsed down into the time span of a month or two using up the years dosage.

SelenoPrecise®is an approved selenium source which complies with the international quality and safety standards for foodstuffs. This selenium

yeast is highly unique, as it can document higher bio-availability than any other known selenium source, while providing an extremely stable batch-to-batch quality profile. These properties make SelenoPrecise® an ideal raw material for scientific studies where homogeneity is essential for reliable results and an ideal, safe and trustworthy selenium source for consumers.

• SelenoPrecise® is a new generation of selenium yeast containing at least 99% organically bound selenium (high bio-availability) and never more than 1% inorganic selenium compounds (low bio-availability). The preparations has a high and stable content of app. 70% as l-selenomethionine.
• SelenoPrecise® is characterised by having a content of organic selenium compounds somewhere in the range of 1000 to 1600ppm of selenium.
• SelenoPrecise® is characterised by an absorption of more than 85% (in humans).
• SelenoPrecise® has an extremely high safety profile due to the high presence of organic selenium compounds.
• SelenoPrecise® offers the potential benefits of active selenium species other than lselenomethionine.
• The health potential for SelenoPrecise® is documented in several studies.
• SelenoPrecise® eliminates the problem of unpleasant smell and taste associated with pure synthetic l-selenomethionine.
• SelenoPrecise® is manufactured under strictly controlled conditions and complies with all relevant quality requirements.

The European Food Safety Authority (EFSA) has reviewed the extensive safety documentation on SelenoPrecise and concluded that the product does not present any safety concern. SelenoPrecise was already approved by derogation in many EU member states, and the new approval by EFSA confirms the future potential for using SelenoPrecise as a safe and stable selenium ingredient in food products and supplements.

EFSA's panel on Food Additives stressed that only selenium-enriched yeasts produced by cultures in the presence of sodium selenite and containing selenomethionine as the predominant organic form of selenium were included in the safety approval.

Nowadays, selenium can be included in animal feed in two forms; as inorganic selenite or as organic selenium yeast. Both forms have different metabolic routes and effects. Selenium yeast is regarded as a more effective way of supplementing selenium. As more producers of selenised yeast enter the market, benchmarking on quality becomes increasingly relevant. Selenised yeast predominantly consists of selenomethionine (SeMet), which can be converted into selenocysteine (SeCys) by natural turn-over from methionine into cysteine. SeMet is recognised by the animal as normal methionine and absorbed and metabolised following the methionine pathway. When selenised yeast is fed, tissues will be enriched with the selenium from SeMet. If selenium is required, it is rapidly available from SeMet turning into SeCys (Figure 1). This saves valuable time and ensures a fast and effective reaction in case of stress or a disease.

# Alpha-Lipoic Acid


*90 veggie capsules $15.95*

Alpha-lipoic acid is equally important for it will, along with selenium, raise glutathione levels. Along with selenium, ALA will help us deal with mercury that is polluting the body.

**Dosage:** Because of its chelation effect, one should only cautiously exceed recommended dosages.

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[1] Toxicology in Vitro. http://cat.inist.fr/?aModele=afficheN&cpsidt=19999781

[2] J Nutr. 2006 Mar;136(3 Suppl):864S-869S. http://www.ncbi.nlm.nih.gov/pubmed/16484582

[3] Daily intake is usually 800-900 milligrams of sulfur per day. Certain health conditions, such as arthritis and liver disorders, may be improved by increasing the intake of sulfur to 1,500 milligrams per day in supplemental form (most commonly as methylsulfonylmethane, or MSM). Sulfur-rich foods include eggs, legumes, whole grains, garlic, onions, Brussels sprouts, and cabbage according to Dr. Michael T. Murray.

http://www.sharecare.com/question/recommended-dietary-allowance-for-sulfur

[4] Researchers once thought that the chemical called allicin was responsible for garlic's benefits, as well as its distinctive smell. But we now know that it is the other chemicals in garlic, including the sulfur-containing compounds, that may help lower cholesterol, fight heart disease, and help prevent cancers.
http://health.rush.edu/HealthInformation/Complementary%20and%20Alternative%20Medicine/33/000245.aspx

[5] http://www.cancer.gov/cancertopics/factsheet/prevention/garlic-and-cancer-prevention

[6] http://www.umm.edu/altmed/articles/garlic-000245.htm

[7] Gonzalez CA, Pera G, Agudo A, et al. Fruit and vegetable intake and the risk of stomach and oesophagus adenocarcinoma in the European Prospective Investigation into Cancer and Nutrition (EPIC-EURGAST). *International Journal of Cancer* 2006; 118(10): 2559–2566.

[8] Chan JM, Wang F, Holly EA. Vegetable and fruit intake and pancreatic cancer in a population-based case-control study in the San Francisco bay area. *Cancer Epidemiology Biomarkers & Prevention* 2005; 14(9):2093–2097

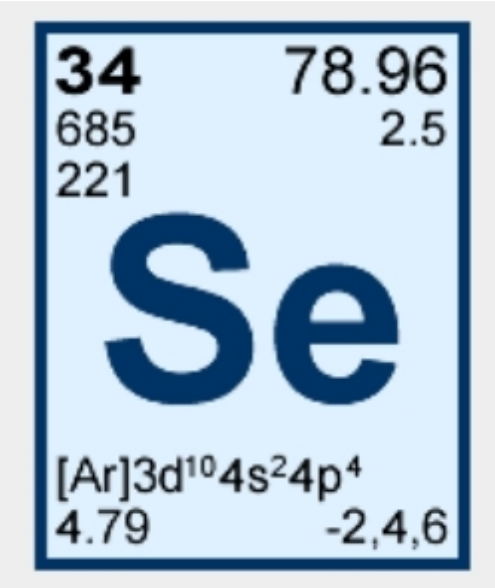
[9] Challier B, Perarnau JM, Viel JF. Garlic, onion and cereal fibre as protective factors for breast cancer: A French case-control study. *European Journal of Epidemiology* 1998; 14(8):737–747.

[10] http://en.wikipedia.org/wiki/Sulfur_assimilation

[11] Carcinogenesis. 1992 Jul;13(7):1167-70.Comparison of selenium and sulfur analogs in cancer prevention. Ip C, Ganther HE. Department of Surgical Oncology, Roswell Park Cancer Institute, Buffalo, NY 14263

[12] An alternative mechanism for radioprotection by dimethyl sulfoxide; possible facilitation of DNA double-strand break repair; Kashino G, Liu Y, et al; J Radiat Res. 2010;51(6):733-40. http://www.ncbi.nlm.nih.gov/pubmed/21116101

# Selenium Dosages




For cancer treatment one has quite a few options in terms of selecting a selenium dosage. One should start at 400 mcgs a day for the first few days of supplementation but then begin to work up toward 800 mcg a day. Once comfortable at the 800 level, and when stable with much of the rest of the protocol, one can contemplate thrusting up to much higher levels without much concern using selenium's anticancer power for maximum effect.

If one has cancer though and elects to use selenium as a principle treatment then these dosage levels are just warm up exercises, which are important when patients elect to treat themselves with this widely available mineral.

Dr. Clark said that he thought that he could get to a 600 microgram supplement added to the U.S. average intake of over 100 micrograms per day and see the "optimum" effect on cancer prevention. But he pointed out that this was a "pharmaceutical" action because it was so much higher than what was needed for a good pool size or good enzyme activity. He has spent a lot of time trying to nail down the level where selenium moves away from

an enzyme cofactor and into a DNA binding agent. Clark says that for selenium to move into this DNA binding role you have to have a blood level above **120 ng/ml of plasma**.

When practicing a full protocol one must remember that all of the agents will act synergistically with the others to lower the need for extremely high dosages. Don't let the mainstream press boys scare you with toxicity stories that are just projections of the dangerous nature of the drugs the medical press sponsors. An appropriate form of selenium is less toxic than just about every pharmaceutical you can think of including aspirin.

> *Continuous infusion of selenium as sodium selenite (4,000 microg on the first day, 1,000 microg/day on the nine following days) had no obvious toxicity.*

If one wants to go even higher there are very private people who have experience with guiding dosages up to 5, 10 even 20 grams of selenium safely using sublingual means. A few days of pulse dosing will probably have dramatic results and in emergency late stage cancer situations dosages can be given intravenously.

Taken at normal doses, selenium does not have side effects. An overdose of selenium may cause bad breath, fever, nausea, and liver, kidney and heart problems if those organs are very weak, which is often the case in late stage cancer. The good news is that it is relatively easy to saturate the cells with enough selenium. With magnesium it takes months of hard work and the same is pretty much the case for iodine and bicarbonate when there are long standing deficiencies of these minerals.

| **Group** | **Recommended Dietary Allowance** |
| --- | --- |
| | |

| | |
|---|---|
| Children 1-3 | 20 micrograms/day |
| Children 4-8 | 30 micrograms/day |
| Children 9-13 | 40 micrograms/day |
| Adults and children 14 and up | 55 micrograms/day |
| Pregnant women | 60 micrograms/day |
| Breastfeeding women | 70 micrograms/day |

One can multiply these dosages by a factor of around ten and still be on the safe side of toxic issues though for pregnant or breastfeeding women very high dosages should only be applied in dire medical circumstances. When looking at the above chart it is good to remember the Brazil nut and how strong of a medicine one nut can be for children or anybody else. Obviously a few nuts is not going to kill anybody.

Although selenium is an essential trace element, it is toxic if taken in excess though anything and everything taken in excess is toxic. Exceeding the Tolerable Upper Intake Level of 400 micrograms per day can lead to selenosis. This 400 microgram (µg) Tolerable Upper Intake Level is based primarily on a 1986 study of five Chinese patients who exhibited overt signs of selenosis and a follow up study on the same five people in 1992. **The 1992 study actually found the maximum safe dietary Se intake to be approximately 800 micrograms per day (15 micrograms per kilogram**

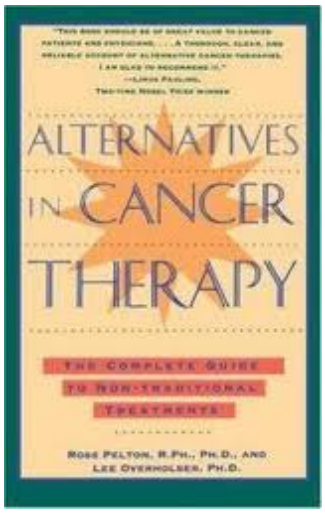
**body weight)**, but suggested 400 micrograms per day to not only avoid toxicity, but also to avoid creating an imbalance of nutrients in the diet and to account for data from other countries.[1]

# Selenium History

It all started back in the 1970s at the University of California in San Diego. Dr. Gerhard Schrauzer studied the relationship between selenium and breast cancer in female mice. In one experiment Dr. Schrauzer added 2 ppm of selenium in the form of selenite to the drinking water. After fifteen months, 82 percent of the untreated mice used as controls had developed mammary tumors. However, only 10 percent of the mice that received selenium supplementation developed tumors.

Over a 70 percent reduction in breast cancer was realized with trace amounts of selenium added to the diet. For many years Dr. Schrauzer has been saying that if women would take 200-300 mcg of selenium daily, the majority of breast cancers could be eliminated within a short period of time.

In another study with mice, Dr. Schrauzer showed that midlife cessation of selenium supplementation resulted in a subsequent rapid increase in the number of tumors. Therefore, **selenium supplementation must be maintained throughout the entire life span if you want its protection**. "The data suggest that selenium is not only effective in prevention but can also be used as an adjuvant chemotherapeutic agent." The more selenium that is available, the lower the levels of cancer.




There is this very interesting book by Dr. Ross Pelton who talked about Dr. Schrauzer as well as Dr. Robert C. Donaldson, an oncologist at the Veterans Administration Hospital in Saint Louis, Missouri, who discovered in most of his patients that normal doses of selenium did not produce much of an increase in the blood levels of selenium.

In fact, very high oral doses of selenium were required to bring up the blood levels of selenium in his cancer patients. In a letter to Nutrition 21 dated May 11, 1979, he indicated, "We are now able, **with nearly 100 percent regularity, to increase the blood levels by several fold by giving 1,000 to 2,000 micrograms of selenium daily and then dropping back to a maintenance dose**."

In one case, a dosage level of 2,700 mcg/day for two months followed by six weeks of 5,000 mcg/day was required to bring up the selenium blood levels. One important aspect of Dr. Donaldson's work is the discovery that **many cancer patients apparently don't absorb selenium well**. Potentially toxic levels of oral selenium had to be administered in order to achieve normal blood selenium levels. When normal blood selenium levels were reached, Dr. Donaldson documented marked improvement in his patients and, in some cases, **remission of advanced cancers.**

The question must be asked whether selenium is really toxic at these high levels when blood levels are so low. Donaldson noted that occasional **patients with relatively low levels of selenium (.223 ppm) experienced dramatic tumor regressions when supplemental selenium raised blood levels to normal.** For other patients, however, tumor regression was not evident until the levels reached .40 ppm to .50 ppm, while still others required reaching blood levels of .80 ppm.

The higher dosage levels of selenium that appear to be necessary to help cancer patients can be toxic, but that is not the primary concern because the toxicity of selenium is blown totally out of proportion. It is officially sanctioned scare tactics, which is normal activity coming from the industrial medical complex.

Dr. Schrauzer reports that dosages of 2,000 to 5,000 mcg per day will produce toxicity symptoms only after several months. However, since the early symptoms of selenium toxicity such as nausea, weakness, and discoloration of the fingernails are hardly ever overlooked, **high doses have not been reported to have caused any fatalities**.

“Because oral doses of selenium have to be so large to be therapeutically effective, it is imperative to perform regular assays of blood selenium levels in each individual patient if using 1,000-mcg intramuscular injection of selenium, which is best done every other day during a twenty-one-day period for late stage cancer patients. This route bypasses the intestines and avoids the problem of varying levels of selenium uptake in different patients. Outpatients take between 300 and 400 mcg of organic selenium orally each day as a nutritional supplement. Close medical supervision combined with regular laboratory assessment of blood selenium levels is necessary to prevent toxicity when selenium is used to treat cancer,” concludes Dr. Pelton.

For utilizing selenium more powerfully in terms of cancer treatment even higher dosages can be used safely. Using aspirin is considerably more dangerous than using selenium killing over 15,000 people a year in the United States alone. If one searches on line one can find only one reported death from selenium. In 2006 an Australian man has died after swallowing 10,000 times the daily dose of selenium. The 75-year-old mistakenly purchased sodium selenite powder used primarily as a supplement for livestock, swallowing 10 grams.

# Selenium is Safe

The July 1998 issue of *The American Journal of Medicine*[2] said:

> "Conservative calculations estimate that approximately 107,000 patients are hospitalized annually for non-steroidal anti-inflammatory drug (NSAID)-related gastrointestinal (GI) complications and at least 16,500 NSAID-related deaths occur each year among arthritis patients alone."

Common over-the-counter painkillers such as aspirin kill around 20,000 Americans every year, and another 100,000 end up in hospital as a result of taking the drug, new research reveals. Painkillers known as NSAIDs (non-steroidal, anti-inflammatory drugs) are far more dangerous than people have been told and can cause life-threatening gastrointestinal (GI) bleeding, stomach perforations and ulcers. More than 14 million Americans regularly take an NSAID for their arthritis pain alone, and around 60% of these will suffer gastrointestinal side effects—and will probably never blame the drug, researchers from the Eastern Virginia Medical School estimate.

Selenium toxicity is rare in the U.S. The few reported cases have been associated with industrial accidents and a manufacturing error that led to an excessively high dose of selenium in a supplement. The Institute of Medicine of the National Academy of Sciences has set a tolerable upper intake level (UL) for selenium at 400 micrograms per day (ug/day) for adults to prevent the risk of Bio selenosis.
The Linus Pauling Institute says, "A two-stage model has been proposed to explain the different anticarcinogenic activities of selenium at different doses. At nutritional or physiologic doses (~40-100 mcg/day in adults), selenium maximizes antioxidant selenoenzyme activity, probably enhances

immune system function, and may affect carcinogen metabolism. At supranutritional or pharmacologic levels (~200-300 mcg/day in adults), the formation of selenium metabolites, especially methylated forms of selenium, may also exert anticarcinogenic effects."

**The amount of selenium needed to obtain normal blood levels varied from person to person.** Normal healthy people usually were seen to have normal blood selenium levels on normal diets however it seemed that **cancer patients had lower selenium levels** on similar diets. (As we will see below this could in great part be due to more intense mercury toxicity in cancer patients.) Apparently they could not get enough without supplements. Dr. Donaldson found that he had to supplement the cancer patients with at least 200 to 600 micrograms of selenium per day and **in some cases 2,000 micrograms of selenium per day were required to obtain normal blood selenium levels**. Some patients will benefit from even higher dosages. Patients themselves can administer high dosages safely for short periods of time as long as they are informed of the subtle signs of overdoing it.

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[1] Yang, G. and Zhou, R. (1994). "Further Observations on the Human Maximum Safe Dietary Selenium Intake in a Seleniferous Area of China". *Journal of trace elements and electrolytes in health and disease* **8** (3–4): 159–165. PMID 7599506.

[2] Singh Gurkirpal, MD, "Recent Considerations in Non-steroidal Anti-Inflammatory Drug Gastropathy," *The American Journal of Medicine*, July 27, 1998, p. 31S

# Selenium Diary

## Mark Sircus AC., OMD
## February, 2013

In February I started an experiment on myself with selenium. First I took two drops of liquid selenium of a most special type. Each drop contains one mg when the standard dose would be 200 to 400 micrograms. So I took about ten times the normal dose. Then a few hours later I took five drops and just now took about seven totaling so far today of 14 drops or 14 mg. I will take it up again before bed.

First thing I can tell you is that it is like passing the speed of sound. In this case the barrier is strictly mental. We have been so impregnated with the industrial medical establishment screaming about the toxicity of selenium it does create a mental block that gets released as soon as you start taking milligram drops. I have not published my selenium papers yet, they will come out together in a mini book Today I am going well beyond my own recommendations that are presently in my book *Treatment Essentials*.

I am taking it to test dosage levels and to shed some mental chains about its toxicity through experiencing it before recommending to people to take very high dosages. I have had two different people through the years tell me about these high level dosages that they themselves were using.

In the book will be three sources of selenium, I am experimenting with a fourth for ultimate dosages....

# Selenium Diary Day Two

Recently I traveled to Rio to try to save the life of one of my wife's friends. That is why I got the courage to finally try large dosages of selenium on myself because before I can in my heart and in all good consciousness give someone else high dosages I had better know through my own experiences what we are dealing with.

Today I just did 10 drops or 10 mg, which is only 50 times the normal dosage. Did not die yet!!!

Have been freaking out the people around me a bit, because they themselves have not broken the selenium barrier. But I tell you my stomach is happy, my ulcer has been quiet all day!!!!!!!!!!!!

I do not think doctors are really aware of the pharmaceutical properties of selenium so afraid they are because they have been brainwashed about its exaggerated toxicity.

If it is so toxic how come we can only find less than a handful of reports on the Internet about problems with selenium.

One thing is for sure, you will not catch the mainstream medical system crying about the toxicity of chemo and radiation therapy so really it’s a pathetic joke to scare cancer patients away from heavy use of selenium when just a little, 200 mcg., cuts your chance of dying from cancer in half! That’s science speaking not me.

Every substance, even vitamin C has an upper limit for dosages and in the case of C we measure that in terms of bowel tolerance. It is the same with

magnesium. Both will provoke diarrhea but neither does any harm even when you ring the bell in terms of high dosages.

When I take too much sodium bicarbonate it will also hit on some people's intestines but the selenium, even when using super -concentrated drops from a four year old bottle gives me no reaction in terms of side effects but it certainly is taking the inflammation out of my inflammation meaning I had no pain today.

# Cancer Treatments with Selenium

“I have taken selenium for just under 30 years now. I have taken a lot at one time. I have never seen anybody’s hair fall out, loss of fingernails etc. that you read about in my practice yet. The testicles are the storage point in the body for selenium. I can tell when I start to run low. This is the best reason that females out live males that I can see. Men freely give as much selenium to the female as possible,” writes Dr. Richard Olree. Meaning that sperm has a high amount of selenium, which gets depleted when given to the woman via ejaculation.

The use of magnesium chloride is the practice of concentrated nutritional medicine. It’s the process of taking a nutritional element in dosages not possible with dietary intake. When Hippocrates said in 400 B.C., “Let thy food be thy medicine,” he did not dream that individual vitamins, minerals and even enzymes could be taken in concentrated form. Twenty-five hundred years later we find that emergency room and intensive care doctors are practicing concentrated nutritional medicine to save lives every day

“Selenium is an essential trace mineral critical for antioxidant defense, fertility, thyroid hormone metabolism, immune response, and muscle development.  First discovered in 1817, selenium was considered a toxic substance best avoided. 140 years later, in 1957, the status of Selenium dramatically changed with a report of the first selenium deficiency disease. An obscure biochemist at the NIH, Klaus Schwarz, found that Vitamin E deficient rats were protected from liver degeneration by selenium,” writes Dr. Jeffery Dach.

Symptoms of selenium toxicity include diarrhea, fatigue, hair loss, joint pain, nail discoloration or brittleness, and nausea making it a perfect

substance to use for chemotherapy. Why do I say that? On one side it would seem, if you buy into the allopathic paradigm of cancer treatment, that side effects are a necessary part of cancer treatment. A medicine without side effects would not be a pharmaceutical medicine because they all come with side effects.

Let's just imagine that we use selenium in high enough dosages to bring on some of these side effects. The first thing we notice is that it is really hard to take high enough dosages to bring on these kinds of side effects because selenium is a necessary nutrient yet it is understood that too much of a good thing can be harmful.

# A New Form of Chemotherapy

Sodium bicarbonate, simple plain old baking soda, is one of the strongest anti-cancer medicinals and the same can be said for iodine, magnesium and cannabinoids. The best form of natural chemotherapy would include all of these substances. Adding selenium to the mix is like adding a lead Panzer division to one's army. Those Tiger tanks were a bitch for the Americans to deal with and that is what we have in selenium.

At very low dosages selenium already has a great effect on our immune system and thus on cancer and its outcome. At very high dosages we hope to find a therapeutic sweet spot that will help many more cancer patients survive their cancer.

I have been experimenting at 100 times the recommended dosages and it is probably disappointing to note that not even a burp has resulted but it certainly did wonders for my ulcer/gastritis. When we look at the science that tells us that even one percent of my dosage would reduce my risk of dying from cancer by fifty percent then we can begin to see that at these dosages some major inroads would be made with this ideal natural chemo agent.

Every substance, even vitamin C has an upper limit for dosages and in the case of C we measure that in terms of bowel tolerance. It is the same with magnesium. Both will provoke diarrhea but neither does any harm even when you ring the bell in terms of high dosages except in rare instances.

Looks like selenium is just like these two but the scale is in milligrams not grams like the two above. When I take too much sodium bicarbonate it will also hit on my intestines but the selenium, even when using super

concentrated drops from a four year old bottle gives me no reaction in terms of side effects but it certainly is taking the inflammation out of my inflammation meaning I had no pain today.

Selenium supplementation reduces DNA damage[1] instead of increasing it as radiation and chemo treatments do making it an ideal substitute for what is presently used in chemotherapy today. In fact **tumor incidence** correlates inversely **to the quantity of selenium consumed and that cannot be said so easily about either chemo or radiation therapies. The relationship between selenium concentration and malignancy stage shows an** inverse dependence,[2] **i.e., the concentration decreases with stage number.**

It has already been established that the anti-oxidative potential of selenium[3] is a major factor in providing protection from development of experimentally induced colon carcinogenesis. Both selenoproteins and low molecular weight seleno-compounds are important for the cancer-protective effects of selenium.[4]

Selenium compounds effectively inhibit prostate cancer carcinogenesis.[5] Seleno-protein deficient mice exhibited accelerated development of lesions associated with prostate cancer progression, implicating selenoproteins in cancer risk and development and raising the possibility that selenium prevents cancer by modulating the levels of these selenoproteins[6]. Serum selenium is inversely associated with risk of prostate cancer.[7]

Selenium is an essential mineral important for health and makes an excellent chemo agent.. Selenium deficiency is a known cancer risk and when taken in high dosages will help cancer sufferers beat back cancer.

The NPC Trial, published in 1996 in JAMA, was the brainchild of Dr. Larry C Clark and Dr. Gerald Combs. They chose selenized yeast containing 200 mcg of elemental selenium for residents of the southeastern United States, where soil selenium levels are the lowest in the nation. The NPC Trial showed selenium supplementation significantly decreased the total cancer incidence by 50 percent, and specifically dropped the incidence of lung cancer by 48 percent, prostate cancer by 63 percent, and colorectal cancer by 58 percent. Those who entered the trial with plasma selenium levels less than 106 ng/mL showed both the greatest protection from selenium and the highest rates of subsequent cancer in the control group.

Other studies, which used low quality selenium and synthetic vitamin E have not shown this effect but in a trial involving 29,000 Finnish subjects in which researchers tested whether vitamin E could reduce lung cancer in smokers, those taking the supplements did not enjoy a lower rate of lung cancer but did develop 34% fewer cases of prostate cancer compared to controls.

# Revici's Guided Chemotherapy

Revici's guided chemotherapy is a chemical therapy promoted as an alternative cancer treatment. The therapy varies for every patient but can include a chemical formula made of varying amounts of lipid alcohols, caffeine, zinc, lithium, and iron or a formula that contains fatty acids, selenium, magnesium, and sulfur. Despite its name, Revici's guided chemotherapy is entirely different from mainstream chemotherapy but similar in some respects to Natural Allopathic Medicine.

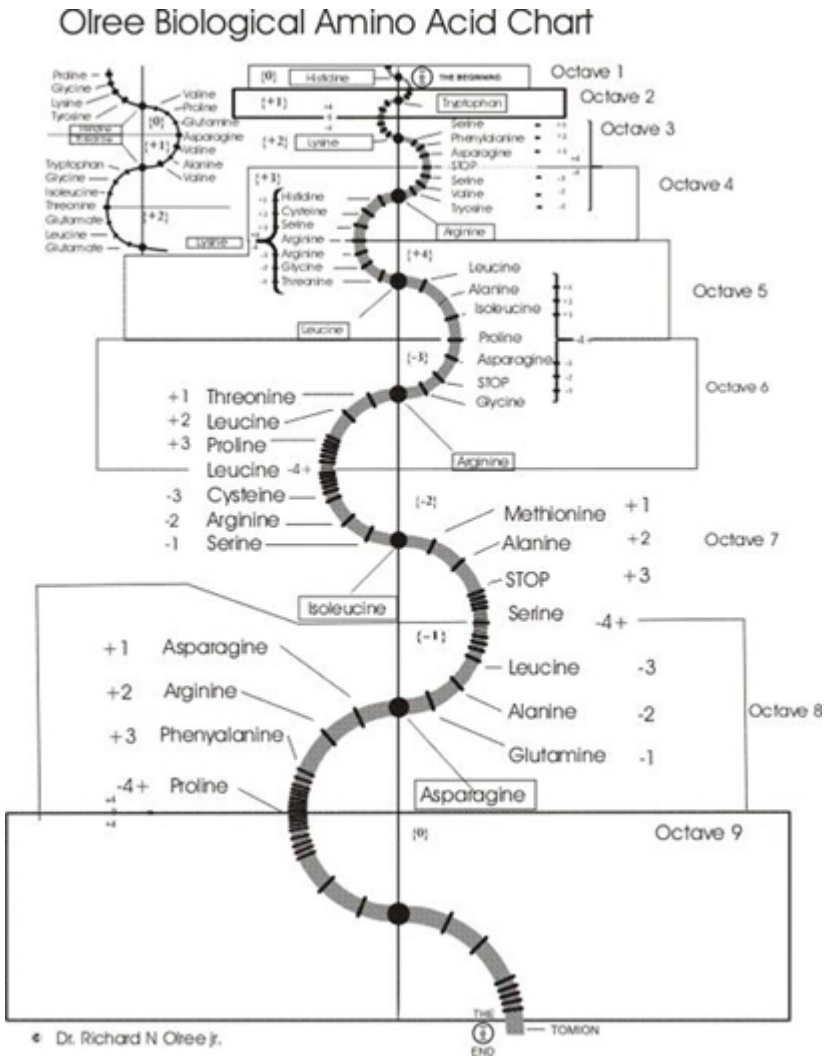
Revici's guided chemotherapy is still promoted for the treatment of various types of cancer, including colon, bone, lung, and brain cancer, as well as heart disease, arthritis, AIDS, chronic pain, drug addiction, injury from radiation, and schizophrenia.

According to a 1989 review article in CA: A Cancer Journal for Clinicians, Emanuel Revici was born in Romania in 1896 and received a medical degree from the University of Bucharest in 1920. After graduation, he taught internal medicine and practiced in Bucharest. In the 1920s, he began research into lipids and cellular metabolism. From 1935 to 1941, he conducted clinical research and practiced medicine in Paris, and from 1941 to 1946 in Mexico City. He began experimenting with a variety of drugs and compounds to treat cancer in 1941. Revici died in 1998 at the age of 101, but his therapy is still offered by some of his associates in New York City.

In his 1961 book, Revici listed a large number of case histories of patients whose tumors he claimed had shrunk or disappeared completely. Some of his patients also testified at a congressional hearing in New York that Revici's treatment caused their cancer to go into remission.

According to the American Cancer Society Revici himself said that his treatment might cause the area around a cancerous tumor to become inflamed and the tumor itself to grow larger and more painful before it shrank or disappeared. Selenium compounds, which are sometimes used in this therapy, can be toxic at high doses if the wrong type of selenium is used.

# Stimulating Tumor Suppressing Genes with Minerals



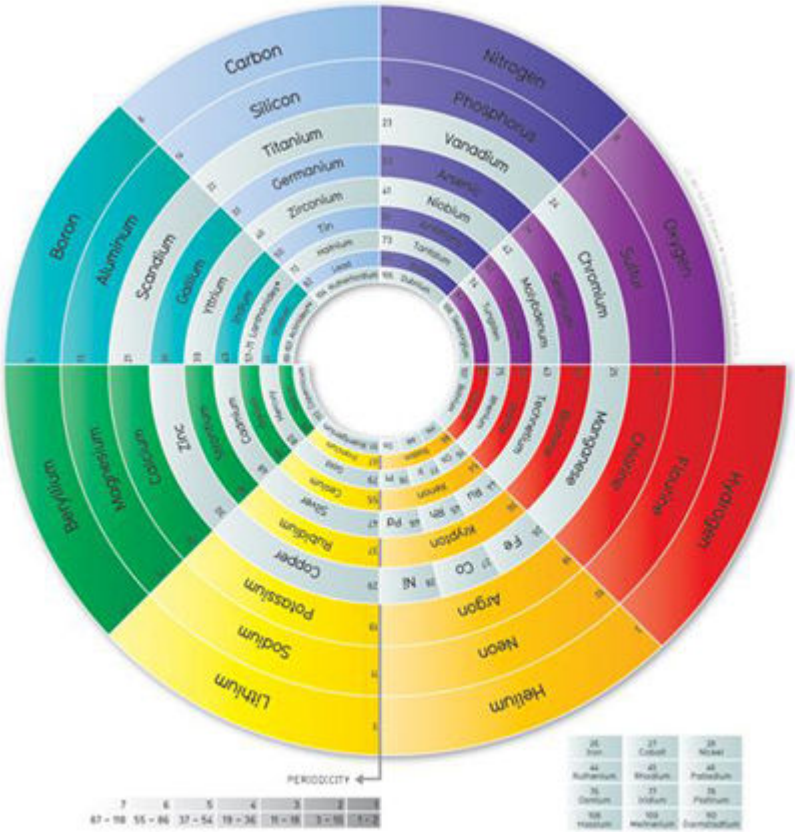

Occasionally we meet genius doctors like Dr. Richard Olree who believes that the key to the biological role of all trace minerals has been available to science for decades, but nobody realized it. Will his Standard Genetic Code Chart prove to be the Rosetta Stone of trace nutrients?

Through sequencing the amino acids in the process of constructing proteins, Olree has traced all the elements to their participatory function in the life

process. In his cutting-edge work, the connection is made between the physical, chemical and biological aspects of minerals and subatomic particles in the life process, and assignment is made of the specific mineral that governs each entry in the genetic code.

This knowledge, based on peer-reviewed medical literature as well as research by forgotten innovators, suggests an end to the tyranny of pharmaceuticals. Each of the 64 sequences (or "codons") in the Standard Genetic Chart is discussed with an overlay of the mineral involved its absence leading to degenerative disease; its presence ensuring that health is maintained.

Dr Olree's genetic mineral chart overlaps the 64 codons that are now a part of "settled" science. This innovative book reveals a unique roadmap overlaying the body's deepest genetic need for specific minerals, classical chiropractic conditions, acupuncture meridians, and deficiency and disease indicators.




The following materials are from unpublished materials of his:

Genes are molecular blueprints. In order to ensure cell survival and controlled growth of these new cells, the genetic information, stored in DNA molecules, must first be correctly copied and then accurately distributed during cell division. Mutations in a certain few genes, such as the P53 tumor suppressor gene, are found in so many different cancers. Mutations in P53 are found in the majority of human cancers, for example. Genetic error can push a cell to divide relentlessly, leading to conditions of DNA replication stress. This stress leads to random errors in the DNA duplication process – breaks in the DNA that disrupt genes, for example.

Cells have an effective on-board damage control system, managed by the P53 gene. P53 appears to be somehow broken in 95% of all cancers. A protein senses the DNA breaks caused by replication stress and activates the

P53 pathway. That pathway shuts down the replication process, thus limiting further DNA damage replication. In some circumstances, P53 may even force the cell into apoptosis, or programmed death, as a way to protect against the cell developing into a tumor.

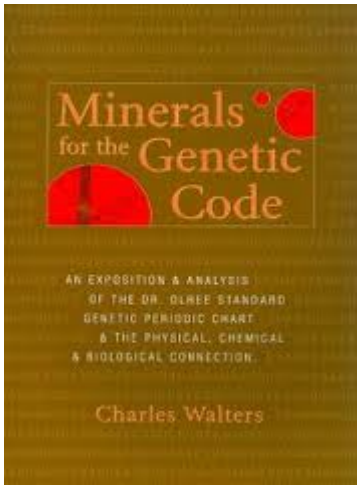
If the mutations occur in P53 itself, however, or the 53 pathway is unable to completely halt the process, further mutations will occur, leading the cell to become cancerous, with the number of mutations constantly growing. So, when P53 remains intact, it is most often able to prevent cancers from developing. When it suffers damage itself, cancers commonly result, explaining why P53 mutations are so frequently seen in so many different cancers. The presence of DNA breaks in precancerous and cancer cells may turn out to be the Achilles heel of cancer and it might be impossible to repair of these DNA breaks, in which case the cancer cells would die.

As a powerful tumor suppressor, P53 turns on genes that either halt cell division, to allow time for repair of damaged DNA, or, when all rescue attempts prove futile, order the cell to commit suicide.

Mouse experiments revealed that, in fact, it is MDM4 that renders P53 inactive, while MDM2 mainly controls the stability of P53's structure. It is the job of USB7 to release P53 from MDM2. This is much like a lock and key scenario, where P53 is kept from being over utilized. The key utilizes cesium (+1) as the primary mineral to release P53 for its' activities. This is where (alkalize or die) comes from, with cesium the most alkaline mineral on the Walter Russell Chart.

The second abundant mineral needed by USB7 is iodine (-1).

# Selenium's Role in P53



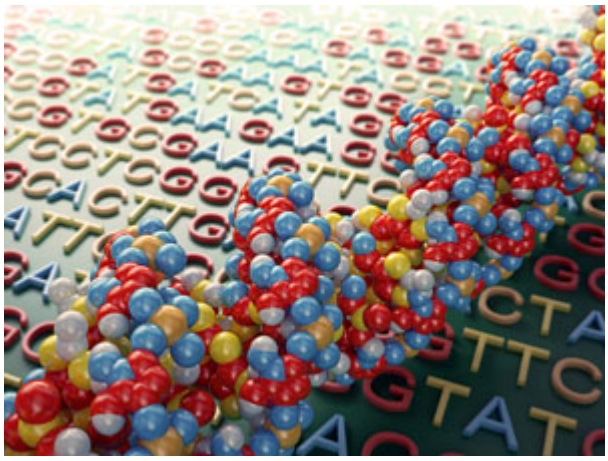

This P53 – MDM2 is a yin / yang effect with lock and key affect. If minerals are deficient neither of the gene products will work. For researchers who study the cancer-inhibiting mechanisms of selenium, the scientific literature generally comes in two flavors. Selenium is seen as either a beneficial scavenger of DNA-damaging oxygen free radicals or as a potent inducer of apoptosis that eliminates damaged, potentially cancerous cells.

Scientists at Indiana University in Indianapolis Proceedings of the National Academy of Sciences that reported recently on the high levels of selenomethionine, the primary organic form of selenium, prompts cells in culture to initiate DNA repair, a key mechanism in preventing cancer.

Research has shown that the nutrient indirectly switches on a DNA repair sub pathway controlled by the regulatory protein P53. The finding raises the intriguing, but still scientifically murky, possibility that people with functional P53 could boost their capacity for DNA repair by simply increasing their dietary intake of selenomethionine, for example, eating Brazil nuts which is a plentiful source of the amino acid mineral complex.

The p53 gene is a tumor suppressor gene, i.e., its activity stops the formation of tumors.

The p53 gene has been mapped to chromosome 17. In the cell, P53 protein binds DNA, which in turn stimulates another gene to produce a protein called P21 that interacts with a cell division-stimulating protein (CDK2).



The amount of information that exists on all aspects of P53 normal function and mutant expression in human cancers is now vast, reflecting its key role in the pathogenesis of human cancers. It is clear that P53 is just one component of a network of events that culminate in tumor formation.

# Another reason to consider your selenium levels

Previous randomized clinical trials in humans have shown that selenium significantly reduces risk and mortality for multiple cancers, including prostate and colorectal. It has also recently been shown to inhibit skin cancer. The mineral is thought to inhibit the changes that cause cells to become cancerous. It has been found to slow abnormal cell growth, prevent DNA damage and facilitate the normal process of cell death, or apoptosis. Selenium is also known to act as an antioxidant, so it may interfere with the cell-damaging effects of free radicals produced during normal cell metabolism.

# Dr. Walter Russell

Dr. Walter Russell laid out a Periodic Chart that included 22 subatomic particles back in 1926. Research did not prove the existence of subatomic particles until the 1980's. Walter Russell mineral chart was laid out in nine levels of minerals with the noble gasses to be present in the middle of each level. He called these levels octaves. The ninth level is the heaviest where all of the radioactive minerals exist. Level eight up to and including the first level or octave is where all of life that is DNA based is deriving it's qualities of magnetism, strong and weak electric forces and gravitational forces.

There is an electron valance pattern that is replicated nine times in the Russell mineral chart. The pattern of electron valance goes as follows. -0-, +1, +2, +3, +4-, -3, -2, -1, -0-.

Each of the nine octaves on the original Walter Russell Mineral Chart has been reworked and is named the Olree Biological Periodic Chart. Each level of minerals has a dominate electron charge. The charge is in relationship to DNA and mRNA. The levels or octave and the dominate charge are as follows:

Octave 1 has a dominate -0- charge Alphanon (subatomic particle) is the controlling mineral
Octave 2 has a dominate +1 charge Marconium (subatomic particle) is the controlling mineral
Octave 3 has a dominate +2 charge Ethlogen (subatomic particle) is the controlling mineral
Octave 4 has a dominate +3 charge Boron is the controlling mineral
Octave 5 has a dominate +4 and -4 Carbon is the +4 Controlling

mineral Silicon is the controlling -4 mineral

Octave 6 has a dominate -3 charge Phosphorus is the controlling mineral

**Octave 7 has a dominate -2 charge Selenium is the controlling mineral**

**Octave 8 has a dominate -1 charge Iodine is the controlling mineral**

Octave 9 has a dominate -0- charge Radon is the controlling mineral

The eighth octave of minerals is governed by Iodine. Iodine must be in the valance of -1. This is where the grand unified theory invokes a rule from gravity. Iodine is the densest mineral that is absolutely necessary for life. One only has to take a look at the importance of the thyroid gland to see how important iodine is as the understanding of tumor suppression genes are further understood in relationship to the importance of iodine. When FASTA sequences (amino acid strings that are held together forming proteins) are converted to the mineral correspondent's, **iodine is the most overall used mineral needed to keep tumor suppression genes functioning.**

The seventh octave of minerals is governed by Selenium. Selenium has a few other oxidation states other then -2 that the mineral chart calls for and those being +4 and +6 valances. Using any other oxidation state other than -2 would be the kiss of death to any mRNA proteins sequences. The other -2 oxidation minerals that are dominated by selenium are as follows: Oxygen, Sulfur, and Tellurium.

What will become more important in understanding this type of unfolding is what sulfur's effects on the DNA and mRNA's translation are. Sulfur does

have a particular relationship and is incorporated with the following amino acids: methionine and cysteine.

The sixth octave of minerals is governed by Phosphorus. Phosphorus is the back bone for DNA. The chemistry of phosphorus is mostly understood in terms of a biochemical perspective. The power house of the cell is considered the mitochondria and the mitochondria are full of phosphorus to give the cells energy for all protein activities.

The third octave of minerals is governed in the ratio by a small part of Beryllium, Barium, and Strontium and in a large part by **Magnesium** and Calcium. Magnesium seems to have the greatest load to carry; it is the center of the sunlight energy to three dimensional life conversions in the form of Chlorophyll. There is no life without the magnesium's relationship to Chlorophyll, the center of it's' molecule is magnesium.

mRNA could not be made without the use of ions such as Mg++ to shield the uniform negative charge of the phosphate backbone. Humans can absorb little or excrete little calcium without magnesium. One of the leading causes of human death is calcification of the arteries called atherosclerosis. Calcium is great stuff to sell on TV, however it is an over rated minerals and is easily prone to get out of ratio with magnesium due to over calcium consumption.

The second octave of minerals is governed in a small part by the ratio of Lithium, Cesium and Rubidium and in a large part thanks to Sodium and Potassium. Too much or too little sodium or potassium and life is cut short.
Sodium also can under the right circumstances become involved with mRNA initiation due to its relationship with the codon UUG, UUG is an alternative START Codon.

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[1] Increased Rates of Chromosome Breakage in BRCA1 Carriers Are Normalized by Oral Selenium Supplementation; Elzbieta Kowalska1 et al; Cancer Epidemiol Biomarkers Prev May 2005 14; 1302; http://cebp.aacrjournals.org/content/14/5/1302.long

[2] **The distribution of selenium in human blood samples of Israeli population--comparison between normal and breast cancer cases;** Chaitchik S, Shenberg C, Nir-El Y, Mantel M.; Biol Trace Elem Res. 1988 Jan-Apr;15:205-12.; http://www.ncbi.nlm.nih.gov/pubmed/2484517

[3] **Selenium as a chemopreventive agent in experimentally induced colon carcinogenesis;** Fereshteh Ezzati; *World J Gastrointest Oncol* 2009 October 15; 1(1): 74-81 ISSN 1948-5204 (online); http://www.wjgnet.com/1948-5204/pdf/v1/i1/74.pdf

[4] **Both selenoproteins and low molecular weight selenocompounds reduce colon cancer risk in mice with genetically impaired selenoprotein expression.** Irons R, Carlson BA,et al; J Nutr. 2006 May;136(5):1311-7.; http://www.ncbi.nlm.nih.gov/pubmed/16614422

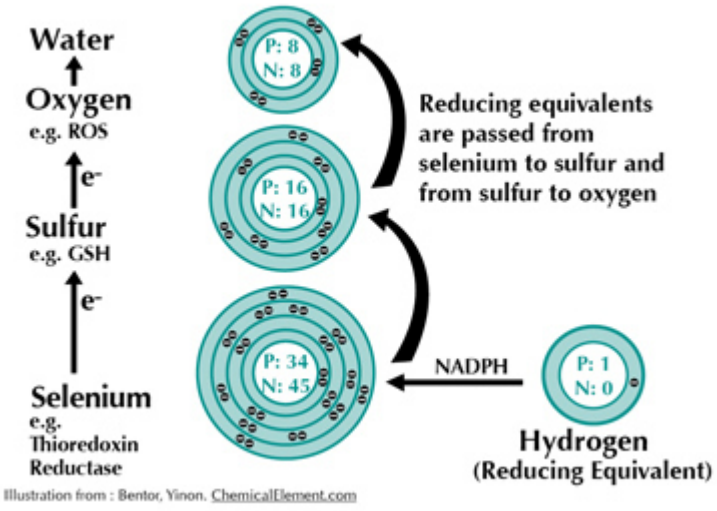
[5] Methyl-Selenium Compounds Inhibit Prostate Carcinogenesis in the Transgenic Adenocarcinoma of Mouse Prostate Model with Survival Benefit; Lei Wang et al; Cancer Prev Res May 2009 2; 484

[6] Selenoprotein deficiency accelerates prostate carcinogenesis in a transgenic model;

Veda Diwadkar-Navsariwala et al; Proc Natl Acad Sci U S A. 2006 May 23; 103(21): 8179–8184; http://www.ncbi.nlm.nih.gov/pmc/articles/PMC1472449/

[7] Serum selenium and risk of prostate cancer in U.S. blacks and whites.Vogt TM et al; Int J Cancer. 2003 Feb 20;103(5):664-70; http://www.ncbi.nlm.nih.gov/pubmed/12494476

# Selenium & Sulfur Secrets




This book digs into why selenium matters and how it works, revealing some discoveries and secrets that need to come to light, the principle of which is that **free fatty acids only exist in pathogenic tissue and red blood cells**. Healthy cells do not consume free fatty acids – only sick ones do.

This was Dr. Emanuel Revici's greatest discovery. What this means is that i**f we want to deliver a nutrient to a sick cell – attach it to a fat. Unsaturated fats are the ultimate and perfect vehicle to deliver nutrients to stressed cells.** This discovery enabled Dr. Revici to package therapeutic minerals, at will, to delivery only to sick cells. This gave him a huge advantage as a therapy developer – especially with selenium.

*Modern cooking with unsaturated fats – oxidize a wide range of bad nutrients and carry them to already sick cells to make them sicker.*

Revici also leads us to the perception that p**athogenic cellular pH can be alkali or acid – they tend to be acidic in the early hypoxic stage and alkali in late stages.** According to him tissue pH in disease is not just acid – it is often alkali as disease cells absorb chloride from salt. This absorption orphans sodium in extracellular space causing severe alkalosis. Much of the pain in both injury and cancer comes from tissue alkalosis from regional chloride depletion.

*Ever wonder why your digestion breaks down when you're sick? The sick part of your body sucks the chloride out of your blood so your stomach can't make enough acid to digest your food.*

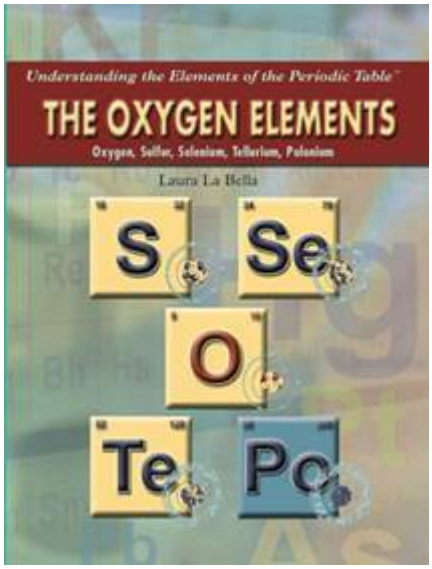
Your body uses lipid bound selenium to break down the stress toxins that accumulate in cells from stress. These toxins are responsible for withdrawal drug resistance, and hormone resistance.

Revici discovered pH modulation is the key to pain control, and disease containment. A localized pH imbalance causes both pain and stress to nearby tissues. As the stress weakens nearby tissues they become vulnerable to disease. Both injury and virus tend to cause alkalosis – hypoxia causes acidosis.

Revici described and patented therapeutic methods to address acidic imbalances– using sulfur/selenium compounds (acidic imbalance), and alkali imbalances using non-toxic alcohols (n-butyl alcohol and glycerol).

This is crucial because inflammation from pH imbalance interferes with oxygen delivery to nearby tissues, which in turn weakens nearby cells, increasing vulnerability. Control of the regional pH imbalance helps to contain pathology – by protecting nearby cells from chemical burns from pH imbalance.

# The Role of Stress




http://onlinebookplace.com/the-oxygen-elements-oxygen-sulfur-selenium-tellurium-polonium

The next central issue is about the relationship of stress and oxygen. **Oxygen is closely related to sulfur and selenium**. Note how these three elements are stacked in the periodic chart. Oxygen is above sulfur, which is above selenium. Nature makes heavier elements smaller – an atomic nucleus with more positive charge tends to hold the electrons tighter making a smaller, denser atomic package. Smaller, sulfur, and selenium, packages integrate more deeply into cellular structures.

Since the exterior (electron shell), has a similar pattern, each successive element is chemically similar, but smaller – so it integrates at deeper cellular levels more easily. In chemical terms both sulfur and selenium are smaller forms of oxygen.

Oxygen, sulfur and selenium share chemical properties and reactivity, and each one follow the previous one in a single column of the periodic table. Oxygen is the fire of life itself and loves to grab electrons from other molecules. Unfortunately this causes oxidation, which must be quenched to avoid tissue damage. Sulfur, right under oxygen, is a little bit bigger in atomic size, and so its outer electrons are less tightly bound. Selenium is bigger still, and it holds electrons even less tightly than sulfur. This means that selenium is best at passing electrons and sulfur is second best, while oxygen holds on the strongest.

*This same effect describes why heavy metals are so dangerous. Their small size, compared to chemically similar biologically appropriate elements means cells absorb and integrate them more readily.*

Sulfur, and then selenium are sub-cellular oxygen since they're smaller, they are more mobile, and can help metabolism when oxygen is deprived by disease. Sulfur and selenium are used by cells when oxygen runs out.

This is the probable reason why Dr. Revici was able to use thiol (sulfur & selenium – bi-valent negative) compounds to treat tissue acidosis – because sulfur and selenium both proxy oxygen for restoration of aerobic metabolism. Oxygen availability increases the cellular energy budget to 38 ATP/glucose from 2 ATP/glucose. This upshift radically decreases anaerobic acid production – and reduces tissue acids.

Did you ever wonder why stress makes you sick? Stress causes vascular inflammation from loss of oxygen in blood plasma – inflammation restricts blood flow to tissues; which locks regions of tissue into a low energy state – this is where disease happens, this is where cancer happens.

Any form of stress reduces oxygen dissolved in blood plasma. Stress comes in many forms - anxiety, dehydration, toxins, physical trauma, infection, and so on. Stress decreases the amount of oxygen dissolved in your body fluids, and decreases the amount of oxygen that reaches cells. Stress causes cellular suffocation.

It's a medical fantasy to assume that oxygen attached to red blood cells is available to tissues. Many factors interfere with blood-to-tissue oxygen delivery: tissue pH, vascular inflammation, cellular malnutrition and more. [1]

Manfred von Ardenne, a German Scientist, developed Oxygen Multistep Therapy, or OMT. OMT is a very effective and very affordable way to restore and maintain oxygen levels in body fluids, for nearly any condition.

The ability of sulfur/selenium thiol compounds, specifically magnesium thiosulfate and sodium thiosulfate, to enable the body to overcome hypoxic acidosis, explains many therapeutic effects of sulfur and selenium. Thiol compounds carry oxygen analogs as sulfur or selenium which are small enough to enter sick tissue and help restore normal oxygen metabolism. They seemingly help anaerobic tissue compensate for hypoxia by fueling aerobic metabolism.

Revici's patents covered the several key areas of disease management:

- Cancer Control Anabolic and Catabolic / constructive/destructive process regulated by pH using alcohols, thiols and sterols.
- Addiction – Revici discovered that lipid-bound selenium and sulfur rapidly break down catabolic toxins that form during repeated exposure to addictive substances, nicotine, alcohol, opiates, and others. His patents describe methods to rapidly cure physical addiction. This use of selenium also inhibits development of physical addiction.

- Infections – Revici discovered a range of anti-viral agents that address HIV, and other viral forms using novel alcohols.
- Pain Control using magnesium thiosulfate, n-butyl alcohol and glycerol.

An alert reader will note that cancer is a clump of sick cells isolated from the immune system by inflammation with no oxygen supply.

From the very moment of conception, life can be sparked by the unique redox environment created when a sperm fertilizes an egg. **The sperm is extremely rich in proteins containing the mineral selenium, which is a potent reducing agent for glutathione,** the most important antioxidant molecule in cells. **The egg,** on the other hand, **is very rich in glutathione.** Bring these two potent antioxidant strategies together, and you create an exceptionally reduced cell that can initiate life and promote development using the power of redox. **That reducing power provides a metabolic spark as new life begins its journey,** allowing the rapidly dividing cells to safely maintain a high rate of oxidation.

# The Ultimate Biological Molecule

The ultimate sulfur molecule is glutathione, and its function in life is to combat oxidative stress. In reduced form it is a reservoir for electrons and the most potent antioxidant we make. Selenium, even larger than sulfur, is an ideal carrier for electrons. It picks them up easily but just as easily gets rid of them. This is the secret to life. You can use oxygen as an energy source as long as you control that fire with enough antioxidants. This column in the periodic table, with oxygen, sulfur and selenium, is the pathway where you get both the fire and the reducing equivalents (electrons) so necessary to keep that fire in check. In a sense, electrons are electro-magnetic glue that holds the molecules together. Oxidation pulls molecules apart. Free radicals and other active molecules are the actual precipitators of oxygen stress.

**The bottom line is you must have enough selenium from the diet to combat oxidative stress**. Some soils are famous for being extremely selenium-deficient and resulted in higher rates of hypothyroidism, goiter, cretinism, miscarriages, and extreme fatigue. A selenium deficiency state can be evident as fatigue and impaired cognitive function, as well as thyroid dysfunction.

Mercury binds to a form of selenium called selenocysteine. It is the regular cysteine molecule, but the sulfur element has been replaced by selenium. The affinity of mercury for that molecule is 10 to the 45th power. Unfortunately, that is actually a million-fold higher affinity than for the glutathione that would normally bind to that molecule. Mercury can bind so tightly to selenoproteins that an adequate diet is not going to meet the body’s demands.

It has been reported that seleno-protein P in the brain can bind a hundred molecules of mercury, like a natural sponge, just to keep mercury away from the developing neurons and astrocytes. Once mercury is present in those cells, they will not develop normally, due to disrupted DNA methylation.

# Glutathione is Magnesium-Dependent

Glutathione protects the cells from oxidative-stress-induced apoptosis and glutathione levels are magnesium dependent. Glutathione is a very important detoxifying agent, enabling the body to get rid of undesirable toxins and pollutants. It forms a soluble compound with the toxin that can then be excreted through the urine or the gut. The liver and kidneys contain high levels of glutathione as they have the greatest exposure to toxins. The lungs are also rich in glutathione partly for the same reason. Many cancer-producing chemicals, heavy metals, drug metabolites etc. are disposed of in this way.

Glutathione (glū'tə-thī'ōn') is a polypeptide, $C_{10}H_{17}N_3O_6S$, of glycine, cysteine, and glutamic acid. Glutathione synthetase requires γ-glutamyl cysteine, glycine, ATP, and magnesium ions to form glutathione. In magnesium deficiency, the ss y-glutamyltranspeptidase is lowered. There is a direct relationship between cellular magnesium, GSH/GSSG ratios, and tissue glucose metabolism.

Magnesium deficiency causes glutathione loss and this is unwelcome as the clouds of radiation are touching down across the northern hemisphere. Magnesium deficiency causes glutathione loss, which is not at all healthy because glutathione helps to defend the body against damage from cigarette smoking, exposure to radiation, cancer chemotherapy, and toxins such as alcohol and just about everything else.

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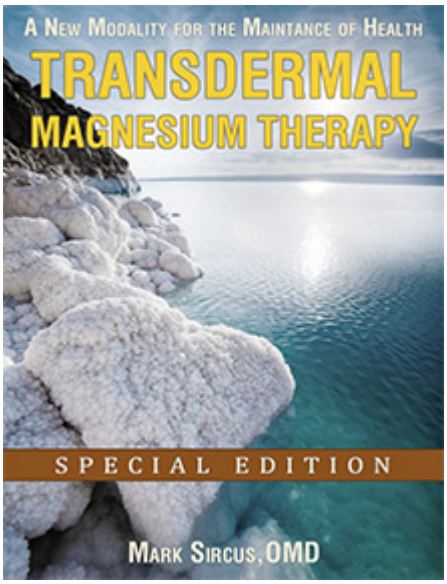
[1] http://whnlive.com/fatigue/care/mechanism/

# Magnesium – Antioxidant Status – Glutathione




The involvement of free radicals in tissue injury induced by Mg deficiency[1] causes an accumulation of oxidative products in heart, liver, kidney, skeletal muscle tissues and in red blood cells.[2] Magnesium is a crucial factor in the natural self-cleansing and detoxification responses of the body. It stimulates the sodium potassium pump on the cell wall and this initiates the cleansing process in part because the sodium-potassium-ATPase pump regulates intracellular and extracellular potassium levels. Cell membranes contain a sodium/potassium ATPase, a protein that uses the energy of ATP to pump sodium ions out of the cell, and potassium ions into the cell. The pump works all of the time, like a bilge pump in a leaky boat, pumping K+ and Na+ in and out, respectively.

Potassium regulation is of course crucial because potassium acts as a counter flow for sodium's role in nerve transmission. The body must put a high priority on regulating the potassium of the blood serum and this

becomes difficult when magnesium levels become deficient.[3] Because of these crucial relationships, when magnesium levels become dramatically deficient we see symptoms such as convulsions, gross muscular tremor, atheloid movements, muscular weakness, vertigo, auditory hyperacusis, aggressiveness, excessive irritability, hallucinations, confusion, and semicomma. A magnesium deficiency can cause the body to lose potassium and this our bodies cannot afford. Within the cell wall is a sodium pump to provide a high internal potassium and a low internal sodium. Magnesium and potassium inside the cell assist oxidation, and sodium and calcium outside the cell wall help transmit the energy produced. **The healthy cell wall favors intake of nutrients and elimination of waste products.**

Magnesium protects cells from aluminum, mercury, lead, cadmium, beryllium and nickel, which explains why re-mineralization is so essential for heavy metal detoxification and chelation. Magnesium protects the cell against oxyradical damage and assists in the absorption and metabolism of B vitamins, vitamin C and E, which are anti-oxidants important in cell protection. Recent evidence suggests that vitamin E enhances glutathione levels and may play a protective role in magnesium deficiency-induced cardiac lesions.[4] Magnesium in general is essential for the survival of our cells but takes on further importance in the age of toxicity where our bodies are being bombarded on a daily basis with heavy metals. Magnesium thus protects the brain from toxic effects of chemicals. It is highly likely that low total body magnesium contributes to heavy metal toxicity in children and is a strong participant in the etiology of learning disorders.

Without sufficient magnesium, the body accumulates toxins and acid residues, degenerates rapidly, and ages prematurely. Recent research has pointed to low glutathione levels being responsible for children's vulnerability to mercury poisoning from vaccines.[5] It seems more than reasonable to assume that low levels of magnesium would also render a

child vulnerable. And in fact we find out that glutathione requires magnesium for its synthesis.[6] **Glutathione synthetase requires γ-glutamyl cysteine, glycine, ATP, and magnesium ions to form glutathione.**[7] In magnesium deficiency, the enzyme y-glutamyl transpeptidase is lowered.[8] Data demonstrates a direct action of glutathione both in vivo and in vitro to enhance intracellular magnesium and a clinical linkage between cellular magnesium, GSH/GSSG ratios, and tissue glucose metabolism.[9] Magnesium deficiency causes glutathione loss, which is not affordable because glutathione helps to defend the body against damage from cigarette smoking, exposure to radiation, cancer chemotherapy, and toxins such as alcohol and just about everything else.

According to Dr. Russell Blaylock, low magnesium is associated with dramatic increases in free radical generation as well as glutathione depletion and this is vital since glutathione is one of the few antioxidant molecules known to neutralize mercury.[10] Thus, sadly, children receiving thimerosal containing vaccines are sitting ducks to mercury when both magnesium and glutathione levels are low. Also under the shadow of magnesium deficiency too much Nitric Oxide (NO) is produced which in turn may react with superoxide to form a very damaging compound peroxynitrite. Low magnesium levels can induce such excessive NO production that even the glutathione in the red blood cells is damaged. These could provide some possible explanations for why magnesium seems to protect the arteries.[11]

“For every molecule of pesticide that your body' detoxifies, you throw away or use up forever, a molecule of glutathione, magnesium and more,” says Dr. Sherry Rogers who goes on to say that, “Your body uses nutrients to make this glutathione and it uses up energy as well. Every time we detoxify a chemical, we use up, lose, throw away forever, a certain amount of nutrients.”

*Magnesium permits calcium to enter a nerve cell to allow electrical transmission along the nerves to and from the brain. Even our thoughts, via brain neurons, are dependent on magnesium.*

*- Dr. Carolyn Dean*

When dealing with autism spectrum and other neurological disorders in children it is important to know the signs of low magnesium: restless, can't keep still, body rocking, grinding teeth, hiccups, noise sensitive, poor attention span, poor concentration, irritable, aggressive, ready to explode, easily stressed. When it comes to children today we need to assume a large magnesium deficiency for several reasons. 1) The foods they are eating are stripped of magnesium because foods in general, as we shall see below are declining in mineral content in an alarming way. 2) The foods many children eat are highly processed junk foods that do not provide real nutrition to the body. 3) Because most children on the spectrum are not absorbing the minerals they need even when present in the gut. Magnesium absorption is dependent on intestinal health, which is compromised totally in leaky gut syndromes and other intestinal problems that the majority of autism syndrome disorders. 4) Because the oral supplements doctors rely on are not easily absorbed, because they are not in the right form and because magnesium in general is not administered easily orally.

Evidence is mounting that low levels of magnesium contribute to the heavy metal deposition in the brain that precedes Parkinson's, multiple sclerosis and Alzheimer's. Many of the symptoms of Parkinson's disease can be overcome with high magnesium supplementation. In a trial with 30 epileptics 450 mg of magnesium supplied daily successfully controlled seizures. Another study found that the lower the magnesium blood levels the more severe was the epilepsy. In most cases magnesium works best in combination with vitamin B6 and zinc.

Because of its nerve and muscle support, magnesium is helpful for nervousness, anxiety, insomnia, depression, and muscle cramps. Thus magnesium is also given as part of a treatment for autism or hyperactivity in kids. Dr. Bernard Rimland, of the Autism Research Institute, did extensive research on vitamin B6 and magnesium many years ago and found, through double-blind placebo-controlled crossover experiments with 16 autistic children, statistically significant results. For most children dosage levels of B6 ranged between 300 mg and 500 mg per day. Children and adults tend to sleep better when taking magnesium before bed.

Glutathione is a small molecule found in almost every cell. The rate at which glutathione can be made by the cells depends on the availability of cysteine and also importantly on the presence of selenium. The amino acid cysteine has a sulfur-containing portion which gives the whole glutathione molecule its ability to protect cells from free radicals and heavy metals, which when left unchecked, damage and destroy cells. According to Dr. Patricia Kongshavn, former professor, department of medicine at McGill University, "**Glutathione is a very important detoxifying agent, enabling the body to get rid of undesirable toxins and pollutants.** It forms a soluble compound with the toxin that can then be excreted through the urine or the gut. The liver and kidneys contain high levels of glutathione as they have the greatest exposure to toxins. The lungs are also rich in glutathione partly for the same reason. Many cancer-producing chemicals, heavy metals, drug metabolites etc. are disposed of in this way." [12]

Dr. Kongshavn goes on to say, "Glutathione is also required in many of the intricate steps needed to carry out an immune response. It is needed for the lymphocytes to multiply in order to develop a strong immune response, and for killer lymphocytes to be able to kill undesirable cells such as cancer cells or virally infected cells. The importance of glutathione cannot be overstated. It has multiple roles as indicated and, indeed, as one examines

each system or organ more closely, the necessity for glutathione becomes increasingly evident. Glutathione values decline with age and higher values in older people are seen to correlate with better health, underscoring the importance of this remarkable substance for maintaining a healthy, well-functioning body."

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[1] Magnesium deficiency (MgD) has been associated with production of reactive oxygen species, cytokines, and eicosanoids, as well as vascular compromise in vivo. Although MgD-induced inflammatory change occurs during "chronic" MgD in vivo, acute MgD may also affect the vasculature and consequently, predispose endothelial cells (EC) to perturbations associated with chronic MgD. As oxyradical production is a significant component of chronic MgD, we examined the effect of acute MgD on EC oxidant production in vitro. In addition we determined EC; pH, mitochondrial function, lysosomal integrity and general cellular antioxidant capacity. Decreasing Mg2+ (< or = 250microM) significantly increased EC oxidant production relative to control Mg2+ (1000microM). MgD-induced oxidant production, occurring within 30min, was attenuated by EC treatment with oxyradical scavengers and inhibitors of eicosanoid biosynthesis. Coincident with increased oxidant production were reductions in intracellular glutathione (GSH) and corresponding EC alkalinization. These data suggest that acute MgD is sufficient for induction of EC oxidant production, the extent of which may determine, at least in part, the extent of EC dysfunction/injury associated with chronic MgD. Effect of acute magnesium deficiency (MgD) on aortic endothelial cell (EC) oxidant production.Wiles ME, Wagner TL, Weglicki WB. The George Washington University Medical Center, Division of Experimental Medicine, Washington, D.C., USA. mwiles@nexstar.com Life Sci. 1997;60(3):221-36.

[2] Martin, Hélène. Richert, Lysiane. Berthelot, Alain Magnesium Deficiency Induces Apoptosis in Primary Cultures of Rat Hepatocytes.* Laboratoire de Physiologie, et Laboratoire de Biologie Cellulaire, UFR des Sciences Médicales et Pharmaceutiques, Besançon, France. 2003 The American Society for Nutritional Sciences J. Nutr. 133:2505-2511, August 2003

[3] A magnesium deficiency can cause the body to lose potassium [Peterson 1963][MacIntyre][Manitius], possibly because of a poorly understood effect of magnesium on the efficiency of energy supply to the sodium pump [Fischer].

[4] Barbagallo, Mario et al. Effects of Vitamin E and Glutathione on Glucose Metabolism: Role of Magnesium; (Hypertension. 1999;34:1002-1006.)

[5] Environmental Working Group. http://www.ewg.org/reports/autism/part1.php

[6] Linus Pauling Institute http://lpi.oregonstate.edu/infocenter/minerals/magnesium/index.html#function

[7] Virginia Minnich, M. B. Smith, M. J. Brauner, and Philip W. Majerus. Glutathione biosynthesis in human erythrocytes. Department of Internal Medicine, Washington University School of Medicine, J Clin Invest. 1971 March; 50(3): 507–513. Abstract: The two enzymes required for de novo glutathione synthesis, glutamyl cysteine synthetase and glutathione synthetase, have been demonstrated in hemolysates of human erythrocytes. Glutamyl cysteine synthetase requires glutamic acid, cysteine, adenosine triphosphate (ATP), and magnesium ions to form γ-glutamyl cysteine. The activity of this enzyme in hemolysates from 25 normal subjects was

0.43±0.04 µmole glutamyl cysteine formed per g hemoglobin per min. Glutathione synthetase requires γ-glutamyl cysteine, glycine, ATP, and magnesium ions to form glutathione. The activity of this enzyme in hemolysates from 25 normal subjects was 0.19±0.03 µmole glutathione formed per g hemoglobin per min. Glutathione synthetase also catalyzes an exchange reaction between glycine and glutathione, but this reaction is not significant under the conditions used for assay of hemolysates. The capacity for erythrocytes to synthesize glutathione exceeds the rate of glutathione turnover by 150-fold, indicating that there is considerable reserve capacity for glutathione synthesis. A patient with erythrocyte glutathione synthetase deficiency has been described. The inability of patients' extracts to synthesize glutathione is corrected by the addition of pure glutathione synthetase, indicating that there is no inhibitor in the patients' erythrocytes.

[8] Braverman, E.R. (with Pfeiffer, C.C.)(1987). The healing nutrients within: Facts, findings and new research on amino acids. New Canaan: Keats Publishing

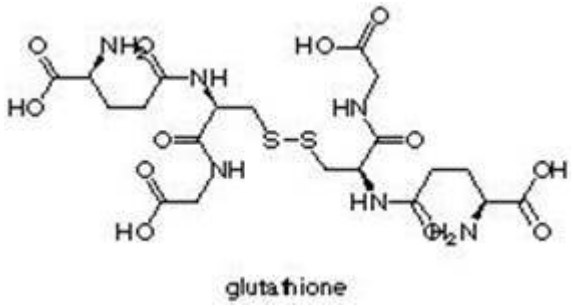
[9] Barbagallo, M. et al. Effects of glutathione on red blood cell intracellular magnesium: relation to glucose metabolism. Hypertension. 1999 Jul;34(1):76-82. Institute of Internal Medicine and Geriatrics, University of Palermo, Italy. mabar@unipa.it

[10] http://www.dorway.org/blayautism.txt

[11] Mak IT; Komarov AM; Wagner TL; Stafford RE; Dickens BF; Weglicki WB Address Department of Medicine, George Washington University Medical Center, Washington, District of Columbia 20037, USA. Source Am J Physiol, 1996 Jul, 271:1 Pt 1, C385-90

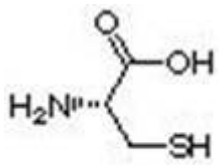
[12] http://www.drhirani.com/glutahione.htm

# Glutathione

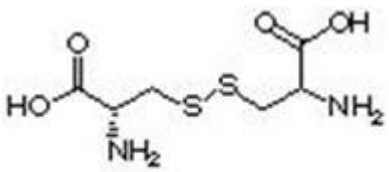



*Gutathione (glū'tə-thī'ōn') is a polypeptide, C10H17N3O6S, of glycine, cysteine, and glutamic acid.*

Spirulina is effective in raising glutathione levels because it supplies glutamic acid, glycine, cystine, and methionine in easily absorbable forms. Cysteine and cystine are closely related. One cystine molecule is composed of two bonded cysteine molecules and each can convert to the other as required. Both amino acids contain sulfur (via free sulfhydryl groups) which makes them antioxidants. The free amino acid cysteine does not represent an ideal delivery system to the cell. It is potentially toxic and is spontaneously catabolized in the gastrointestinal tract and blood plasma. Cysteine absorbed during digestion as cystine (two cysteine molecules linked by a disulfide bond) in the gastrointestinal tract is more stable than the free amino acid cysteine. The disulfide bond is pepsin and trypsin-resistant, but may be split by heat, low pH, and mechanical stress. Cystine travels safely through the GI tract and blood plasma and is promptly reduced to the two cysteine molecules upon cell entry.




cysteine



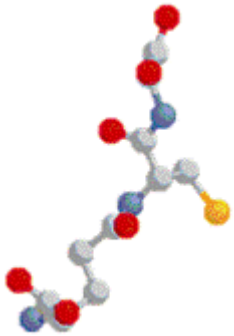

cystine

The acetylated form of cysteine is N-acetylcysteine (NAC) and contains a bonded acetyl group. In this form, NAC is more easily absorbed, more stable, and safer to use than cysteine on its own, which can be neurotoxic in very high doses. NAC is effective at promoting glutathione synthesis and can be used to super charge the effect of spirulina. Some studies have shown that supplementing with NAC yields higher glutathione levels than supplementing with cysteine or glutathione directly so when taken with spirulina we can expect good results.

*The sulfur for cysteine synthesis comes from the essential amino acid methionine.*

Glutathione is a central and key factor in detoxification and chelation. **It is very important to know that exogenous glutathione can protect against mercury-induced renal injury.**[1] The mechanism of protection by glutathione and cysteine seems to involve decreased uptake of inorganic mercury across the luminal membrane of the kidneys and subsequent accumulation. Other researchers have confirmed this in animal experiments, finding that administered glutathione reduced both renal cortical accumulation of inorganic mercury and the severity of mercury-induced renal injury.[2] [3] Since glutathione provides concentration-dependent protection from mercury-induced cytotoxicity it is essential when chelating. When mercury is mobilized for excretion by chelators, glutathione will help protect all systems from undue harm. In reality glutathione belongs at the center of all treatment of chronic disease and certainly is crucial to all detoxification and chelation protocols.

*Glutathione is 50 percent as effective as the chelating agent DMSA in preventing inorganic mercury accumulation in renal cells.*[4]



*Glutathione*

*Sensitivity to thimerosal was inversely proportional to the basal intracellular glutathione concentration.*
[5]

*- Costa et al 2004*

The inability of autistic children to combat oxidative damage because of their low glutathione levels leads to many health problems, with a leaky gut being prominent on the list. Glutathione is vital to proper functioning of the intestines. Deficits in glutathione cause degeneration of the jejunum and colon (Martensson 1990). Research suggests that oral administration of glutathione protects intestines against toxicity associated with inflammatory diseases, oxidative damage, and other toxins (Martensson 1990).

Laboratory studies have also demonstrated that treatment with glutathione precursors can protect the gut from different types of free-radical-mediated injury (Jefferies 2003). In these leaky gut disorders, undigested proteins pass through the gut and cause oxidative damage to the brain and nervous system (White 2003). One of the reasons that some children show dramatic improvements on milk-free and wheat-free diets is that this protein

infiltration is reduced. Some children are naturally allergic to milk products and others cannot handle it simply because of their gut problems.

*Children are more vulnerable than adults to*
*oxidative stress due to their naturally low*
*glutathione levels from conception through infancy*
*- Erden-Inal 2003*

Cysteine, cystine, and NAC possess powerful antioxidant properties and work best when taken in combination with selenium and vitamin E. They promote liver detoxification by binding toxins and heavy metals such as mercury and lead and facilitating their removal from the body. These amino acids also reduce free radical damage and, in combination with their "liver repair" services, are important for detoxification and chelation.

If NAC can help prevent side effects associated with chemotherapy and radiation therapy it certainly shows how spirulina and NAC used together would be helpful not only during chelation but also would prevent cancer by reducing the number of chemical adducts that cancer-causing compounds use to attach to DNA and cause damage.

**Alpha-Lipoic Acid is a very powerful agent in this regard, and can be used as a stand alone chelator because of its power as a chelator and also as an agent that stimulates glutathione production.** Actually, as Dr. Andrew Cutler Hall reminds us, “ALA itself is not an active chelator - it is metabolized in the body to dihydroALA which is the active chelator. It doesn't chelate anything until it gets inside the cells then the mitochondria where it is metabolically activated.”


I recommend the Rejuvenate products by HPDI which contains spirulina such as the Rejuvenate Plus form. I've written a number of essays on Rejuvenate products and am happy to say that I continue to value its purity, its strength, and the value for the money. I recommend everyone look to the website and check out the comparison of the various forms of Rejuvenate to decide which would be best for to use. Not all contain spirulina, though I also recommend getting all forms and alternating what you use throughout the day.

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[1] Zalups RK, Robinson MK and Barfuss DW (1991a) Factors affecting inorganic mercury transport and toxicity in the isolated perfused proximal tubule. *J Am Soc Nephrol* **2:** 866-878[Abstract].

[2] Houser MT and Berndt WO (1988) Unilateral nephrectomy in the rat: Effects on mercury handling and renal cortical subcellular distribution. *Toxicol Appl Pharmacol* **93:** 187-194[Medline].

[3] Lash LH and Zalups RK (1992) Mercuric chloride-induced cytotoxicity and compensatory hypertrophy in rat kidney proximal tubular cells. *J Pharmacol Exp Ther* **261:** 819-829[Abstract].

[4] Endo T, Sakata M. Effects of sulfhydryl compounds on the accumulation, removal andcytotoxicity of inorganic mercury by primary cultures of rat renal cortical epithelial cells.Pharmacol Toxicol 1995;76:190-195.

[5] L.G. Costa, M. Aschner, A. Vitalone, T. Syversen and O.P. Soldin, Developmental neuropathology of environmental agents, *Annu Rev Pharmacol Toxicol* **44** (2004), pp. 87–110.

# Other Glutathione Agents

*Spirulina, Selenium, Vitamin C, s-adenosylmethionine (SAMe), N acetyl cysteine (NAC) and Alpha lipoic acid (ALA).*

Intake of ascorbate acid helps conserve GSH, and SAMe is required in the manufacture of all sulfur-containing compounds in the human body including glutathione. ALA and NAC both raise glutathione levels. Glutathione itself can be administered either transdermally or sprayed directly in the lungs as an aerosol. **Spirulina, as medicinal food, holds down the entire nutritional foundation for all the biochemical processes in the body and facilitates crucial processes like glutathione formation with all its protective assets.**

*Animals given sodium fluoride in drinking water showed that fluoride in public water supplies can significantly reduce the activity of glutathione peroxidase.*

A clear understanding of the interrelationships among glutathione, nutrition, and oxidative stress is clinically relevant. **Glutathione concentrations are sensitive to diet and nutritional status. Applying this information gives a return when navigating the dangers of heavy metal detoxification and chelation.** Strategies to rapidly restore glutathione for both antioxidant and immune defense systems are crucial especially in malnourished patients. And since we have discussed how nutritional values are dropping precipitously, and how difficult it is for an autistic child or mercury poisoned individual to absorb nutrients well, we should seriously consider all the powerful options spirulina holds.

Our biological systems were not created to deal with thousands of chemical assaults on our bodies. Even under normal conditions (which **no longer exist**) the liver's defensive detoxification system needs important nutrients from our diet in order to function. Because of poor diet and the rapidly declining nutritional status of food, most people are not **eliminating** the environmental toxins that are **continually** absorbed, each and every day. The liver is the major detoxification centre of the body that fails in its function when deprived of the proper amino acids. A liver starved of vital nutrients does not detoxify as rapidly or as completely as a well-fed healthy liver. Slower detoxification results in more toxic substances circulating in the body. Unchanged or partially changed toxins are not easily eliminated and instead pass from the liver into the body. Eventually the toxins are stored in fatty body tissue including the brain and central nervous system cells. Stored toxins may be slowly released into the blood, contributing to many chronic illnesses.

> Milk Thistle is an herb recognized since ancient times for its medicinal value. It grows in moderate climates of North America and Europe, easily recognized by its large purple thistle-like flower heads. By the Middle Ages, the seed of the milk thistle plant was used to support liver functions, to promote the flow of bile and as a general tonic for the stomach, spleen, gallbladder and liver. Milk Thistle consists of three potent liver protective flavonoids: silybin, silydianin and silychristin. Collectively these are known as silymarin. To be effective, milk thistle products must be standardized to contain this active blend. Kirkman's Milk Thistle is standardized to contain 80% silymarin. Recent research has indicated that silymarin helps to protect against the depletion of the antioxidant glutathione in liver cells.

The liver acts as an inline filter for the removal of foreign substances and wastes from the blood. Toxins that are cleared by the liver include alcohol, solvents, formaldehyde, pesticides, herbicides and food additives. The liver has the function of reducing toxins into compounds that the body can safely handle and remove through the kidneys, skin (as sweat), lungs and bowels.

**The method by which the liver detoxifies** highlights the importance of spirulina. A healthy liver uses two mechanisms, called Phase 1 and Phase 2 detoxification to remove toxins. In Phase 1 your body's enzymes activate toxic substances to make them more accessible for Phase 2. In Phase 2 other enzymes convert toxins to more water-soluble forms, which your body eliminates through the urine or **bowel**. Waste Products (water soluble) are eliminated from body via the **gall bladder (bile)**, bowel actions, kidneys and urine.

| Phase 1 | Phase 2 |
|---|---|
| Required | Required |
| B Vitamins | Amino acids |
| Folic Acid | Glutamine |
| Glutathione | Glycine |
| | |

| | |
|---|---|
| Antioxidants | Taurine |
| Carotenoids | Cysteine |

Vitamin E

Children with “leaky guts” that are allowing large undigested molecules to pass into the body are creating an extra burden on the liver because increased amounts of toxic substances travel through the liver and overload its capacity to detoxify them. The ability of the liver to breakdown and remove waste products effectively depends on a range of nutrients including the B vitamins and amino acids such as taurine. The liver dissolves toxins into a liquid called bile, which it produces with the assistance of taurine, and then removes the toxins via the bowel. A deficiency of taurine can lead to reduced toxin removal, digestive complaints such as fat intolerance and even risk of gallstones. **Taurine is derived from methionine and cysteine metabolism**. Taurine is a non-essential sulfur-containing amino acid that functions with glycine and *gamma*-aminobutyric acid as a neuroinhibitory transmitter. While taurine does not have a genetic codon and is not incorporated into proteins and enzymes, it does play an important role in bile acid metabolism. Taurine is incorporated into one of the most abundant bile acids, chenodeoxychloic acid where it serves to emulsify dietary lipids in the intestine, promoting digestion.

Dr. Timothy Birdsall focuses on taurine because it is known to play an important role in numerous physiological functions. “While conjugation of bile acids is perhaps its best-known function, this accounts for only a small proportion of the total body pool of taurine in humans. Other metabolic actions of taurine include: detoxification, membrane stabilization, osmoregulation, and modulation of cellular calcium levels. Clinically,

taurine has been used in the treatment of a wide variety of conditions, including: cardiovascular diseases, epilepsy and other seizure disorders, macular degeneration, Alzheimer's disease, hepatic disorders, and cystic fibrosis. Although frequently referred to as an amino acid, it should be noted that the taurine molecule contains a sulfonic acid group, rather than the carboxylic acid moiety found in other amino acids. Unlike true amino acids, taurine is not incorporated into proteins, and is one of the most abundant free amino acids in many tissues, including skeletal and cardiac muscle, and the brain. There are three known pathways for the synthesis of taurine from cysteine. All three pathways require pyridoxal-5'-phosphate (P5P), the active coenzyme form of vitamin B6, as a cofactor. A vitamin B6 deficiency has been shown to impair taurine synthesis.”

Taurine administered to experimental animals has been able to increase the level of acetylcholine in the brain, and researchers have demonstrated that decreased concentrations of taurine are present in the cerebral spinal fluid of patients with advanced symptoms of Alzheimer’s.

# Selenium & Mercury

A 2011 study about Thimerosal[1] from the University of Brazil warns that while vaccines are essential to the wellbeing of children around the world, the use of thimerosal should be reconsidered. The author, Dr. José Dórea, reviews the published science that demonstrates that infant exposure to the amount of thimerosal in vaccines is toxic to human brain cells.

A number of recent studies have further suggested that the mercury used in everyday medical products, such as flu shots[2] and amalgam, or "silver" dental fillings,[3] contributes to causing a wide variety of illnesses, including autism[4] and other developmental diseases in children[5] and Alzheimer's disease[6] in adults.

Vera Hassner Sharav writes: "Public health officials on both sides of the Atlantic have lost the public trust because they have been in league with vaccine manufacturers in denying that safety problems exist. If vaccines posed no safety problems why has the U.S. Vaccine Court awarded more than $2 billion dollars to settle 2,500 cases involving vaccine-related debilitating injuries in children?"

It's these same officials we are now saying that the radiation spreading around the globe also poses no safety problems so who can believe medical officials who have no respect for people and their children whatsoever.

Understanding the interaction between selenium and mercury will help us identify populations which may be protected or are at greater risk to mercury's toxic effects.

It is well recognized that mercury and sulphur bind together to form complexes. This binding property is the basis of chelating therapy used as a

treatment in cases of acute mercury poisoning. The complexes between mercury and selenium are less generally known but of much higher affinity. Physiologically, sulphur is far more abundant than selenium, yet because of selenium's higher affinity, mercury selectively binds with selenium to form insoluble mercury selenides. This interaction has been assumed to be a 'protective' effect whereby supplemental selenium complexes the mercury and prevents negative effects in animals fed otherwise toxic amounts of mercury.

The first report on the protective effect of selenite against mercury toxicity appeared in 1967. Since then, numerous studies have shown selenium supplementation counteracts the negative impacts of exposure to mercury, particularly in regard to neurotoxicity, fetotoxicity, and developmental toxicity. The ability of selenium compounds to decrease the toxic action of mercury has been established in all investigated species of mammals, birds, and fish.

Mercury-selenium-glutathione interactions are crucial to anyone who wants to understand the consequences of mercury exposure and how to combat or detoxify from its poisonous effects. Selenium is important in a broad public health sense because we can assume that people who have high levels of selenium and thus glutathione would tend to live longer.

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[5] INTERMINGLED MODULATORY AND NEUROTOXIC EFFECTS OF THIMEROSAL AND MERCURIC IONS ON ELECTROPHYSIOLOGICAL RESPONSES TO GAB AND NMDA IN HIPPOCAMPAL NEURONS;  P. WYREMBEK et al;
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# The Babies & Young Children Are Dying

*Who would want this baby to die?*

There are many alarming trends in pediatric care, not the least of which is increasing radiation exposure. It is now estimated that that the average child will get more than seven radiation scans by age 18 and this does not include dental X-rays. Most alarming is the increasing use of CT scans, which entail far more radiation and can raise the risk for cancer in children. X-rays of the chest, hands and feet are the most common. Forty-two percent of children had at least one radiation procedure and 25 percent had two or more during the three-year study period. Eight percent of the children got at least one CT scan, and more than three percent of children got two or more.

What we can do to save our children after they have been exposed to radiation is the most important thing a parent can learn at this point in time. We must acquire this knowledge *before* we or our children have been

exposed, but now it’s already too late for that for a great number of people in the northern hemisphere.

# Heavy Metal and Particle Vulnerability

**Children are more vulnerable to the dangers of toxic chemicals than are adults**, according to Herbert L. Needleman, M.D. and Philip J. Landrigan, M.D., authors of *Raising Children Toxic Free*. According to a study released in October 2004, conducted by the University of North Carolina, 21 percent of women of childbearing age have mercury levels in their hair that exceeds federal health standards.[1] That is up from eight percent in just four years using a recent CDC study as a reference point. Under United States guidelines, 79 percent of Inuvik women of childbearing age have unsafe levels of mercury.[2] Earlier this year, the U.S. Food and Drug Administration issued a directive warning women of childbearing age to eat no more than two meals or 12 ounces of seafood, including canned tuna, weekly.

*The life period with the highest adaptability and vulnerability to environmental factors: the period inside the womb.*

Dr. Sandra Steingraber describes the **particular vulnerability of children** when it comes to mercury poisoning:

> The placenta, which works well to bar pathogens from entering the womb, does a terrible job of keeping methylmercury out. In fact, the placenta actively pumps mercury into the fetal capillaries as though it were a precious molecule of calcium or iodine. This is why levels of mercury in the blood of a newborn typically exceed those of its mother by 70 percent. When confronted with methylmercury, the placenta functions more like a magnifying glass than a barrier. Once inside the fetal blood supply, mercury is carried

> to the fetal brain where it interferes with brain cell migration. Just as a spider can lower itself from the ceiling by reeling out a single strand of silk, a fetal brain cell moves from the center of the brain to the surface by rappelling along its own fiber. This process of brain cell migration begins in earnest during month four of pregnancy and continues after birth at least through the age of two. Methylmercury paralyzes migrating brain cells and thus interferes with their movement from center to surface. Methylmercury also halts cell division in the fetal brain by binding directly to neural chromosomes. The cerebellum—center of balance and coordination—is a special target of methylmercury. Prenatal exposures to methylmercury have also been linked to deficits in memory, learning, and attention span that persist into adolescence and appear irreversible. In short, human fetuses are more vulnerable than adults to the brain-addling powers of mercury for two immutable reasons: They receive a comparatively bigger exposure (because of the placenta's concentrating powers), and their brain cells need to move and multiply.

A U.S. Environmental Protection Agency biochemist, Kathryn Mahaffey, estimates that **one in six pregnant women in the United States had high enough blood mercury to damage her child, for a total of 630,000 U.S. newborns at risk**.[3] This was the first study to calculate the numbers based on children's blood levels, not the mother's blood. The new formula showed that one in six pregnant women had mercury levels in their blood of at least 3.5 parts per billion, sufficient for levels in the fetus to reach or surpass the EPA safety threshold of 5.8 parts per billion. In 1999-2000, the last year for which government data is available, this meant that 630,000 children were at risk instead of the original estimate of 320,000.

According to Dr. Sandra Steingraber, “The EPA has taken pains not to adopt the 630,000 figure as its official position. Calculated by EPA scientist Kathryn Mahaffey, these new estimates were published in *Environmental Health Perspectives*, April 2004.

*Children are more vulnerable than adults to*
*oxidative stress due to their naturally low*
*glutathione levels from conception through infancy.*
*- Erden-Inal 2003*

More than 100 years ago Dr. Abraham Jacobi, the father of American pediatrics, recognized the importance of and need for age-appropriate pharmaco therapy when he wrote, “Pediatrics does not deal with miniature men and women with reduced doses and the same class of disease in smaller bodies, but... has its own independent range and horizon.” Modern pediatrics has abandoned this wisdom as demonstrated by the fact that vaccines are not adjusted down to the bodyweight of infants.

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[1] Washington Post. Thursday, October 21, 2004. Study was commissioned by Greenpeace. The study found excess mercury levels in 21 percent of the 597 women of childbearing age who were tested. The study used hair samples so the internals levels of mercury accumulation could potentially be much higher for it is known not all people are able to excrete mercury equally well.

[2] Bueckert, Dennis. Canadian Press. Health Canada reviews its data as U.S. adopts stricter guidelines. November 20, 2004

[3] Washington Post. February 6, 2004. EPA Revises Risk Estimates. Mercury Threat To Fetus Raised

# Industrial Pollution Begins in the Womb

National Geographic

*As our knowledge about the etiology of disease progresses, the evidence for environmental contributions to disease grows.*

*- Physicians for Social Responsibility*

No one really knows how much of any given chemical, much less a mixture of chemicals, could affect a human fetus but we do know that growing children are particularly at risk to chemicals in their environment because they face greater exposure and are physiologically more susceptible. They ingest more food/water per pound of body weight than adults and the little ones live closer to the ground and put things in their mouths. Now, in the year 2005, we learn that the unborn are being exposed to the background contamination and pollution of the world and from the hazardous drugs and vaccines given to their mothers during pregnancy.

**Babies are not being protected in the womb.** Fetuses are under attack from hundreds of industrial chemicals, pollutants and pesticides that are

pumped back and forth from mother to baby through umbilical cord blood. Cord blood[1] reflects what the mother passes to the baby through the placenta. The Environmental Working Group (EWG) from Washington, D.C. commissioned laboratory tests of 10 American Red Cross cord blood samples.[2] The group found that **the babies averaged 200 contaminants in their blood. The pollutants included mercury, fire retardants, pesticides and the Teflon chemical PFOA. In total, the babies' blood had 287 chemicals, including 209 never before detected in cord blood.**

*Besides the pesticides, chemicals from two widely used household products—Teflon and Scotchgard—were found in every baby tested.*

Toxic elements found in infants' cord blood

- 76 chemicals that cause cancer in humans or animals
- 94 that are toxic to the brain and nervous system
- 79 that cause birth defects or abnormal development in animal tests

Found were polyaromatic hydrocarbons, or PAHs, which are produced by burning gasoline and garbage and which may cause cancer; flame-retardant chemicals called polybrominated dibenzodioxins and furans. Among the most pervasive pesticides found: 4,4'-DDE a contaminant and byproduct of DDT, banned in the United States in 1972 but still used in other parts of the world to control mosquitoes; hexachlorobenzene, a fungicide widely used on wheat until 1965 when chemical giants Bayer and Dow voluntarily discontinued production of the likely carcinogen; and Dieldrin, routinely used on corn and cotton until banned in 1974 except for treatment of termites.

**Pesticides are toxic by design and meant to kill** weeds, insects, rodents and other pest organisms; they do so by impairing the nervous and immune system function. Many pesticides and their byproducts (which include PCBs) are highly toxic, persistent and bioaccumulative in humans. Because our nervous system shares basic physiology with other living things, pesticides harm the human nervous and immune systems. New safe Bio pesticides are now on the market that are completely non-toxic, and can be used instead of toxic pesticides to control pests, but no one thinks it important enough to use them.

*The average annual rate of childhood leukemia has*
*risen almost 1% a year from 1977 to 1995.*
*- National Cancer Institute*

The authors of the above study said, "Had we tested for a broader array of chemicals, we would almost certainly have detected far more than 287. But testing umbilical cord blood for industrial chemicals is technically challenging. Chemical manufacturers are not required to divulge to the public or government health officials methods to detect their chemicals in humans." Another study published in February 2005 calculated that the U.S. loses $8.7 billion annually due to the impact of mercury alone on children's brain development. The peer-reviewed study by the Mount Sinai School of Medicine's Center for Children's Health and the Environment was published by the National Institutes of Health journal, *Environmental Health Perspectives*.[3] Before they take their first breath, as many as 600,000 babies may suffer permanent brain damage from their mothers' exposure to mercury pollution," said Susan Marmagas, MPH, director of Physicians for Social Responsibility's Environment and Health Program. "The damage has personal consequences for these children, but now we see that it also has enormous implications for the national economy." The study showed that babies born to women taking antidepressants in the last three

months of pregnancy were three times more likely to develop drug-related symptoms than those born to women who did not use the drugs.

*To know that we are bringing our children to a chemical slaughtering house is deeply unsettling.*

Developmental disabilities such as autism, attention deficit hyperactivity disorder (ADHD), dyslexia and uncontrollable aggression currently affect an estimated 12 million U.S. children under age 18—almost one child in five. And this is just part of the accumulating story that is building as the chemicals are becoming more and more concentrated in the children. In the United States we are witnessing a drop off of intelligence, IQ and grades in standardized tests. If the cumulative effects of environmental toxicants reduced the average American's IQ by just a few points, the cost to society would be staggering in terms of lost creativity.[4] In all likelihood it is not just the one in 166 children with autism and the one in five with the full range of neurological disorders who are being affected, but all our children are bending under the weight of chemical poisons that the prostituted FDA loves to approve as safe for human consumption. Studies by Greenpeace in India and a study of Mexican children exposed to pesticides found impaired memory, creativity and motor skills compared to an unexposed population. The pesticide-exposed children had trouble drawing an ordinary stick figure of a human, something the unexposed children could readily do.[5]

*It is now estimated that one in three children born in 2000 will have diabetes in their lives—this makes it soon to be the most prevalent chronic disease.*

*- Dr. Francine Kaufman*

*Professor of Pediatrics, Keck School of Medicine*

According to a study conducted by the University of North Carolina (October 2004), 21% of women of childbearing age have mercury levels in their hair that exceeds federal health standards.[6] Under United States guidelines, 79 percent of Inuvik women of childbearing age have unsafe levels of mercury.[7] Earlier this year, the U.S. Food and Drug Administration issued a directive warning women of childbearing age to eat no more than two meals or 12 ounces of seafood, including canned tuna, weekly. That directive was based in part on the work of a U.S. Environmental Protection Agency biochemist, Kathryn Mahaffey, who estimates that **one in six pregnant women** in the United States had high enough blood mercury to damage her child, for a total of 630,000 U.S. newborns at risk.[8]

This was the first study to calculate the numbers based on children's blood levels, not the mother's. The new formula showed that one of six pregnant women had mercury levels in their blood of at least 3.5 parts per billion, sufficient for levels in the fetus to reach or surpass the EPA safety threshold of 5.8 parts per billion. In 1999-2000, the last year for which government data is available, this meant that 630,000 children were at risk instead of the original estimate of 320,000. According to Dr. Sandra Steingraber, "The EPA has taken pains not to adopt the 630,000 figure as its official position. Calculated by EPA scientist Kathryn Mahaffey, these new estimates were published in *Environmental Health Perspectives*, April 2004."[9]

According to the *Wall Street Journal*, "The EPA's exposure limit is based on its calculation that mercury above 5.8 parts per billion in young women's bloodstreams may pose a danger to their babies. By this measure, 5.7% of U.S. infants, or 228,000 a year, could be at risk of mercury poisoning during gestation, based on the latest blood survey of women of childbearing age by the Centers for Disease Control and Prevention."[10] Whichever numbers we use there is a serious problem to be considered that is largely

going ignored.

The EPA analysis is showing a clear and present danger from mercury because even when the mother is below the danger zone, a woman can give birth to a baby that's over the limit because recent research has shown that the umbilical cord can have an average mercury concentration 1.7 times as great as the concentration in the mother's blood.[11]

***All forms of mercury are toxic to the fetus, but methylmercury most readily passes through the placenta. Even with an asymptomatic patient, maternal exposure can lead to spontaneous abortion or retardation.***

***- Dr. Barry Diner***

**It is exactly at this point where humanity is most vulnerable to mercury's** devastating power and this seems to be showing up in huge numbers of children with neurological and developmental disorders. Is it purely a coincidence that today one in five children are known to have some kind of neurological or learning disorder or are we seeing a direct correlation between mercury and a flood tide of problems in the current generation of children?

Dr. John Risher of the Agency for Toxic Substances and Disease Registry and Dr. Sherlita Amler of the CDC affirm that significant exposure to all forms of mercury (elemental/metallic and both inorganic and organic compounds) **can result** in a variety of adverse health effects, including neurological, renal, respiratory, immune, dermatologic, reproductive, and developmental sequellae.[12] Yet neither the CDC nor anyone else in allopathic medicine advocates the *immediate elimination* of thimerosal from vaccines or an emergency reduction in mercury power plant emissions.

*What little research that exists in this area has shown that chemical exposure in the womb can be dramatically more harmful than exposure later in life.*[13]

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[1] The cord blood mirrors the mixtures of chemicals the baby was exposed to while in the mother's womb. Before the cord is cut, the equivalent of 300 gallons of blood a day will flow through it, providing the baby with nutrition and removing waste.

[2]The Environmental Working Group conducted the study in collaboration with Commonweal, a California nonprofit health and environmental research institute. EWG is a nonprofit environmental watchdog/research organization that, according to its Web site, claims to "bring to light unsettling facts that you have a right to know. It shames and shakes up polluters and their lobbyists. It rattles politicians and shapes policy. It persuades bureaucracies to rethink science and strengthen regulation. It provides practical information you can use to protect your family and community." the Environmental Working Group study is the first toattempt to detect so many chemicals, pollutants and pesticides — a total of 413. Of these, 307 had never been targeted in cord blood tests.

[3]http://ehp.niehs.nih.gov/members/2005/7743/7743.pdf

[4] Bernard Weiss, "Vulnerability of children and the developing brain to neurotoxic hazards," ENVIRONMENTAL HEALTH PERSPECTIVES, (June 2000) Vol. 108 (Supplement 3), pgs. 375-381

[5]Elizabeth A. Guillette and others, "An Anthropological Approach to the Evaluation of Preschool Children Exposed to Pesticides in Mexico,"

ENVIRONMENTAL HEALTH PERSPECTIVES (June 1998) Vol. 106, No. 6, pgs. 347- 353.

[6] Washington Post. Thursday, October 21, 2004. Study was commissioned by Greenpeace. The study found excess mercury levels in 21 percent of the 597 women of childbearing age who were tested. The study used hair samples so the internals levels of mercury accumulation could potentially be much higher for it is known not all people are able to excrete mercury equally well.

[7] Bueckert, Dennis. Canadian Press. Health Canada reviews its data as U.S. adopts stricter guidelines. November 20, 2004

[8] Washington Post. February 6, 2004. EPA Revises Risk Estimates. Mercury Threat To Fetus Raised

[9] http://www.coanews.org/tiki-read_article.php?articleId=37

[10]Wall Street Journal.Mercury and Tuna:U.S. Advice LeavesLots of QuestionsAugust 1, 2005. Pg 1

[11] Office of Environmental Health Assessment Services, Washington State. Evaluation of Evidence Related to the Development of a Tolerable Daily Intake for Methylmercury: Previous works have also suggested that the average mercury cord blood levels are 20—30% higher than mercury maternal blood levels (Kuhnert et al., 1981). Dennis and Fehr (1975) analyzed paired maternal and cord blood samples for mercury from fish consuming women in northern Saskatchewan (n = 43) and non-fish consuming women living in southern Saskatchewan (n = 45). There was a positive association between mercury maternal and mercury cord blood levels in both regions with the correlation coefficients being 0.45 and 0.87 for the south and north, respectively. Only in the north though, was the

mean mercury level significantly different ($p < 0.01$) between maternal and cord blood samples. The cord blood samples were higher for the north sample group with the slope of the regression being 1.3. Kuhnert and associates (1981) re-addressed this issue of maternal and cord blood mercury level differences using gas chromatography techniques, however, a limitation was that the sample size of the study group was small ($n = 29$). Methylmercury levels in both plasma and erythrocytes were investigated with 30% more methylmercury observed in fetal erythrocytes than in maternal, while plasma levels were not significantly different. “Total” mercury concentrations in blood were calculated and compared fetal cord blood are 13% to 24% higher than those in maternal blood. Kuhnert and associates (1981) also suggested that fetal cord whole blood contained 32% more methylmercury than maternal whole blood which is similar to the increase observed between fetal and maternal red blood cells. Although the sample size is a limitation of this study, this work does suggest that the ratio of mercury cord blood levels to mercury maternal blood levels is greater than one.

[12]**John F. Risher, Sherlita N. Amler.** Mercury Exposure: Evaluation and Intervention: The Inappropriate Use of Chelating Agents in the Diagnosis and Treatment of Putative Mercury Poisoning. Neurotoxicology. 2005 Jul 8

[13]In 2003, the EPA updated its cancer risk guidelines, finding that carcinogens are 10 times as potent to babies and that some chemicals are up to 65 times more powerful in children.

# It Matters Where You Live

*States that are reporting the highest levels of mercury emissions also have the highest rates of developmental disorders including autism.*

*- Dr. John Palmer*

One of the greatest secrets of the last 50 years is coming to the surface and that is that it really does matter where you live. Really it does but the mental weight of conceiving how dangerous one place can be for ones health than another is stultifying because our resistance to change and our laziness of being is overwhelmingly heavy.

This whole subject of location safety is getting quickly more complicated because not only do the poisons people breathe in the air lead to accumulating toxic build up in our bodies and environment simultaneously, but also we are having cooling in the higher altitudes and latitudes. And on top of everything severe drought and ever increasing dangerous water shortages are threatening survival in certain areas. The Central Intelligence Agency in the U.S. warned seven years ago of water wars by the year 2015

and have you noticed how fast the years are passing? Relocation for many will not be an option but how does one relocate without money? What are all the people in India and China going to do with their quickly dropping water tables? Severe drought is biting deeply into agricultural production on different continents.

If you are sick and are living in a city where you can literally see the air when looking from a distance you need not wonder so much about the cause of your illness. It is right there in the air you breathe. It might not be the only source of your disease but it is a cause, part of the etiology. Every human being on the planet is being poisoned but in some places it is like a low intensity gas chamber, slowly forcing poisons into our bodies until we get sick and then die.

As adults we make certain decisions as to where we work and live and that is just a fact of life. It is sad though, tragically so, that our young ones have neither choice nor option in this regard. They are much more vulnerable to environmental threats and the statistics are showing this to be true. Researchers from all over the globe are posting information about the chemical hazard that sits like a background radiation cloud across our once pristine planet. *Chemical radioactivity* is an appropriate phrase to describe what the situation is with mercury and other chemicals that are causing disease rates to sore through the stratosphere.

EPA experts acknowledge that there are tools available today that can measure the toxic dangers in any locality, which can dramatically improve decisions on where people can safely live, work, go to school or play. What no one has communicated bluntly is that those safe places have become extinct leaving us and our children with no safe place, no haven from a chemical onslaught that will only get worse with each passing year.

It is now accurate, scientific and medically sound to state that we are poisoning every man, woman and child on earth. We have reached a milestone in human history. **Awaiting each and every child born on the planet is a life doomed to being poisoned.**

*As our knowledge about the etiology of disease*
*progresses, the evidence for environmental*
*contributions to disease grows.*
*- Physicians for Social Responsibility*

Dr. Colborn informs us that from across the board we are hearing that contaminants are derailing children's ability to think, to remember, that their temperaments are being affected so that they don't smile or laugh as much. Children are expressing more fear and are difficult to soothe or calm down under unpleasant situations, suggesting that man-made chemicals can control how our children develop in unexpected ways. Certainly all of these factors come together and explode in children with autistic syndromes.

# The Rising Nightmare of Mercury

A two-year study of mercury accumulation in the town of Steubenville, Ohio, by federal EPA researcher Matt Landis and the University of Michigan disputes the basic EPA policy on mercury; showing emissions to be much more concentrated in local areas around power plants than thought before. The EPA contends only about 8% of the mercury from coal-burning plants, incinerators and boilers settles to the ground locally. The Steubenville study contends nearly 70% of the mercury found in the Steubenville area came from local sources.[1]

What this means is that it is dangerous to live anywhere near coal-burning plants, incinerators and boilers. If mercury spreads widely, as presumed by the model commonly used by the EPA, communities near coal-fired plants face no greater risk than those elsewhere. But if large amounts of mercury from those plants settle within 60 to 120 miles of a plant, then local communities face **much larger risks**.

*Millions of people living in nearly 600*
*neighborhoods across the country are breathing*
*concentrations of toxic air pollutants that put them*
*at a much greater risk of contracting cancer.*
*- Environmental Protection Agency*

# Coal-Fired Electrical Plants

On December 29, 2008 the *New York Times* reported, "In a single year, a coal-fired electric plant deposited more than 2.2 million pounds of toxic materials in a holding pond that failed last week, flooding 300 acres in East Tennessee, according to a 2007 inventory filed with the Environmental Protection Agency. In just one year, the plant's byproducts included 45,000 pounds of arsenic, 49,000 pounds of lead, 1.4 million pounds of barium, 91,000 pounds of chromium and 140,000 pounds of manganese. Those metals can cause cancer, liver damage and neurological complications, among other health problems."

"For days, authority officials have maintained that **the sludge released in the spill is not toxic,** though coal ash has long been known to contain dangerous concentrations of heavy metals," reported the *Times*. "They think that the public is stupid, that they can't put two and two together," said Sandy Gupton, a registered nurse, and she is correct. For instance no mention was made of mercury in the first article, which is not only present in the sludge but is present all around the plant contaminating water, soil, people and animals especially downwind.

But who cares, certainly not the power industry and certainly not the United States government, which has done little to require reduction in mercury emissions through the installation of scrubbers that are proven to dramatically reduce emissions. Most of our dentists don't care as they continue to place mercury—toxic waste dumps—in people's mouths and our pediatrician and general practitioners don't care since they think its safe to inject organic mercury directly into babies, children and adults.

Emissions from electric utility plants represent the single largest unregulated industrial source of mercury emissions in the U.S., according to the EPA. Some 500 power plants pump out 60 percent of the 75 tons of mercury released into the air by all industries in 2001, according to the EPA's Toxic Release Inventory.

We all use electricity in our daily lives, without thinking much about it—turning on the lights, listening to the radio, using computers. More than half of the electricity generated in the United States comes from coal, which is by far the dirtiest source of electricity.

## Older Plants Are Dirtier.

*Power plants that are between 30-50 years old and are up to 10 times dirtier than new power plants.*

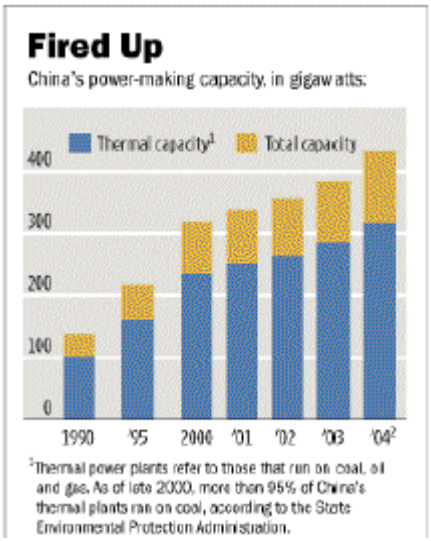
Power plants are a major source of air pollution, with coal-fired power plants spewing 59 percent of total U.S. sulfur dioxide pollution and 18 percent of total nitrogen oxides every year. Coal-fired power plants are also the largest polluter of toxic mercury pollution, largest contributor of hazardous air toxics, and release about 50 percent of particle pollution. Additionally, power plants release over 40 percent of total U.S. carbon dioxide emissions.

**Power plants in the U.S. put 48 tons of mercury a year into the atmosphere through burning coal**.[2] **China now spews 800 tons of mercury into the air each year**, accounting for a great part of the world's non-natural emissions. In fact China now burns nearly as much coal as the rest of the world combined.

The country's (China's) appetite for the carbon-intensive fuel rose by 9% in 2011, to 3.8bn tonnes, meaning it now accounts for 47% of worldwide coal consumption.[3]

And the volume is rising quickly with more coal-fired energy plants now under construction in China than exists in the entire country of England. China all by itself is bringing on a mercury crisis. By 2020, China will have nearly 1,000 gigawatts of total electricity-generating capacity, more than twice the current amount, according to the State Power Economic Research Center.

China in 2004 burned about 1.9 billion tons of coal, a 12 percent increase from the previous year, and consumption is expected to keep rising. In 15 years we can expect China to be pumping 1,400 tons of mercury into the air or approximately 60 additional tons a year as new capacity comes online.[4] This is a huge number and will join the already enormous amount of mercury bellowing up from China's more than 2,000 coal-fired power plants. This mercury soars high into the atmosphere and then around the globe on what has become a transcontinental conveyor belt of mercury-polluted air. And as we can see from the chart below, China, over the last 15+ years, has tripled its power-making capacity, thus its **mercury-polluting capacity**.




**It takes no stretch of the imagination to understand that what is happening to these songbirds is happening to our children**. Mercury is getting into everything and even birds and land animals like us are being blanketed with this nerve poison. The same study found similar problems in Mink and Otters, showing us what is on the way for human beings and their offspring.

Mercury is not an ordinary air pollutant nor is it classified as such. Because it is a neurotoxin that causes neurological problems, it is considered a hazardous air pollutant, which gives it a different legal status. This is a very polite way of saying that mercury is a **nerve poison**, which even at the lowest concentrations imaginable causes problems for the young. We are only in the beginning phases of becoming aware of the tremendous problem with thousands of tons of mercury being poured into the air each year. If one gram of mercury can pollute a 20-acre lake or kill a child, imagine what eight to ten billion grams of it would do.[5]

*A fraction of a teaspoon can render all the fish in a 20-acre lake unsafe to eat.*

Mercury has spread out into the atmosphere and into the oceans where it gains strength and toxicity through the process of methylation. Radioactivity tends, with the passing of many years, to lower in toxicity but mercury runs up the hill to more toxic levels with the help of fish, mammals and bacteria. Mercury bio-accumulates and under goes bio-magnification. The term bioaccumulation refers to the net accumulation over time of metals within an organism from both biotic (other organisms) and abiotic (soil, air, and water) sources. The term bio-magnification refers to the progressive build up of some heavy metals (and some other persistent substances) by successive trophic levels—meaning that it relates to the concentration ratio in a tissue of a predator organism as compared to that in its prey. According to biologist Dr. Sandra Steingrabera, "Top predatory fish, like a tuna, can easily have sequestered in its flesh methylmercury levels that are a million times higher than the water it swam in."

Previous UNEP (United Nations Environment Program) global mercury assessments considered only atmospheric emissions.[6] The 2013 report is thus the first attempt to compile a global inventory of aquatic releases. Three types of sources were considered. Point sources are industrial sites such as power plants or factories, and they release an estimated 185 tonnes of mercury per year.

Contaminated sites, including old mines, landfills, and waste disposal locations, release 8 - 33 tonnes per year. Artisanal and small-scale gold mining was evaluated separately, with total releases to water and land totalling more than 800 tonnes per year.

Along with coal burning, the use of mercury to separate metal from ore in small-scale gold mining remains the chief source of emissions worldwide, according to UNEP. Annual emissions from small-scale gold mining are estimated at 727 tonnes, or 35 per cent of the global total.

Greater exposure to mercury poses a direct threat to the health of some 10-15 million people who are directly involved in small-scale gold mining, mainly in Africa, Asia and South America. An estimated three million women and children work in the industry.
Mercury-free methods and other low-cost solutions for reducing emissions during gold extraction are available, UNEP notes, but socio-economic conditions, and low awareness of the risks of mercury, are barriers to adopting safer techniques.

Deforestation mobilizes another 260 tonnes of mercury into rivers and lakes. Other sources remain to be quantified, and so these estimates comprise only a partial total. Thus, anthropogenic releases to waters are likely to be at least 1000 tonnes per year. Mercury concentrations in the oceans and in marine animals have risen due to anthropogenic emissions.

Large amounts of mainly inorganic mercury have accumulated in the environment, in particular in surface soils and in the oceans, as a result of past emissions and releases. Owing to their larger volumes, intermediate and deep ocean waters below 100 metres actually store much larger tonnages of anthropogenic mercury than surface waters. There are also relatively large tonnages of natural mercury circulating in the intermediate and deep waters. A significant fraction of the mercury in intermediate waters is recycled back to the surface each year by upwellings. Today's anthropogenic emissions continue to load the oceans, and the catchments and sediments of lakes and rivers, with inorganic mercury. This mercury, which is the "feed-stock" for toxic methylmercury production, is stored and recycled in the bioavailable part of the environment for decades or centuries before it eventually is removed by natural processes. One consequence is that there will likely be a time-lag of years or decades, depending on the part of the water column, before emissions reductions begin to have a

demonstrable effect on mercury levels throughout the environment and in the fish and marine mammals which are part of the human food-chain.

*States that are reporting the highest levels of mercury emissions also have the highest rates of developmental disorders including autism.*

*- Dr. John Palmers*

This is terrible news for many people for large populations in certain areas of the United States are exposed to multiple sources of mercury. Every year these plants spill out millions of tons of pollution into the air and this alone is provoking a health crisis. Different institutions have measured the impact of this pollution in terms of increased premature death, heart attacks and other negative health impacts. You can see exactly the increased risks to you and your family, depending on where you live, at the following site:

http://www.usatoday.com/news/mercury-emitter-map.htm

*It allows you to zero in on your state and will show you all the points of exposure for air pollution in general. Doctors and patients alike need to be well advised that all efforts to derail the monumental chemical buildup have failed, and thus people will increasingly be showing the direct effects of chemical poisoning in their signs and symptoms.*

*- Dr. Rashid Buttar*

To know that we are bringing our children to a chemical slaughtering house is deeply unsettling. Children and adults are being exposed to thousands of trillions (quadrillions) of mercury atoms each day primarily from dental amalgam fillings in the mouth, which leak toxic vapors 24 hours a day,

seven days a week. Most recently though, mercury has been increasing in the foods we eat, especially in the form of fish. It is also increasingly in the air and the water we drink and is entering into the soil where it is just beginning to threaten biological activity there. In the next ten years, we will pollute the world with approximately another 60-90 thousand tons of mercury after already adding well over 600 thousand tons during the past century.

The longer medical and governmental authorities deny the full mercury story the higher the tide will rise as concentrations increase on land, sea and air. Mercury is a reality that has to be taken into account by doctors and everyone else. Though mercury is accompanied by tens of thousands of other chemicals in the environment, none are as toxic or as prevalent. We are destroying our children and our future with an invisible enemy as surely as if we have fought and lost a nuclear war.

*Los Angeles, Calif., and Madison County, Ill., had the highest cancer risks in the nation according to EPA data. Allegheny County, Pa., and Tuscaloosa County, Ala., placed strong second place.*

And now we have bad news for diabetes as well. **A new study suggests that the air we breathe increases insulin resistance and inflammation.**[7] Cardiovascular and lung researchers at The Ohio State University Medical Center are the first to report a direct link between air pollution and diabetes but they did not direct their attention to the mercury in the air nor the fact that each and every mercury atom or molecule is like a cruise missile ready to collapse the sulfur bonds of the insulin enzyme.

The news offered by Dr. Palmer from the University of Texas and a Harvard Research team is that the mercury in the air is having its direct effect on our children, playing its part in the devastating epidemic of neurological

disorders including autism. It is not just the fish, the vaccines or the dental amalgam that are saturating our bodies with mercury. Americans and people around the world are going to have to wake up to the fact that mercury is in the air they breathe, in the soil they plant in, and in the water they drink.

*Air toxic risks are local. They are a function of the sources nearest to you.*

*- Dave Guinnup*

*EPA*

The world is facing massive poisoning, similar to that which India and Bangladesh are already facing with heavy concentrations of arsenic in their ground water. Yet people are skeptical because the poisoning is slow in coming on. Arsenic is not something you drink and you instantly fall ill, this is something that affects your body over years. It's the same with mercury poisoning and most of the principle chemicals that are now firmly implanted in our environment. One does not have to be bitten by a snake or spider and fall over dead immediately to consider oneself poisoned.

*Beijing persuaded the World Bank to cut from a report finding that pollution has caused about 750,000 premature deaths in China each year. The Financial Times reported saying that "The World Bank was told that it could not publish this information. It was too sensitive and could cause social unrest," one unnamed adviser told the Financial Times.*[8]

Recently researchers from the Northeastern Ecosystem Research Cooperative[9] have, for the first time, documented elevated mercury levels in non-aquatic and non-fish-eating animals, including songbirds that live in

mountaintop forests of the northeastern part of the United States. **“Mercury’s reach in our environment is much greater than we ever imagined,”** said Felice Stadler of the National Wildlife Federation. The most troubling discovery to researchers was the mercury found in the blood of songbirds. The songbird data show that methylmercury is also forming in drier, forested areas, raising new questions about the extent of environmental damage. The birds exhibited the following problems from non-aquatic environmental exposure to mercury:

> Fewer eggs produced, lower reproductive success, offspring less responsive to maternal calls, reduced chick survival, and decreased egg volume, compromised embryonic development, less likely to hunt, seek shade, less time flying, walking or pecking. Exaggerated response to fright stimulus, brain lesions, spinal cord degeneration, central nervous system dysfunction, tremors, difficulty flying, walking and standing, inability to coordinate muscle movement, reduced feeding, weight loss and progressive weakness in wings and legs has also been observed.

**It takes no stretch of the imagination to understand that what is happening to these songbirds is happening to our children**. Mercury is getting into everything and even birds and land animals like us are being blanketed with this nerve poison. The same study found similar problems in Mink and Otters, showing us what is on the way for human beings and their offspring.


The United States government's estimate of the health benefits of reducing mercury emissions vastly understates the total problem because it does not take into account the direct effect of having thousands of tons of nerve poison in the atmosphere that people breathe. The Harvard study that was stripped from public documents by EPA officials estimated health benefits from mercury reductions at 100 times the level used by the EPA.[10] The government is not paying attention to the presence of mercury in the water people drink or that it is getting into the soil and thus into our dry foods. If one takes even a curious glance at the bottom of the above graph we see visually that mercury is a quickly rising tide having in a few short years polluted the majority of our waterways. What doctors and scientists have not seen is that this same process is being repeated on land.

Part of the airborne mercury deposited in the United States originates from abroad and this highlights the entire question about mercury. It's everywhere, coming from everywhere. Nothing demonstrates our current state of globalization better than the international nature of mercury air

pollution. From 1990 to 1999, even as total airborne emissions of mercury in the United States supposedly dropped, worldwide emissions have soared into the stratosphere.

*Ice core studies have shown that we have already increased environmental mercury levels by a factor of 20 over the last 270 years.*[11]

Mercury is making its presence felt more in the soil and is entering the food chain via our crops. Recent evidence suggests that mercury is responsible for a reduction of micro-biological activity vital to the terrestrial food chain in soils over large parts of Europe—and potentially in many other places in the world with similar soil characteristics. Critical limits to prevent ecological damage due to mercury in organic soils have been set at 0.07-0.3 mg/kg for the total mercury content in soil.[12] The Swedish Chemicals Inspectorate is reporting that the "**mercury levels are increasing by about 0.5% per annum in the topmost layer of its forest soils and southern Sweden is already above the levels which have been shown to affect biological process and organisms in the soil**."[13]

University of Nevada researchers in December of 2004 let it be known that we have similarly overlooked another problem on land. "Based on previous studies, what we originally thought was that mercury in soil would be absorbed through a tree's roots, then released through the tree's leaves into the air," said Jody Ericksen, a Nevada graduate student who studied the contaminant for her master's degree in Environmental Science and Health. "We were wrong. What happened is that the plants absorbed the mercury from the air." According to Nevada researchers, once a tree's leaves contain mercury, those leaves eventually fall off, decay and mercury goes back into the soil, air and, ultimately, water.[14] This has huge implications, darkening the mercury story considerably. As we learn more we see the huge error

humanity has made. Understanding is dawning that mercury is not going away. It is just being recycled and fortified as it goes organic. Even the mercury we all excrete everyday from our bodies is going into the environment.

According to the National Institute of Environmental Health Sciences between the late 1970s and late 1980s, the average level of mercury in biosolids (inevitable by-product of the sewage treatment plants) that are used as fertilizers for farm lands increased from 2.8 mg/kg to 5.2 mg/kg, and arsenic levels from 6.7 mg/kg to 9.9 mg/kg while levels of lead, nickel, cadmium decreased.[15] And as early as 1999 reports found mercury levels in rain over Chicago, Illinois that are as high as 42 times EPA safe levels; Detroit, Michigan rain with 65 times safe levels; and rain along the Illinois/Wisconsin border as high as 56 times safe levels.[16]

*Of our nearly 1,900 lakes and rivers officially classified as "impaired" under standards set by the U.S. Environmental Protection Agency, mercury is responsible in two cases out of three.*

*- State of Minnesota*[17]

University of  Washington atmospheric chemistDan Jaffe and a new breed of global air detectives are delivering a sobering message to policy makers everywhere: Carbon dioxide, the predominant driver of global warming, is not the only industrial by-product whose effects can be felt around the world. Prevailing winds across the Pacific are pushing thousands of tons of other contaminants—including mercury, sulfates, ozone, black carbon, and desert dust—over the ocean each year. Some of this atmospheric junk settles into the cold waters of the North Pacific, but much of it eventually merges with the global air pollution pool that circumnavigates the planet.[18]

China in particular stands out because of its sudden role as the world's factory, its enormous population, and the mass migration of that population to urban centers; 350 million people, equivalent to the entire U.S. population, will be moving to its cities over the next 10 years. **China now emits more mercury than the United States, India, and Europe combined**. "What's different about China is the scale and speed of pollution and environmental degradation," Turner says. "It's like nothing the world has ever seen."

Development there is racing far ahead of environmental regulation. "Standards in the United States have gotten tighter because we've learned that ever-lower levels of air pollution affect health, especially in babies and the elderly," Jaffe says. As pollutants coming from Asia increase, though, it becomes harder to meet the stricter standards that our new laws impose.

China is full of the two biggest contributors to human-generated mercury, metal smelting and coal combustion. Smelting facilities heat metal ores to eliminate contaminants and extract the desired metal, such as zinc, lead, copper, or gold. Unfortunately, one of the consistent contaminants is mercury, and the heating process allows it to escape into the atmosphere in gaseous form. Similarly, coal contains trace amounts of mercury, which is set free during combustion at power plants.

Evidence emerged that the amounts of mercury found coming from China had increased dramatically. In 2005 David Streets and his team reported their first tally of human-generated mercury emissions in China, for the year 1999. The scientists estimated the amount at 590 tons (the United States emitted 117 tons). Almost half resulted from the smelting of metals —especially zinc, because its ores contain a high concentration of mercury. Coal-burning power plants accounted for another 38 percent of Chinese mercury emissions, and that percentage may be going up. As recently as

2007, China was building two new power plants a week, according to John Ashton, a climate official in the United Kingdom.

David Streets, a senior energy and environmental policy scientist at Argonne National Laboratory in Illinois. published a subsequent inventory estimating that China's mercury emissions had jumped to 767 tons in 2003. "Mercury emissions in China have grown at about 5 to 6 percent a year," he says. "It's pretty much undeniable."

It was the first time anyone had decisively identified Asian mercury in American air, and the quantities were stunning. The levels Jaffe measured suggested that Asia was churning out 1,400 tons a year. The results were a shock to many scientists, Jaffe says, because "they still couldn't wrap their heads around the magnitude of the pollution and how dirty China's industry was." They were only starting to understand the global nature of the mercury problem

In the U.S. hospitals that burn their wastes put 20 tons a year into the air and potentially upwards of 200 tons are lost into the environment because that is how much Hg is ordered into hospitals to repair sphygmomanometers.[19] Every plastic manufacture pours it out and every new car is laden with its fumes. Much attention though is being focused on the nation's heavy reliance on coal.

*A medical waste incinerator near Baltimore's industrial waterfront has violated limits for mercury, soot and other air pollutants more than 400 times over the past two years, prompting three state legislators and a city councilman to demand that the state shut it down.*

*- Baltimore Sun 12/2004*

According to the U.S. Environmental Protection Agency, medical waste incinerators are the fourth largest source of mercury re-entering the environment. In addition, the EPA estimates that mercury fever thermometers contribute about 17 tons of mercury disposed of in solid waste landfills annually. Active attempts to reduce these numbers have in recent years brought down these levels significantly in some areas. [20]

Actually there is no real way to estimate how many tons are actually being put into the environment and how much really has entered the environment in the last 15 years. Between 1990 and 2000, energy-related carbon dioxide emissions grew by 69 percent in India, 57 percent in Brazil and 33 percent in China indicating a pace of development that includes increased mercury emissions. "If India, China and Brazil replicate our pattern of fossil-intensive development, the game is over," said Alden Meyer, director of the U.S.-based Union of Concerned Scientists. Scientists seem more concerned with the warming effect of all this growth and not as concerned with the poisoning effect. India is estimated to be now dumping 77.91 tons of mercury per year into the atmosphere, 59 tons of which are from its coal fired plants. India's coal carries concentrations of mercury in the area of about 0.272 ppm, which is considerably higher than American grade coal. When other industrial uses are factored in, like the production of chlorine, India raises high in the rankings of mercury polluters.

*Researchers are facing a complex task—how to monitor 2,500 tons of mercury every year, more than half of which comes from fossil-fuel power plants.*

*- Physics Today*

*June 10, 2009*

The huge tonnage of mercury put into the environment each day is adding to an already critical situation. Considering that mercury is an accumulative

poison with delayed effects or a lag time measured in years, we can see that humanity has created a time bomb that is ticking while even more mercury is added.

Communities in developing countries are facing increasing health and environmental risks linked to exposure to mercury, according to new studies by the United Nations Environmental Agency.

Produced by the UN Environment Programme (UNEP), the studies note how parts of Africa, Asia and South America could see increasing emissions of mercury into the environment, due mainly to the use of the toxic element in small-scale gold mining, and through the burning of coal for electricity generation.

“Mercury, which exists in various forms, remains a major global, regional and national challenge in terms of threats to human health and the environment,” UNEP’s Executive Director, Achim Steiner, said in a news release on the studies.

Diabetes gives us a clear picture of how the human race is being caught between a rock and a hard place, a kind of devils anvil of our own corporate making, same story with cancer. The human body is failing to deal with massive chemical exposure in the face of hugely increasing deficiencies in basic nutrients like magnesium. Malnutrition is now in full bloom in the first world even among the obese and the levels of mercury and other toxic poisons have never been higher.

# Chemical Radioactivity

Scientists have long known that forest fires release mercury into the atmosphere. Peatlands, which are widespread in the vast boreal forest stretching across nearly every Canadian province and far into the territories, release huge tonnages of mercury when burnt because, "As water flows through, peat filters mercury out of the water," said Mike Flannigan of the Canadian Forest Service. When peatlands burn, mercury is released into the atmosphere, eventually falling to earth where it combines with sulphur to form mercury's most toxic form. Climate change could double the estimate that peat-burning forest fires currently release 341 tonnes per year across the world's northern forests. That compares with about 48 tonnes annually for all American power plants.

*Chemical radioactivity* is an appropriate phrase to describe the process whereby mercury and other chemicals are causing disease rates to sore. And what has already arrived gets worse with the hundreds of millions of tons of toxic chemicals that get produced and added to the human biosphere each year. Everyone now has to live and breathe in the context of a dangerous chemical cloud with radioactive-like fallout penetrating our human skin.

Having failed to destroy ourselves with radioactive clouds from atomic bombs, we have managed to muddle through and threaten ourselves through chemical means. Now with the use of depleted uranium weapons it is actually the mixture of clouds of chemicals and radioactivity that is threatening us.

Mercury pollution is making its way into nearly every habitat in the U.S., exposing countless species of wildlife to potentially harmful levels, a September 2006 report from the National Wildlife Federation shows. “From songbirds to alligators, turtles to bats, eagles to otters, mercury is accumulating in nearly every corner of the food chain,” says Catherine Bowes, Northeast Program Manager for the National Wildlife Federation and principal author of the report. “This report paints a compelling picture of mercury contamination in the U.S., and many more species are at risk than we previously thought. Fish, long thought to be the key species affected by mercury, are just the tip of the iceberg.” People forget all too easily that humanity is also an animal species and the same thing that his happening to these animals is happening to us.

# Exposure Levels Going Up Everywhere

# Michio Kaku - Japanese American Physicist

It is urgent medical work in terms of helping people to eliminate heavy metals, radiation contamination and other toxic poisons from the body. **The most obvious way of course is to reduce exposure.** Sometimes to avoid toxic exposure we have to move out of a moldy house, out of a city heavily laden with air pollution or even out of a country if one plans on living a long and healthy life. If humans keep up with their intense poisoning of their planet it might mean going off the planet or burrowing deep into the ground

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[1]http://members.greenmediatoolshed.org/sites/default/files/file_import/0/95/9511/Steubenville_Paper_-_Keeler.pdf

[2] DEP Commissioner Bradley Campbell statement about national emission levels. Associated Press. Fri, Nov. 05, 2004

[3] http://www.guardian.co.uk/environment/2013/jan/30/china-burns-half-coal-worldwide

[4]Wall Street Journal. Invisible Export A Hidden Cost Of China's Growth: Mercury Migration
December 17, 2004

[5] The world is 510 million square kilometers and 71 percent of that is ocean. One gram of mercury poured into eighty million liters of water would be cause for concern under federal human health standards for drinking water, enough to contaminate a typical mid-western lake. Thus one gram pollutes a typical 20 acre lake and 20 acres equals .081 square

kilometers. One ton of mercury contains 1 million grams which would thus pollute 81,000 square kilometers of lakes. One thousand tons would pollute 81 million square kilometers, so 7,000 tons of mercury would pollute a lake the size of the world. The world is not a lake, so the one gram rule does not quite work, but it offers us a good reference point. The oceans are quite deep and the atmosphere also holds a vast capacity to hold mercury, as does the soil. But over the last five hundred years we have dug up and used approximately 1 million tons of mercury. That is 1,000,000,000,000 grams (a trillion) or enough to blanket each 20 acres on earth with over 149 grams. It is these 149 grams that is responsible for mercury levels increasing by a factor of 20 times over the last 3 centuries.

[6] Global inventories for mercury emissions to air from human sources have been produced at approximately 5-year intervals since 1990 by scientific groups. UNEP produced its first Global Mercury Assessment in 2002.

[7]http://www.diabetesincontrol.com/results.php?storyarticle=6461

[8]http://news.yahoo.com/s/ap/20070703/ap_on_re_as/china_pollution;_ylt=AhOR6v5O7csgFaG_SJrnTgbMWM0F

[9] Mercury Connections is a summary of the major findings reported in a series of 21 papers. These papers are published in: Biogeographical patterns of environmental mercury in northeastern North America. 2005. *Ecotoxicology.* Volume 14, numbers 1 and 2. This project was undertaken as part of The Northeastern Ecosystem Research Cooperative (NERC).NERC is an initiative to promote collaboration among ecosystem research scientists in the northeastern U.S and eastern Canada. http://www.briloon.org/mercury/BRIMercury.pdf

[10] Retrograde on Mercury. Boston Globe. April 1, 2005 http://www.boston.com/news/globe/editorial_opinion/editorials/articles/2005/04/01/retrograde_on_mercury/

[11]Science News, May 1, 2002 Ice cores open new window on mercury deposition.

[12] UNEP. Position Paper on Mercury

[13] Kemi Report. Mercury—Investigation of a general ban. Report by the Swedish Chemicals Inspectorate. 3.1

[14]http://www.innovations-report.de/html/berichte/studien/bericht-38075.html

[15] National Institute of Environmental Health Sciences. EHP Online. http://ehp.niehs.nih.gov/qa/105-1focus/focusbeauty.html Last visited on December 5, 2004

[16]*Clean the Rain, Clean the Lakes: Mercury in Rain Is Polluting The Great Lakes. Reported by Environmental News Service. http://www.uwsp.edu/geo/courses/geog100/ENS-Mercury.htm*

[17] Star Tribune. December 31, 2004 http://www.startribune.com/stories/561/5161906.html

[18] http://discovermagazine.com/2011/apr/18-made-in-china-our-toxic-imported-air-pollution

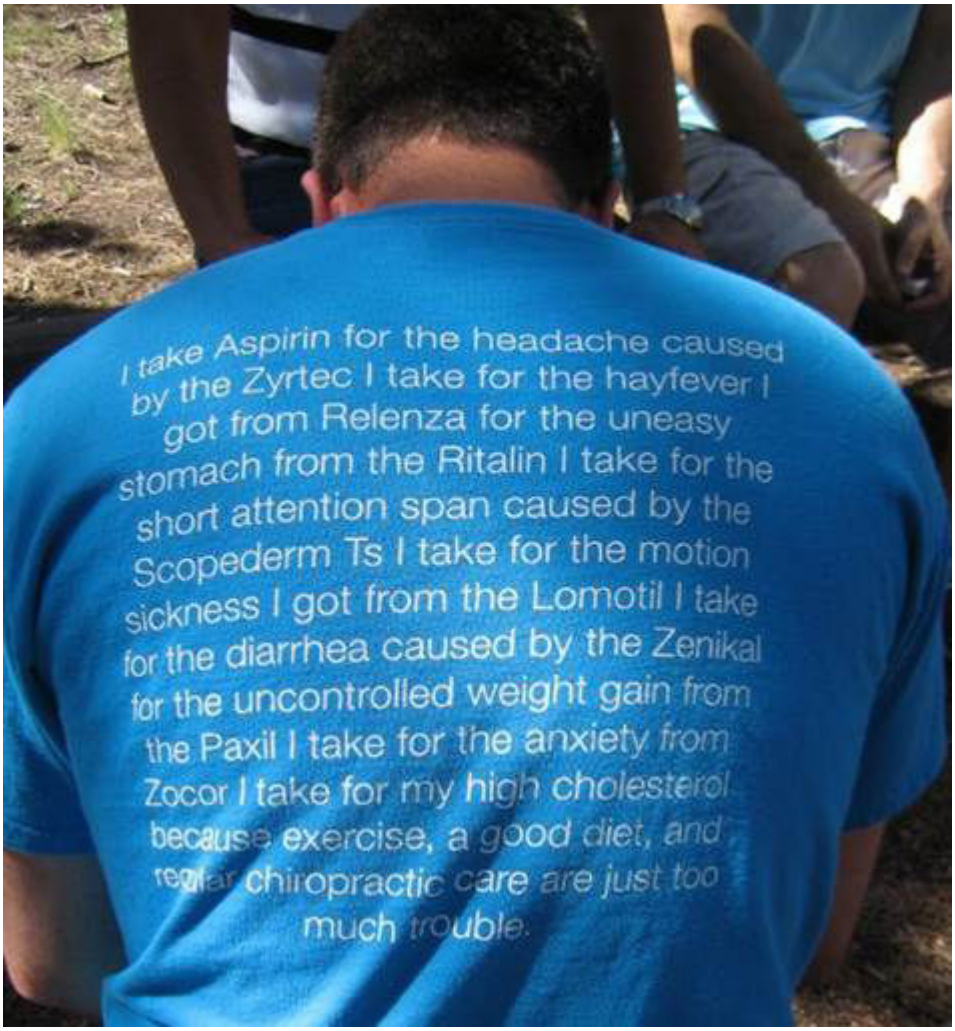
[19] Colquitt, Phillip J. **Labeling all sphygmomanometers.**Using the reported 9 Kg/year of Hg ordered in to repair sphygmomanometers in one large Australian hospital without evidence of Hg spill retrieval, together with the estimated 24,000 hospitals in the USA reported in Goldberg et al[,

potentially upwards of **200 tons** of Hg are being ordered into hospitals to repair sphygmomanometers in USA each year. If used hospital Hg is unaccounted for, as is reported to be the case in Quebec hospitals, then the unaccounted for Hg may be assumed to have polluted the immediate hospital environment, thence to pollute the greater environment. http://www.cmaj.ca/cgi/eletters/168/1/78#221

[20]http://cfpub.epa.gov/eroe/index.cfm?fuseaction=detail.viewInd&lv=list.listbyalpha&r=216615&subtop=341

# Chemical Hell On Earth

## Pharmaceutical - Chemical—Radioactive




It is perfectly clear that certain groups of corporations with government support have deliberately created a toxic hell on our planet. It's a special kind of hell that gets chemically and radioactively more toxic each year—hurting, debilitating, torturing, and even killing people in uncountable numbers. Welcome to planet earth.

The weight of evidence based on the findings of wildlife biologists, toxicologists, and epidemiologists indicates that the world's populations are being exposed to a host of chemical contaminants and heavy metals. And now radiation exposures are headed upward with the medical establishment's stubborn use of radiation in diagnostic tests, its use in the treatment of cancer, the insane use of depleted uranium on distant battlefields and now the terrible disaster in Japan.

Chronic disease is the number-one killer in the United States, accounting for about four out of five deaths in America each year, yet most doctors have not the slightest idea of what is really causing this. The medical establishment has not been able to solve or cure any of the chronic diseases facing humanity simply because they don't really want to know anything about the underlying causes. Medical officials go on and on about the flu and about viruses instead of addressing the fact that pharmaceutical medicines are one of the greatest sources of toxic exposure—and so is dentistry.

*There are poisonous time bombs going off in billions of mouths and few in medicine and dentistry are aware of it. Why dentistry did not study mercury chemistry before thousands of tons were implanted two inches from the brain, and why allopathic medicine did not scream out warnings, are questions we will be asking for a long time.*

Most doctors, dentists and health officials have been brainwashed; they cannot see the forest for the trees when it comes to toxicity. This has been deliberate. Medicine and dentistry are among the worst polluters of the human biosphere so they are the last ones who will come to grips with **Toxicity Syndrome**. Contemporary medicine is now threatened with its

own demise because as toxicity rises in the world (and intensely in certain areas) we become more sensitive and sick—not from viruses, bacteria and fungus but from chemical poisoning. As toxicity saturates our bodies, any new threat shoves us hard over the line causing a syndrome known as blue flu, chemically-induced flu[1] possibly resulting from events such as the Gulf of Mexico oil spill in 2010.

To understand **Toxicity Syndrome** one has to understand the equations—the factors that combine and become strong etiologies of disease. Today it is clearer than ever that our main health concern is toxic exposures meeting head on with severe nutritional deficiencies, leaving people and their children more vulnerable to toxic insults and thus to disease itself.

According to the Physicians for Social Responsibility (PSR), **about 100 million Americans, more than one-third of the population, suffer from some form of chronic disease like asthma, diabetes, cancer, heart and kidney disease or arthritis.** Cancer is the second leading cause of death, exceeded only by heart disease. Among children ages one to 14, cancer is now the leading cause of death by disease.[2] At current rates, invasive cancer will be diagnosed in half of all men and in one in three women in their lifetime. "Whether it is cancer or autism that is affecting our families and showing up in our examination rooms, the growing rates of chronic disease compel us to search for clues and answers to determine the true causes of these increasingly prevalent illnesses," says the PSR.

Most likely not many people know that on August 1st of 2006 the American Chemical Society published research that showed conclusively that methylmercury induces pancreatic cell apoptosis and dysfunction.[3] Mercury is a well-known toxic agent that produces various types of cell and tissue damage yet governmental health agencies deny the importance of this fact, exposing billions of people to levels of mercury harmful to pancreatic

health. In the case of diabetes, **mercury is especially telling for it affects the beta cells, the insulin itself, and the insulin receptor sites setting off a myriad of complex disturbances in glucose metabolism**. But hey, why not inject everyone, even pregnant women, with another round of mercury-containing flu vaccines? A little more toxic hell is not going to hurt anybody, right?

**Human destiny is on a collision course with contemporary medicine, dentistry, and the pharmaceutical companies** who have been poisoning humanity and making a lot of money doing so. Drug companies have been accused of conning the public by hyping up patented medicines while downplaying their potentially harmful side effects. A new study[4] estimates that 85 percent of new drugs offer few if any new benefits while having the potential to cause serious harm due to toxicity and misuse.

*The margin of safety that researchers thought was present with regard to health effects of amalgam does not exist. Sensitive persons can be damaged because of mercury in their mouths. Amalgam should be banned as soon as possible in the whole European Union.*

*- Professor Maths Berlin*

*Former WHO leading expert on the effects of mercury*

**Human destiny is on a collision course with mercury, not carbon dioxide.** Human destiny is on a collision course with many things but carbon dioxide is not one of them. It was a truly idiotic notion to present a healthy gas as dangerous while losing track of the real threats. In my book *Sodium Bicarbonate*, I present the story of carbon dioxide because that is what bicarbonate turns into in the stomach when taken orally. $CO_2$ is a

healthy and necessary gas whereas mercury is a deadly substance that only irresponsible doctors and dentists insist on continuing to use.

A careful reading of the published medical research clearly demonstrates that all sensible concern for published scientific research regarding the toxicity of mercury has been cast aside, exposing the entire world's population to grave unwarranted harm.[5]

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[1]http://www.datelinezero.com/?p=2333

[2]http://www.cancure.org/statistics.htm

[3] Ya Wen Chen, Chun Fa Huang, Keh Sung Tsai, Rong Sen Yang, Cheng Chieh Yen, Ching Yao Yang,# Shoei Yn Lin-Shiau, and Shing Hwa Liu. Chem. Res. Toxicol., 19 (8), 1080 -1085, 2006. Institute of Toxicology, Department of Laboratory Medicine, and Department of Orthopaedics, College of Medicine, National Taiwan University, Taipei, Taiwan, and Departments of Traumatology, Surgery, and Emergency Medicine, National Taiwan University Hospital, Taiwan .
http://www.ncbi.nlm.nih.gov/pubmed/16918248

[4]http://www.dailymail.co.uk/health/article-1304118/Top-professor-claims-5-6-new-medicines-little-benefit-patients.html

[5]The Centers for Disease Control and the American Academy of Pediatrics have issued a statement asserting, "the available scientific evidence has not shown thimerosal-containing vaccines to be harmful." Their statement is false and totally misleading. Following are some of the scientific studies that demonstrate thimerosal, a mercury-containing substance that is used as a preservative, to be harmful and to be a highly probably causal factor in autism. Note that these studies are consistently

ignored in the medical establishment's publications claiming that there is no evidence for vaccine-caused autism.

1 Bernard S, Enayati A, Redwood L, Roger H, Binstock T. Autism: a novel form of mercury poisoning. *Med. Hypotheses*. 2001 Apr;56(4):462-71. PMID: 11339848

2 Geier DA, Geier MR. An assessment of the impact of thimerosal on childhood neurodevelopmental disorders. *Pediatr Rehabil*. 2003 Apr-Jun;6(2):97-102. PMID: 14534046

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# Mercury & Disease

*Most of our cancer patients have a lot of amalgam dental fillings.*

*- Professor W. Kostler*

Mercury is not only a very important subject but also a very confusing one for there are people and organizations working hard advising you not to be concerned. Worse, each area of worry is played off against the others meaning the media will go mad about the mercury levels in fish but say nothing about the dangers of mercury containing dental amalgam or the thimerosal used in vaccines, which is 50 percent ethyl mercury by weight. The practical questions each parent and family needs to face in regards to mercury are:

1) Should I let dentists put mercury in my children's mouths?
2) Should I let the pediatrician inject mercury into my baby's body?
3) Should I eat fish that contain high levels of mercury?
4) Should I live anywhere near a coal fired power station or any number of other mercury spouting sites like medical and municipal incinerators, cement plants; even crematoria put out large amounts of mercury into the environment because of the melting teeth?
5) Should I throw out my old mercury thermometer?
6) Is mercury involved in the etiology of my or my children's diseases and learning disorders?
7) Should we undergo chelation treatments to remove the mercury from our bodies?
8) Should we have our old dental amalgam fillings removed?

9) Should I be supplementing with selenium because selenium offers a great deal of protection against the toxicity of mercury?
10) Should I be consuming more anti-oxidants and glutathione promoting nutritional agents to reduce the overall threat?
11) Should the information we are being told by our government officials and regulatory bodies be trusted and held as "truth"?

Numbers nine and ten should be bolded in everyone's mind because we need more than information about a disaster of untold dimensions in the making. We need answers, we need things we can do to protect ourselves and our children from the rising tide of mercury and other toxic chemicals.

Selenium is crucial to our understanding the dangers of mercury toxicity as well as it being one of the most important keys to protection from mercury. Minerals in general offer keys to health and protection from the onslaught of chemical toxicity that floods the world and thus our bodies today.

This is most needed because our governments and medical organizations believe that mercury and many other common chemical poisons are not something we have to worry terribly about. So what do they do, they allow dentists to put it in you and your children's mouths. They allow doctors and nurses to inject it directly into infants and adults, and they do much too little to control the mercury pollution pouring into the air from many industrial and medical sources. Mercury is dangerous because it's a neurotoxin, a poisonous substance that even at low concentrations can damage or destroy nerve tissue. Clearly it's a dangerous substance whose presence is rising in the world but your friendly health officials are not concerned so why should you be?

The best reason to be concerned revolves around the many scientists and doctors from around the globe who have shown how low levels of mercury toxicity are directly related to illnesses like cancer, heart disease and a host

of neurological problems like Alzheimer's, MS, ALS, autism spectrum syndromes and could even be playing a major role in the rapid increases we are seeing in diabetes because of the way mercury attacks sulfur bonds in both insulin and insulin receptor sites.

# Mercury Causes Chronic Disease

**The association of mercury to chronic diseases is well documented** in the didactic scientific literature. The search for the association between mercury and cardiovascular disease reveals 358 scientific papers exemplifying the relationship; between mercury and cancer we find 643 scientific papers. The association of mercury with neurodegenerative diseases is the most significant, with the references numbering 1,445.[1]

*If mercury is the primary source of autism, it may be for Alzheimer's disease and diabetes as well as a long list of other neurological disorders.*

Levels of mercury currently regarded as safe for adults could be impairing brain function without doctors and health officials diagnosing acute or chronic mercury poisoning. Mercury could be reducing the mental performance of millions if not billions of people worldwide and medical experts are just not seeing it.

The main areas of anxiety in regards to mercury are dental, medical, and environmental. These three areas comprise what is known as the three faces of mercury. Rarely are the three mercury concerns presented together so seldom do we get a fair account of the accumulating danger. The mass media does not present the true picture and often we get pronouncements about the safety of mercury. This is not surprising in a civilization based on the wide scale use of chemicals of a poisonous nature used in everything from the foods we eat to the water we drink.

One thing to always remember about mercury is that it is an accumulative poison so one area of contamination is not separate from another. If for

example a pregnant woman eats lots of fish, has many dental amalgams and is receiving injections of mercury containing vaccines at the same time the risk to her own health and that of her developing fetus is greatly multiplied.

One of the main chapters in this book is about mercury contamination of fish. There are many unexpected twists and turns in the mercury story. Although the majority of attention has been given to fish as the greatest danger in regards to mercury toxicity we have to entertain the possibility that because of selenium, which is an antidote for mercury, fish could be not be as much of a problem as dental amalgam, mercury injected via vaccines, or direct absorption through the air, water and other foods which are becoming increasingly contaminated. The way things are now in the media attention is focused mostly on fish consumption as the main danger from mercury and this is actually a red herring removing us from focusing on the total threat that mercury has become.

Some sources are now claiming that even selenium is not as protective against mercury in fish as once believed citing studies done with mice.

When selenium, which is present in most fish, and mercury are found together, they connect forming a new compound. This makes it difficult for the human body to absorb the mercury separately. As we shall also see scientists have also tagged cysteine in fish binding with mercury also making it safer to eat. When mercury “binds” to selenium or cysteine it is no longer free to “bind” to anything else—like brain or kidney tissue. An accurate picture of the health consequences of eating fish must include other substances that affect the way mercury interacts with the human body. Still though, “evidence of mercury’s health risks is strong enough that people, especially children and women of childbearing age, should be careful about how much and which fish they eat,” declare scientists at the Eighth International Conference on Mercury as a Global Pollutant.

Despite information that selenium found in many foods and omega-3 fatty acids in fish might protect against mercury's effects or rid the body of the mineral, many scientists disagree.[2] It is a most delicate subject but there is nothing delicate about mercury and the harm it can impose on human physiology through either long-term low-level chronic exposure or through acute exposure when it is injected. Irresponsible does not quite cover the huge subject of vaccination and the inclusion of mercury in vaccines to act as a preservative.

The actual picture projected out to the public is this: Fish are dangerous beware, consume with care, mercury spills in schools are emergencies of disastrous proportions but there is absolutely no problem with leaking dental amalgam or mercury containing vaccines. Clearly mercury is something to be concerned about especially when it concerns the young. And clearly the information given out by the government is not always to be trusted as we shall clearly see below when it comes to the huge tonnage of mercury placed directly in peoples' mouths. Also one must be extremely careful when reading statements from The Center for Consumer Freedom, and other such organizations which scoff at environmental activists who would warn young mothers about the dangers of fish. They are funded by the food industry and would have you eat bellies full of mercury containing fish.

Also most importantly, since mercury is not accepted by the medical industrial complex, as contributing to the exploding rates of chronic diseases like autism and diabetes, they fall far short of the mark of providing appropriate health care recommendations and treatments, which could literally save lives. Instead, as chronic disease rates soar off the charts you have health officials scratching their heads in ignorance while preaching about the safety of mercury and many other highly toxic chemicals. Beware and take care anytime you hear someone professing that

poisonous substances are safe, meaning giving the green flag to go ahead and expose yourself. When pro fish lobbies say mercury levels would have to be nearly six times as high before they would represent mercury levels known to pose a human health risk they are missing the mark widely because they are not really recognizing the risks at all.

# Mercury, Infections, Antibiotics & Cancer

When we consider mercury as one of the basic causes of cancer we can begin to review our estimates on iatrogenic death and disease. Mercury weakens the immune system and leaves people vulnerable to acute infection. Mercury is often at the heart of periodontitis and many other diseases yet the vast majority of dentists, the American Dental Association, and the FDA are still in denial. It is bad enough that they plant the mercury in our mouth but then **they add insult and injury by prescribing antibiotics that make the entire situation worse with the yeasts, bacteria and fungi**. Fungal overgrowth occurs because its natural competitors have been removed, which easily becomes the case with antibiotic usage.

# Dental Mercury

Mercury used in dental fillings comes into the dental office with the poisonous cross and bones symbol on the product information insert. Legally when the mercury is taken out of someone's mouth it is considered a toxic waste that needed to be treated in a very specific way. Thus once planted in the mouth we could identify the mercury deposits as legalized toxic waste dumps.

But nothing about the toxicity of mercury seems to penetrate the dental profession. The federal government and the major dental organizations pretend some form of magic takes over turning a neurological poison into a safe thing once it is put in the mouth by a trusted dentist. The official position is: Silver fillings used to patch cavities aren't dangerous even though they expose dental patients to the toxic metal mercury, federal health researchers said in August of 2006. The Food and Drug Administration[3] reviewed 34 recent research studies and found "no significant new information" that would change its determination that mercury-based fillings don't harm patients, except in rare cases where they have allergic reactions. This statement comes despite the fact that mercury is a powerful toxin that can have serious neurological effects, especially in kids. It is known to directly harm the nervous systems of children, causing birth defects and other maladies. The FDA recommendations remain unchanged today.

Many dentists and all of the associations that back them say the fillings are safe though. But some medical practitioners, holistic adherents and even the World Health Organization say **mercury shouldn't be considered totally safe under any conditions**. Exposure to mercury is known to cause brain and kidney disorders. Women of childbearing age are particularly at risk

because mercury exposure during pregnancy can cause neurological birth defects.

The greatest health danger from elemental mercury is breathing mercury vapor. Mercury is unique in that, at room temperature, it is liquid and can vaporize like water. Mercury vapors are invisible and odorless to humans. With amalgam fillings, mercury vapor is released through tooth-brushing and chewing.

> "In 2001 I suffered from an acute case of mercury poisoning due to the unsafe removal of a "silver" filling by my dentist. It was very difficult to find the cause of my sudden illness, because few health care professionals are aware of the symptoms. Now I dedicate part of my time to warning others about "silver" mercury amalgam dental fillings."[4] The governments report on mercury fillings certainly does not cover the reality of this person whose story is not that uncommon.

Public health officials and their respective medical establishments in the United States and United Kingdom will not accept this kind of evidence with regard to just about every poison the public is being exposed to. This is true despite the fact that the FDA believes that even a single well-documented case report can be viewed as a signal of causation. Research that the government uses to reassure parents about the safety of toxic chemicals is often terribly wrong.

> Virginia Pritchett remembers getting her teeth filled when she was seven years old. Now, decades later, she cannot forget the health problems she suffered for years until the symptoms were linked to the mercury in her fillings. "I was 43 when I was correctly diagnosed," Pritchett said. "I was having severe neurological problems and going into seizures." In 1999, Pritchett had the five

mercury fillings removed and replaced with composite materials. "If those were not taken out, I would be dead now," said Pritchett, who lives in Mineral Wells.

*Only well-designed, randomized controlled trials (RCTs) produce medical evidence that can meet the scientific standard of proof.*

The medical world can be divided along the lines of belief or disbelief in this notion about scientific standards and what is considered proof or not. Most medical evidence actually does not meet the scientific standard of proof; and, as in law, it should be judged by a standard of proof appropriate to the point in question. Consumers should be wary of governmental officials at the FDA or CDC when they use science to shore up their medical positions for more often than not what they are spouting is nothing more than manipulated statistics from epidemiologic studies.

An anecdotal case report can provide evidence of probative value, just like eyewitness testimony in a murder trial. And it can be similarly tested, by second opinions, re-examination, laboratory tests, and follow-up. A single case report can prove that a drug causes an adverse reaction. Three events related to administration of the drug prove specific causation: 1) the reaction occurs after the drug is given; 2) it resolves when the drug is discontinued; and 3) the adverse event recurs when the drug is given a second time. Causation is judged to be certain owing to this double hit.

The weight of currently available scientific evidence does not support the hypothesis that potent neurological poisons like mercury injected in children or implanted in their mouths will cause any harm. So there are no warnings given to families who live near coal fired energy plants, chlorine plants or medical and municipal incinerators.

It really does not matter to these officials what the truth actually is it's the weight of currently available evidence even if that evidence is biased by the financial interests that pay for such research. You see for these officials only epidemiologic evidence is sufficiently scientific. But epidemiologic evidence, as an application of statistics, is open to manipulation and bias. Since it does not meet the scientific standard of irrefutability, it is not per se really scientific.

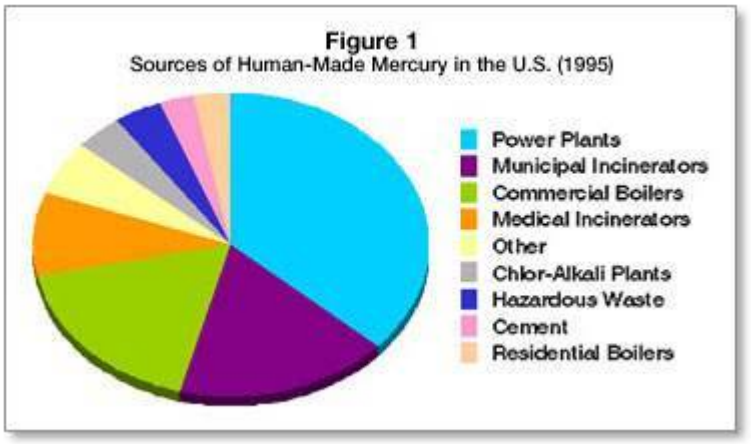
The FDA says and thinks and applies the same attitude about many poisonous substances including fluoride, aspartame, MSG, mercury in vaccines, and thousands of other "safe" chemicals and drugs that provoke disease and quick death at doses much lower than the government will ever admit.

> "If substantial scientific evidence showed that dental amalgam posed a threat to the health of dental patients, we would advise dentists to stop using it. But the best and latest available scientific evidence indicates that dental amalgam is safe," Dr. Ronald Zentz, senior director of the American Dental Association's council on scientific affairs, said in prepared remarks delivered to the joint meeting of FDA experts on dental products and neurology.

# More Examples of Environmental Issues

While environmental issues are discussed in other chapters of this book here are even more examples of the harms to our environment

Something is terribly wrong with the United States federal government and other governments around the world who continue to condone the widespread exposure of people to thousands of tons of mercury. This tonnage is coming from thousands of point sources all over the globe. An example is the Eastern Oregon cement plant that releases more toxic mercury into the air than any other source in the state actually emits far more mercury than it had reported to authorities. The figures make the Ash Grove Cement plant in Durkee the third largest source of airborne mercury in the nation in 2004, the last year with national statistics available. The only larger sources were a California cement plant and a Nevada gold mine.




Nevada mines have chronically underreported their output of mercury that is believed to float into nearby states. “It continues to be a significant public health threat,” said Justin Hayes, of the Idaho Conservation League. People from Utah and their Idaho neighbors worry that unregulated mercury from the Nevada mines has wound up in the air and eventually in water and

wildlife. Now, nine Idaho water bodies have fish consumption advisories, and Utah has three for fish and a blanket warning against eating two species of Great Salt Lake ducks because of mercury. Some of the highest environmental mercury levels ever detected have been found in recent years in Great Salt Lake.

In Pennsylvania, over 9,000 pounds of mercury is released into the air each year from sources such as power plants, municipal waste incinerators, chemical plants, and other manufacturing facilities. By far, coal-fired power plants are the largest source of mercury air emissions in Pennsylvania—responsible for 83% percent of mercury released in the state in 2002. In fact, Pennsylvania is ranked third in the nation for the most mercury emitted by power plants.

Mercury never breaks down into another element; it always remains as mercury. Mercury is a volatile, heavy metal, and, as such, can be re-emitted into the atmosphere from land and water surfaces repeatedly after its initial release into the environment.

Rain falling in Cleveland contains mercury levels up to 31 times higher than the mercury levels EPA considers safe in the waters of the Great Lakes, jeopardizing the health of people and wildlife, according to a new report issued today by the National Wildlife Federation (NWF). The average levels observed were eight times the EPA standard—the highest average level NWF has observed anywhere in the Midwest. “These results completely reverse what we think about rain,” said Zoe Lipman, of NWF’s Great Lakes Office. “The monitoring we’ve done in Cleveland shows levels of mercury in rain that far exceed what EPA considers to be safe in the waters of Lake Erie. So instead of cleaning Lake Erie, the rain is contaminating it.”[5]

*Because of its unique physical properties, mercury can cycle between land, air and water.*

After a study in the Faroe Islands showed that children exposed to mercury in the womb have memory, attention and language problems at age seven, regulatory authorities in the U.S. and U.K. advised pregnant and nursing mothers not to eat large predatory fish such as tuna, shark and king mackerel. Now a study of villagers in Brazil suggests that adults may be at risk too. "Adults may be just as sensitive to mercury as children," claims Ellen Silbergeld at Johns Hopkins University in Baltimore, Maryland. Her team studied 52 men and 77 women living in fishing villages downstream of gold mines. Much of the mercury used to extract the gold ends up in rivers and in fish. "They act almost literally as a sponge," says Silbergeld.[6]

The researchers tested the villagers' neurological abilities by asking them, for instance, to remember a story and thread beads onto a piece of string. The higher the levels of methyl mercury in the villagers' hair—a measure of recent exposure—the greater the deficits in memory and motor skills. Exposure levels were not particularly high though. Hair concentrations in the villagers averaged 4 micrograms of mercury per gram of hair. This is just a tenth of the level considered dangerous for adults by the World Health Organization, and not much higher than that found in many countries. In the US and Japan, for instance, the average mercury concentration in hair is around 1 and 2 micrograms per gram respectively.

*Children's systems are under a broad mercury attack from each source and type of mercury. The age when exposed, the mode of contamination, and each person's metabolism and biological defenses combine setting the stage for different pathologies.*

[1]Buttar, Rashid. Autism Spectrum Disorders: An Update of Federal Government Initiatives and Revolutionary New Treatments of Neurodevelopmental Diseases US Congressional Sub-Committee Hearing;May 6, 2004

[2] A new study recently released has found that even after controlling for better intakes of omega 3 fatty acids and magnesium, young people who ate more mercury from fish are at a 65% greater risk of having diabetes type 2 in later life. These findings, said He, one of the lead researchers, point again to the importance of selecting fish known to have low levels of mercury, such as shrimp, salmon and catfish, and avoiding fish with higher levels, such as swordfish and shark. FDA and EPA guidelines for fish consumption highlight this, particularly for women who are pregnant or of childbearing age and for young children.
"It is likely that the overall health impact of fish consumption may reflect the interactions of nutrients and contaminants in fish. Thus, studying any of these nutrients and contaminants such as mercury should consider confounding from other components in fish," states He.

The study, which involved 3,875 men and women followed for 18 years, established the link between mercury levels and type 2 diabetes risk after controlling for lifestyle and other dietary factors such as magnesium, omega-3 polyunsaturated fatty acids and selenium which could counter the effects of the mercury.

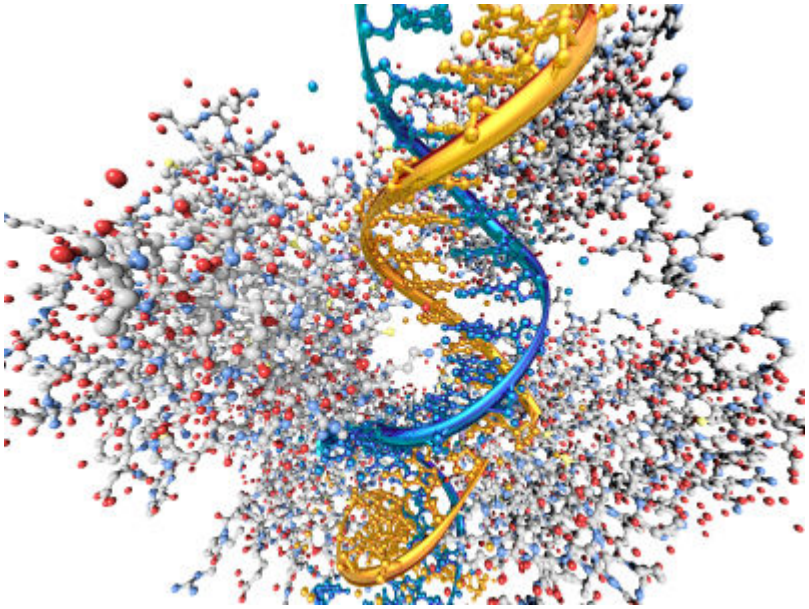
[3]http://www.fda.gov/medicaldevices/productsandmedicalprocedures/dentalproducts/dentalamalgam/ucm171094.htm

[4] http://www.mercurypoisoned.com/index.html

[5] http://www.ehw.org/Air_Pollution/AIR_MercuryPR3-23-04.htm

[6]Environmental Health: A Global Access Science Source, vol 2, paper 8.

# Heavy Metals, Mercury & Cancer



Dr. Rashid Buttar testified before congress that, “The association of mercury to chronic diseases is well documented in the didactic scientific literature. The search for the association between mercury and cardiovascular disease reveals 358 scientific papers exemplifying the relationship; **between mercury and cancer we find 643 scientific papers**. The association of mercury with neurodegenerative diseases is the most significant, with the references numbering 1,445.” The official position currently is that there is “some” evidence that methylmercury can cause cancer in humans. The International Agency for Research on Cancer (IARC) has classified methylmercury as “possibly carcinogenic to humans”.

Lead and aluminum are other common heavy metals that have been shown to dramatically increase the toxicity of mercury. Interestingly, lead is the final end product of the step-by-step radioactive decay of uranium, no wonder it’s so toxic. Medical researchers are still trying to understand the

numerous processes by which various heavy metals (lead, mercury, cadmium, arsenic, chromium, etc.) contribute to carcinogenesis but everywhere in officialdom we find ridiculous doubts about their effects especially when it comes to mercury and its high state of toxicity.

It has been shown that mercury rapidly depletes the immune system. Mercury has also been shown to induce autoimmune diseases. **Anything that depletes and disturbs the immune system will increase one's chances of contracting cancer.** Mercury binds with hemoglobin, which is responsible for oxygen transport to the tissues. This results in less oxygen reaching the tissues when the body is polluted with mercury. We don't have to look far in understanding how a heavy metal like mercury can eventually lead one to cancer's door.

"There is no safe level of mercury, and no one has actually shown that there is a safe level," said Dr. Lars Friberg, Chief Adviser to the WHO on mercury safety. *Survival Medicine for the 21st Century* (2,200-page compendium) has a 200-page section called "The Rising Tide of Mercury" because mercury toxicity needs to be factored into all notions of health and disease today. According to the observations made by the internationally recognized medical researcher, Yoshiaki Omura, MD, **all cancer cells have mercury in them**.

Dr. Hans Nolte wrote, "The wave spectrum of mercury contains more than thirteen wavelengths, whereas only one or two frequencies or wavelengths are usually observed for the other heavy or noble metals."[1] It is Dr. Nolte's belief that the many harmful effects of mercury could be explained to some degree on the basis of this great variety of wavelengths. Dr. Omura's clinical observation concludes that one of the primary reasons cancer returns is because residual mercury reignites a pathological environment

even after surgery, chemotherapy, radiation, and alternative therapies report a positive effect.

*Heavy metals clog up receptor sites, break and bend sulfur bonds in important enzymes like insulin, damage the DNA and in general muck up everything and anything to do with healthy biological life.*

There is a growing body of scientific research that suggests heavy metals contribute to carcinogenesis by inducing/increasing oxidative stress.[2] Oxidative stress damages DNA and can lead to mutations that promote cancer.[3],[4],[5] Heavy metals also disrupt the process of apoptosis (programmed cell death).[6] Apoptosis is vital for safe removal of sick/unhealthy cells, including cells that may become cancerous.

Heavy metals create contaminated environments bothinside and outside the cells. These environments attract all kinds of pathogens—viruses, bacteria and fungi. Some say many cancers are caused by infections others say cancer isan infection and others will insist until they reach their graves that cancer is strictly human cells running amuck with their DNA gone crazy. That many doctors believe this it does not make it true.

Our definition of cancer is a little more broad minded than blaming malfunctioning human DNA as the sole cause of cancer. Cancer is a prime example of how heavy metal toxicity, free radical damage, pathogen infection, mineral and vitamin deficiencies, inflammation, mitochondria dysfunction, immune system depression, genetic mutation, cell wall damage and oxidative stress all come together into an end stage life threatening condition. Cancer treatment can be approached in many ways but the best way would be to address all these problems simultaneously.

# Cancer and Mercury Laden Dental Amalgam

*Most of our cancer patients have a lot of amalgam dental fillings.*

*- Professor W. Kostler*

Mercury vapors in the mouth which spreads mercury to all points in the body, increased use of antibiotics, periodontal disease, inappropriate oral care, yeast and fungal overgrowth, and decreasing immune strength are all colliding and reinforcing each other in a downward spiral that leads to chronic diseases and cancer. **Each year in the U.S. an estimated 40 tons of mercury are used to prepare mercury-amalgam dental restorations**. Scientific studies have concluded that the amalgam is the source for more than two thirds of the mercury in our human population. On a daily basis each amalgam releases on the order of 10 micrograms of mercury into the body. This mercury either accumulates in the body or is excreted via urine and feces into our wastewater systems.

*Mercury from amalgam fillings has been shown to be neurotoxic, embryotoxic, mutagenic, teratogenic, immunotoxic and clastogenic. It is capable of causing immune dysfunction and autoimmune diseases.*

*- Dr. Robert Gammal*

Dentists and their parent dental associations are loath to inform patients that the mercury they place in the mouth is a deadly poison that negatively influences not only their oral environments but total body physiology as well. This is a shame that the majority of dentists will take to their grave. “Mercury is one of the most potent chemical inhibitors of thiol-sensitive

enzymes and mercury vapour easily penetrates into the central nervous system," writes Dr. Boyd Haley who goes on to say, "Amalgams leak mercury, this is a fact that any chemistry department can confirm. We have made amalgam fillings outside of the mouth, placed these fillings in sterile water for 15 minutes to several hours. We then tested this water for toxicity to tubulin and creatine kinase. The result was that the solutions in which amalgams were soaked (even for 15 minutes) were extremely toxic. This work is supported by reports doing similar experiments at the University of Michigan Dental School where they described solutions in which amalgams were soaked as being 'extremely cytotoxic'."

*It is estimated that an amalgam filling will release up to half of its mercury content over a ten-year period (50% corrosion rate).*

*- Dr. Robert Gammal*

Dr. Hal A. Huggins stated that amalgam fillings can devastate human health. The most common form of exposure to mercury is by inhalation of vapor and there is widespread general agreement that this leads to a slowly developing and insidious poisoning, which at first yields psychic and other general effects that are vague and difficult to diagnose. Yet dentists have continued to expose children to the toxic effects of mercury.

# Periodontitis, Mercury. Candida and Other Infections

According to an article recently published in the *Archives of Otolaryngology—Head and Neck Surgery*, **chronic periodontitis is associated with an increased risk of developing cancer of the tongue** among men. Researchers at the University at Buffalo and Roswell Park Cancer Institute have found the same thing. Another recent study published in the Journal of the **National Cancer Institute linked periodontal disease to pancreatic cancer** as well. "Our study provides the first strong evidence that periodontal disease may increase the risk of pancreatic cancer," said Dr. Dominique Michaud of the Harvard School of Public Health in Boston, who led the research. Men with a history of periodontal disease had a 64 percent increased risk of pancreatic cancer than men with no such history.

And increased severity of periodontitis, for example with recent tooth loss, had the greatest risk. People with periodontal disease have an increased level of inflammatory markers such as C reactive protein (CRP) in their blood. These markers are part of an early immune system response to persistent inflammation and have been linked to the development of pancreatic cancer. It is the high levels of carcinogenic compounds (especially mercury) that are present in the mouths of people with periodontal disease that increases risk of pancreatic cancer.

**Mercury vapors play havoc on the body through a host of means the least of which is to feed the bacteria, fungi and yeasts that thrive on mercury.** Mercury will promote the growth of Candida, though as it adsorbs the mercury it thereby protects the system to a certain extent from

its toxicity until they are saturated then they begin to re-release the mercury in organic form.

*The list of organisms that have the highest affinity for toxic metals reads like a "who's who" of our typical human infectious diseases: fungi of the Candida species, streptococci, staphylococci, amoebas, etc.*

*- Dr. Dietrich Klinghardt*

Candida (yeast) overgrowth, which is very difficult to get rid of, is also associated with mercury in the mouth. Dr. Tullio Simoncini insists cancer is intimately linked to Candida overgrowth and that life threatening tumors are actually fungi colonies sucking up all available nutrients. The general line of thought though is the body produces yeast as a defense against excess metals. The yeast cell binds and absorbs its own weight in mercury and prevents it from entering the bloodstream. Dr. J. Trowbridge has written in his book "The Yeast Syndrome," that some doctors specializing in Candida treatment have reported to him that they have discovered clinically that 98% of their patients with chronic Candida also had mercury toxicity.

When we consider mercury as one of the basic causes of cancer we can begin to review our estimates on iatrogenic death and disease. Mercury weakens the immune system and leaves people vulnerable to acute infection. Mercury is often at the heart of periodontitis and many other diseases yet the vast majority of dentists, the American Dental Association, and the FDA are still in denial. It is bad enough that they plant the mercury in our mouth but then **they add insult and injury by prescribing antibiotics that make the entire situation worse with the yeasts and fungus**. Fungal overgrowth occurs because its natural competitors have been removed, which easily becomes the case with antibiotic usage.

Iatrogenic dentistry is a new concept that has yet to be explored but already a great part of the civilized world understands the ignorance of fluoridated water, toothpaste and fluoride treatments at the dental clinic and the continued widespread use of mercury containing dental amalgam. Harvard University Medical Center is just one of many universities that recognize fluoride as a cause of cancer. It is very difficult to accept the devastating reality about what dentists have done to humanity.

When we look at the fungal and yeast infections that are an integral aspect of cancer we should begin to understand the desperate need to include chelation of mercury in each and every cancer treatment. Mercury-fed Candida become more and more virulent and eventually penetrates and roots into the intestinal walls and invades the cells. These fungal microorganisms become quite at home in the cell, and can easily be considered a principle characteristic of cancer. **Sodium bicarbonate, which is proving to be effective against cancer, is lethal to yeasts and fungi growths because it increases the flow of oxygen to all cells including the cancer cells that thrive on oxygen's absence.**

# Bone Cancer

**Some 65-75% of advanced breast and prostate cancer patients eventually suffer bone metastases** so there is an immense need for a medicinal that will reach into the bones. The resulting swelling and fractures can cause excruciating pain and may require radiation, chemotherapy, or amputation. To ease the agony and strengthen the bones, doctors prescribed $1.4 billion worth of a bone-boosting drug called Zometa, from Novartis in 2008. The only treatment that will reach down to the bones is sodium bicarbonate. Intravenous application is ineffective but one can throw oneself into bathtubs full of several pounds of baking soda and magnesium salts and take the bicarbonate also orally to radically change the pH in all the tissues including the bones. Sodium bicarbonate increases CO2 levels that also will have the effect of increasing oxygen to the tissues.

# Mercury, Infections, Antibiotics and Cancer

When we consider mercury as one of the basic causes of cancer we can begin to review our estimates on iatrogenic death and disease. Mercury weakens the immune system and leaves people vulnerable to acute infection. Mercury is often at the heart of periodontitis and many other diseases yet the vast majority of dentists, the American Dental Association, and the FDA are still in denial. It is bad enough that they plant the mercury in our mouth but then **they add insult and injury by prescribing antibiotics that make the entire situation worse with the yeasts and fungus**. Fungal and bacterial overgrowth occurs because its natural competitors have been removed, which easily becomes the case with antibiotic usage.

# Mercury Rising

*A primary route for the toxicity of mercury, cadmium and nickel is depletion of glutathione and bonding to sulfhydryl groups of proteins. Arsenic (As) is thought to bind directly to critical thiols.*

"Mercury is like the 200 pound bully attacking a 7 pound baby; the small baby doesn't have much of a chance. 200 and 7 are the molecular weights of mercury (the bully) and lithium (the baby) respectively," says Dr. Thomas Nissen. Mercury is the most toxic non-radioactive element but it does share toxic properties of uranium and thus lead.

Every physician knows that radiation can lead to cancer. What they don't know is how heavy metals and radiation share similar toxic pathways on a chemical level. For example, "Depleted (DU) uranium is highly toxic to humans, both chemically as a heavy metal and radiological as an alpha particle emitter, is very dangerous when taken internally," writes Dr. Rosalie Bertell, Canadian Epidemiologist.[7] A new study, conducted by biochemist Dr. Diane Stearns at NorthernArizonaUniversity confirms that, separate from any radiation risks, cells exposed to uranium will bond with the metal chemically.[8] Uranium and phosphate have a strong chemical affinity for each other and the DNA and mitochondria are loaded with phosphate so **uranium is a DNA and Mitochondria deep penetration bomb.** The uranium is attacking on fundamental cellular levels while mercury offers a knock out punch by attacking the sulfur bonds besides being highly toxic to nerve cells.

*Both mercury and uranium oxide are floating in the environment like invisible clouds that have spread*

*out everywhere. They are raining down on us,*
*damaging and damning our future.*

Dr. Paul R. Epstein of Harvard Medical School released a report about the severe health impacts of coal on Kentuckians. Because of Kentucky's 22 coal-burning power plants, every mile of Kentucky waterways flow with unsafe levels of mercury, the leading cause of birth defects in this country. **The risk of death for people living within 30 miles of a power plant is three to four times greater than for those living further away**. In Kentucky, 811,993 children live within that 30-mile radius. Of the chemicals known to be used while processing coal, 19 are cancer-causing and 24 are linked to lung and heart disease.

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[7]http://cndyorks.gn.apc.org/news/articles/du/drrb.htm

[8]A radioisotope of an element will bind best to the same substrates which a non-radioactive isotope of the same element will bind. Dr. Stearns has established that when cells are exposed to uranium, the uranium binds to DNA and the cells acquire mutations, triggering a whole slew of protein replication errors, some of which can lead to various cancers. Stearns' research, published in the journals Mutagenesis and Molecular Carcinogenesis, confirms what many have suspected for some time - that uranium can damage DNA as a heavy metal, independent of its radioactive properties. The biochemical reaction of heavy metals can cause genetic mutations, which in turn can curtail cell growth and cause cancer. Heavy metals that are also radioactive amplify this effect and can cause distortions in shape and thus function even of red blood cells.

# Essentials of Chelation

Natural is the best way to go unless faced with immediate life threatening acute exposure. That said it is important to know that in comparison to synthetic chelators with known side effects, natural chelators have literally no side effects and are seen to play important roles in the oral chelation of young children with learning difficulties, ADD, ADHD, autism and other forms of metals toxicity. This is also extremely important for cancer patients, and in fact everyone with chronic disease today needs to get the heavy metals out of their bodies.

Dr. George Gorgiou says, “Many health practitioners use synthetic chelating agents such as DMPS, DMSA, EDTA and others to mobilize and eliminate heavy metals from the body. There are advantages and disadvantages to using these. One advantage is the power of their mobilizing activity—they are quick to mobilize and eliminate certain metals in the body, but this may place a huge burden on the body’s detoxification systems. Further symptoms have been reported by natural medical physicians throughout the U.S., such as intractable seizures in pediatric patients and multiple sclerosis in adult patients due to taking high doses of DMSA over extended periods of time. These are valid reasons to be at least cautious in the use of DMSA for the

treatment of mercury toxic pediatric patients. The fragile brains and nervous systems of children with autism, PDD and seizure disorders should be handled with considerable care so as not to increase the damage."

*Chelation therapy was introduced into the United States in 1948. The treatment is well recognized by doctors around the world.*

After discovering that the pristine environments of the world have vanished we have now realized too late that the same thing has happened to our bloodstreams and thus the cell environments in our bodies.[1] In allowing our corporations to trash the world we have allowed them to trash our bodies[2] with all kinds of chemical pollutants[3] including a long list of dangerous heavy metals.[4] **Modern medicine and dentistry have been involved in the gold rush to profit from the use of dangerous chemicals and have contributed greatly to the intense poisoning of our bodies.**

At the time of our greatest need, when public health has deteriorated especially among the young[5] and elderly, our doctors, dentists and public healthcare officials have gone blind, deaf and dumb to the problem and refuse to help us. Instead, the majority of them continue to cling to their covenant with poisons (toxic pharmaceutical drugs) and to increase the flow of pollution to our cells. Chelation therapies are considered useless, radical, and even dangerous by many in the conventional medical field yet there is no other way to remove cancer-causing heavy metals and chemicals from the body except through chelation and naturopathic detoxification procedures.

*Almost 20 percent of the children in this country are chronically ill or disabled. That's a very different situation from what it was 20 or 30 years ago, and*

*there's no explanation given by the public health authorities as to why that is true.*

*- Barbara Loe Fishe*

*National Vaccine information Center*

The WWF has been out front and has concerned itself with matters that health and medical officials have neglected. In 2004 they sponsored a series of blood tests in the U.K. and every person testedwas contaminated by a cocktail of highly toxic chemicals that were banned from use in the U.K. during the 1970s and that continue to pose unknown health risks.[6] People with chronic illnesses are living testimony to this contamination. In most cases people's limits are reached and exceeded not by an excessive amount of one toxin, allergen or pollutant but by a large oversupply of countless micro-doses, each possibly below what health officials consider dangerous. But together it all explains the great collapse of health and wellbeing in the general public.

*Mortality from cancer was reduced 90 percent during an 18-year follow-up of 59 patients treated with calcium-EDTA. Only one of 59 treated patients (1.7 percent) died of cancer while 30 of 172 non-treated control subjects (17.6 percent) died of cancer (P=0.002).*[7]

*-Dr. Walter Blumer*

The WWF found 70 of the 78 chemicals (90 percent) that were looked for in the survey. The highest number of chemicals found in any one person was 49, nearly two-thirds (63 percent) of the chemicals looked for. This study provides shocking and damning evidence that people across the world are contaminated with a cocktail of highly toxic chemicals. Upon studying his personal results, Dr. John Barry of the Green Party said: "As a vegetarian

who eats mainly organic produce, I did not expect my results to indicate a high level of contamination, yet 18 chemicals were detected in my body. Not a high level in comparison to other results but they are chemicals I did not ask for and certainly do not want." And Michelle Gildernew, Sinn Fein MP said, "Despite following a fairly healthy lifestyle, I was shocked to discover that my blood test revealed a number of chemicals that could be dangerous to health. As a mother, I find it even more disturbing that I could have passed some of these chemicals on to my child during pregnancy."

*Chelation has shown to be effective at removing plutonium from the most carcinogenic locations in the skeleton, such as on bone surfaces near living cells.*[8]

**Fortunately for our children and for us there are natural and semi-natural forms of treatment that can reverse much of the damage of mercury, lead, arsenic and other chemical poisoning.** Even uranium can be eliminated with the proper protocol. It's an approach to medicine that is radically different, for instead of adding to the already heavy chemical burden of the body (which almost all allopathic medicines do including synthetic chelators), it diminishes chemical accumulations and cleans and detoxifies our bodies.

Over the past 100 years our species has been engaged in a vast and complicated chemistry experiment at our expense. Each and every one of us has been a guinea pig in this experiment but this experiment has failed. Today we face a huge choice for ourselves and our children. We can continue to trust and have faith in our medical officials and mainstream allopathic doctors, who want to continue the experiment—continue to poison us and our children. Or we can depart from this medical insanity and

start the long work of purifying ourselves through detoxification and natural chelation protocols.

As the ability of science to measure increasingly smaller amounts of toxins in the body improves, we are finding that it does not take very large amounts to degrade body functioning. What's worse is that these many toxins combine in unpredictable ways to produce a combined effect worse than the sum of the individual effects.

*Oral chelators draw out toxic metals and other harmful substances that impair your bodily functions and help your body eliminate these toxins via the kidneys.*

Metal chelation is a complex and serious matter. It is a fact that you can end up in worse health after chelation than when you started if you are not well-informed and do not proceed carefully under the care of a competent healthcare practitioner. One hears many stories involving heavy metal chelators, as much about the devastating side effects as about the miraculous recoveries. What has become apparent is that the difference is due to the methodology of the attending physician and not necessarily the choice of intravenous procedures.

*Oral chelating agents can often prevent health problems from occurring by restoring circulation to your body's tissues by unblocking clogged arteries.*

In a toxic world an intelligent pharmacology would include affordable safe substances that facilitate the excretion of toxic metals from the body. Dr. Garry Gordon, a leader in the field of heavy metal detoxification and chelation says, "No one on planet earth is operating at optimal levels without doing something about the toxic metals. Thus the conclusion I draw

is that chelation appears a lifetime necessity for all." Gordon is sharp to remind us of important toxic problems like lead. He says, "There is no chelation that can dent the lead levels of bones unless continued for at least seven years (bone turnover time)."[9] So, if you are betting your patients' health on effective protection you need to get into chelation and detoxification for the long haul. This is one of the principle reasons we need natural nontoxic substances. **Using synthetic drugs with their own toxic side effects for long periods of time is not good**.[10] Even EDTA, which is much less toxic then DMPS and DMSA, may not be appropriate for treating low-level lead exposures because it can be toxic in that it increases excretion of some essential metals. EDTA produces substantial diuresis of zinc and a temporary 30-40 percent decrease in plasma zinc.[11]

*In the 21st century the center of pharmacology needs to be shifted away from medicines that add to people's already heavy toxic burdens, to medicines and protocols that reduce these burdens.*

What we need is a unique combination of natural substances, scientifically formulated and tested to form stable complexes while at the same time removing a wide range of toxic heavy metals so they can be readily excreted **via multiple pathways in the body**. These substances must stimulate and enhance our body's natural endogenous mechanisms for coping with toxic metals and chemicals. This includes stimulating the production of metallothionein (metal-binding proteins essential for metal transport), elevating glutathione levels and adding protective essential minerals to the body.

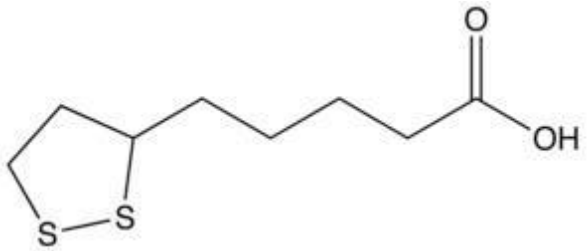
The three most effective, safe and natural substances, when combined, create what I call the golden triangle of natural chelation. Alpha-lipoic acid (ALA), cilantro and chlorella (which is not a chelator when used by itself),

when used together and supported with strong mineral therapy, provide the ultimate in safe chelation for a broad array of heavy metals. It was the genius of Dr. Allan Greenburg who brought these three agents together for the first time and tested extensively to prove their effectiveness and safety.

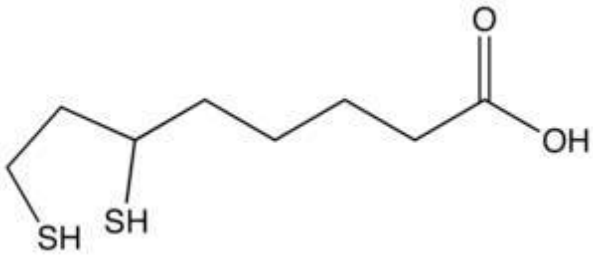
**Alpha-lipoic acid**: According to Jones and Cherian,[12] an ideal heavy metal chelator should be able to enter the cell easily, chelate the heavy metal from its complex with metallothionein or other proteins, and increase the excretion of the metal without its redistribution to other organs or tissues. According to Dr. Lyn Patrick "ALA satisfies at least two of the above criteria; i.e., absorption into the intracellular environment and complexing metals previously bound to other sulfhydryl proteins. ALA when found unbound in the circulation, is able to trap circulating heavy metals, thus preventing cellular damage caused by metal toxicity. The fact that free ALA crosses the blood-brain barrier is significant because the brain readily accumulates lead and mercury, where these metals are stored intracellularly in glial tissue."

ALA scavenges hydroxyl radicals, singlet oxygen and hypochlorous acid, can remove heavy metals by chelation and **regenerates other antioxidants** like glutathione, vitamin C, ubiquinol (coenzyme Q10) and vitamin E—as such it is an excellent chelator. A very recent study of children living in the area affected by the Chernobyl disaster also showed that ALA prevents radiation damage.[13] Alpha-lipoic acid and its cousin DHLA have justly been referred to as the "universal antioxidants". They are active in both cell fluids and membranes, they have no serious side effects, are non-carcinogenic and do not interfere with fetus development.

ALA is the oxidized form of dihydrolipoic acid (DHLA). LA contains two thiol (sulfur) groups, which may be oxidized or reduced.




ALA (Oxidized)




*Dihydrolipoic acid (DHLA) (reduced)*

Patrick goes on to say, "ALA has been shown to increase both intra-and extracellular levels of glutathione in cell cultures, human erythrocytes, glial cells, and peripheral blood lymphocytes. Levels of intracellular glutathione have been shown to increase by 16 percent in T-cell cultures at concentrations of 10-100 □M (concentrations achievable with oral and intravenous supplementation of ALA). Increases in glutathione levels seen with ALA administration are not only from the reduction of oxidized glutathione (one of the functions of ALA) but also from the synthesis of glutathione."

**Cilantro:** Mobilizes toxic metals from the central nervous system and other tissues. A researcher named Dr. Yoshiaki Omura, using bioenergetic measures, discovered that some patients excreted more toxic metals after consuming a Chinese soup containing cilantro. Cilantro is the leafy part of a common herb whose seed, coriander, is a familiar culinary spice. Its active component is a mercaptan that can penetrate the blood brain barrier.

Dr. Andrew Hall Cutler says that Omura is right that cilantro contains some active principle that effectively binds (and releases) mercury and crosses the

blood-brain barrier but says that the pharmacology or kinetics of cilantro's active principle remains unknown. Dr. Hall has deterred people from using it for he has maintained that nobody has any clue how to use cilantro. This issue has been resolved by Drs. Greenburg and Georgiou and several others who use cilantro safely and effectively.

Cilantro stimulates the body's release of mercury and other heavy metals from the brain and CNS into other tissue. Its postulated mechanism of action is to act as a reducing agent changing the charge on the intracellular mercury to a neutral state allowing mercury to diffuse down its concentration gradient into connective tissue.

Cilantro has a health-supporting reputation that is high on the list of the healing spices. It has been well-researched and has been found to have many benefits including blood sugar lowering properties,[14] anti-inflammatory properties—contains flavonoids including quercitin, kaempferol, rhamnetin, and epigenin, is a free radical scavenger and prevents lipid peroxidation properties,[15] and is seen as antimicrobial due to being rich in volatile oils such as carvone, geraniol, limonene, borneol, camphor, elemol, and linalool. Research by Mexican and U.S. researchers has isolated the compound dodecanal—which laboratory tests showed is twice as effective as the antibiotic gentamicin at killing salmonella.[16]

**Chlorella:** An algae that has been shown in research to have radioprotective functions[17] is chlorella. The nucleus of chlorella contains chlorella growth factor (CGF), which is very rich in nucleopeptides that have a protective effect on the nucleus and DNA of the cell. Chlorophyllin,[18] a compound found in chlorella, has also been shown in research to protect against DNA damage.

Scientific experiments have found that CGF have powerful rejuvenating effects on the DNA[19] of cells due to their nucleic acids, RNA and DNA,

and their high content of nucleotides.

Several years ago, Japanese doctors also discovered that giving chlorella to cancer patients going through radiation therapy helped **prevent leucopenia**, which is a sudden drop in your white blood cell count and a major problem with radiation illness!

Chlorella plays a particularly crucial role in systemic mercury elimination because the majority of mercury is rid through stool. Once the mercury burden is lowered from the intestines, mercury from other body tissues will more readily migrate into the intestines—where chlorella will effectively remove it. It is the fibrous material in chlorella that has been shown to bind with heavy metals and pesticides like PCBs that can accumulate in our bodies. Chlorella traps toxic metals in the GI tract and acts as an ion exchange resin. Chlorella is a species of unicellular fresh water algae that has been shown to possess detoxifying properties enabling it to assist or support the human detoxification system.

Chlorella algae contain phytochemicals that support detoxification while the cell walls function as an ion exchange resin to absorb and retain toxic metals that can then be excreted. It is a food-like all-purpose mild detoxifier (not chelator) of heavy metals. The detoxification capability of chlorella is due to its unique cell wall and the material associated with it. The cell walls of chlorella have been shown to have three layers of which the thicker middle layer contains cellulose microfibrils. Atkinson et al found a 14nm thick trilaminar layer outside the cell wall proper that was extremely resistant to breakage and thought to be composed of a polymerised carotene-like material. Laboratory studies showed that there were two active absorbing substances—sporopollenin (a naturally occurring carotene-like polymer that is resistant to degradation) and the algae cell walls. The fibrous material augments healthy digestion and overall digestive tract health.

Chlorella's cleansing action on the bowel and other elimination channels, as well as its protection of the liver, helps keep the blood clean. Clean blood assures that metabolic wastes are efficiently carried away from the tissues. **Chlorella gets its name from the high amount of chlorophyll it possesses.** It contains more chlorophyll per gram than any other plant and can speed up the rate of cleansing of the bowel, bloodstream and liver by supplying plenty of chlorophyll. Chlorella and spirulina are used as nutrient-dense foods and sources of fine chemicals in their most natural forms. They have significant amounts of lipid, protein, chlorophyll, carotenoids, vitamins, minerals, and unique pigments. They may also have potent probiotic compounds that enhance health. (You will find three chapters in *Survival Medicine for the 21st Century* devoted to spirulina as a pure medicine.) Both have extensive scientific research[20] that all indicate their value for a wide range of medical situations.

*Mercury can also be bound to sulfhydryl groups in garlic or to sulfur in the form of MSM. (See Chapter on Sulfur and DMSO)*

# Heavy Metal Detox

In a large metal foundry in Russia, Dr. George Georgiou tested extensively many natural substances for their efficacy in removing heavy metals from the workers there and found chlorella and cilantro so effective—when used "together"—that he introduced "Heavy Metal Detox" (HMD) in 2005.[21] But the issues are not straight or clear-cut as Dr. Georgiou explains, "During the three years that I have been researching the efficacy of certain natural substances for their heavy metal chelating effects, I have stumbled across a few surprises. For example, the literature was full of testimonials on how chlorella and cilantro are excellent chelators of heavy metals, so we tested both of these in carefully designed, double-blind, placebo-controlled trials. Let's take Chlorella vulgaris as an example—when we tested this alone in pre-post provocation urine and feces tests using 3,000 mg daily, we found no difference between the pre- and post-tests. In other words, chlorella by itself was not eliminating any metals that could be detected by an ICP-MS at parts per billion levels of measurement."

Dr. George Georgiou is my own personal physician who I would trust my life with. He is one of the most distinguished natural medical scientists in the world. He is the doctor to pay attention to when it comes to chelation and detoxification of chemicals and heavy metals. Just to demonstrate what is possible when a caring physician who knows what he is doing can do I present the following story of a patient of his.

> There was a patient who had presented to him with severe mitral valve prolapse—a 35-year-old banker who could not walk more than 20 meters without getting cyanosed. Five cardiologists and surgeons suggested open-heart surgery immediately. He decided against the surgery and went to the DaVinci Clinic in Cyprus to my colleague Dr. George Gorgiou. A central part of the pathology was found to be severe mercury toxicity of the heart tissues—he had previously had removal of 14 amalgams poisoning him in the process that caused severe mitral valve prolapse.
>
> With the correct treatment not only did this man survive but nearly a year later he is now wind surfing 12 miles at competition standard and came in first two weeks ago in a race with two others. He is working a full life, etc. The patient actually has registered with the *Guiness Book of Records* as being the only man on the planet who has been completely healed of severe mitral valve prolapse without open-heart surgery. Dr. Georgiou is a naturopathic doctor whose specialty is chelation of heavy metals. He has done research in Russia creating his own natural chelator called HMD. There are doctors out in the field who understand what is actually going on in cardiac patients and treat them in ways mainstream cardiologists don't even dream of. Basic to this man's treatment was magnesium, iodine and natural chelation with the HMD.

Georgiou said, "When we looked at cilantro we were even more surprised as there was a percentage **decrease** in the post-test compared to baseline. What this means was that the cilantro not only was not eliminating metals but it was actually absorbing more metals than baseline levels. It is very probable that cilantro, which is known as an intracellular chelator, takes metals from the interior of the cell and brings them out into the mesenchyme or extracellular space. As there is nothing to mop them up here, as the osmotic

gradient increases, then you get a rush of metals from the extracellular environment into the intracellular environment. Personally, I have seen patients who were given only cilantro by other practitioners get worse while on this protocol. Based upon the extensive double-blind placebo-controlled trials that I have run with 350 people, I would strictly avoid using cilantro by itself with no other backup." This experience of Dr. Georgiou mirrors the warnings of Dr. Cutler about using cilantro alone or indiscriminately.

Synthetic chelators, especially DMSA and DMPS are actually quite toxic and one can hardly imagine using them for years. And as Dr. Jaquelyn McCandless reminds us, "Oral agents, especially DMSA, can encourage yeast overgrowth." When chelating people with a heavy metal burden, particularly when they are young children or very elderly or have any chronic disease, it is best to mobilize and eliminate the metals gently, slower rather than faster, so that the body can reabsorb less and avoid flooding the body with toxic metals that cause further oxidative stress due to their free radical activity. Dr. Timothy Ray, an oriental medical doctor, speaks elegantly about avoiding the healing crisis that synthetic chelators so often bring. He has a product similar to HMD called NDF and NDF Plus that are also based on chlorella and cilantro.

Dr. George Georgiou and the Russian government invested one million dollars in a double-blind, placebo-controlled trial with 350 people that has shown its ability to safely chelate a variety of metals with natural substances that when combined work as effectively as synthetic chelators. Natural chelation is safe, non-invasive, affordable and available without prescription as it is considered food supplement. In reality there is a tremendous amount of anecdotal evidence with a host of chelation products and substances on the market but very little hard proof. It is far easier to make claims then to prove through heavy investments in studies.

While the orthodox medical community does not recognize the need for chelators many find doctors do. Many practitioners have searched for answers and have found them for their patients and loved ones. I have had the privilege of studying with many of these brilliant doctors. The first one was Dr. Alan Greenberg who created what amounts to a standalone chelation formula named Chelorex. This is a good formula if you want an-everything-in-one-type product that contains a long list of appropriate and well-tested ingredients. Dr. Greenberg put his money where his mouth is and spent hundreds of thousands of dollars testing his formula and it showed very positive for uranium contamination as did Dr. George Georgiou's HMD (heavy metal detox).

Another excellent chelator that works as part of a complete protocol, like the HMD does, is Metal-Free, which was designed and created by Dr. David Minkoff. He developed his unique chelation system to save his wife much the way Dr. Rashid Buttar developed his TD-DMPA to recover his son from autism. Dr. Minkoff wrote to me saying, "We have noticed for the past ten years an increasing number of patients with high uranium levels in the hair or on stool tests. Since uranium is one of the heaviest and densest metals it behaves in the body as lead or mercury would with the added danger of radiation. I have no explanation for the increasing levels and have attributed them to the armor piercing weapons used in the Middle East and the fallout eventually coming back here and getting into the water and vegetation and then into people. We have even seen it in small infants. Metal-Free will increase the levels of uranium in the hair and stool after challenge which shows the increased excretion."

The peptides in Metal-Free bind to heavy metals at several sites on the metal molecule rather than at one site. This creates a non-competitive irreversible bond. The peptide's affinity to metal is strong meaning that when a metal is picked up by Metal-Free it will not lose the particle along its way out of the

body. Metals may be removed in the urine, sweat or fecal matter. Heavier metals, such as lead and mercury and uranium are principally removed through the bowels, which mean the kidneys are protected from the heavy metals.

The cell receptor sites in the body have a lesser affinity to heavy metals as compared to Metal-Free. This means the locations in the body where metal is being stored will release this metal when the product pervades its area. When the metal is released from the receptor site, a molecule in the Metal-Free formula attaches itself onto the metal or toxin, which keeps it soluble and in circulation to be removed.

The formula attaches itself using all three methods of bonding (ionic, covalent and hydrogen) while DMPS uses only ionic. Metal-Free's triple bond prevents the metal from being lost and reattaching itself into another area of the body. The peptides in Metal-Free are nanosized meaning they can easily penetrate skin and mucous membranes.

Stool levels for heavy metals is as follows using the Metal Free formula:

| **Metal** | **Pre-challenge result (ppm)** | **Post-challenge result (ppm)** | **Increase** | **Reference Range (ppm)** |
|---|---|---|---|---|
| Mercury | 0.032 | 0.106 | 330% | < 0.05 |
| Antimony | 0.061 | 0.118 | 190% | < 0.08 |
| Arsenic | 3.87 | 6.6 | 170% | < 0.3 |

| | | | | |
|---|---|---|---|---|
| Beryllium | < dl | 0.025 | 250% | < 0.009 |
| Copper | 40 | 300 | 750% | < 60 |
| Nickel | 8.3 | 18.6 | 220% | < 8 |
| Uranium | 0.066 | 0.302 | 450% | < 0.12 |

Dr. Minkoff said to me that, “Metal-Free, for reasons unknown and we have checked many times, does not bind beneficial minerals and so does not deplete the body while removing the heavy metals.” This is of course a problem when one uses synthetic chelators like DMPS. Metal-Free has been used by many doctors on thousands of patients as have all the chelation products I am presenting.

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[1] According to tests done in the US and Japan perfluorinated chemicals (PFCs) have crept into the blood of almost every living creature in the northern hemisphere. The US Environmental Protection Agency has begun an investigation to determine how a Teflon chemical has found its way into the blood of virtually every American, and polluted drinking water supplies. Perfluorooctanoic acid, a key ingredient in the making of Teflon non-stick coating for cookware can cause testicular, breast, liver and prostate cancers, as well as birth defects. And in 2004 the U.S. Food and Drug Administration has found perchlorate contamination in nearly all of the more than 200 samples of lettuce and milk it collected and tested nationwide. The federal government has not yet established a standard for the perchlorate, but the

Environmental Protection Agency has adopted a provisional recommendation that contamination in drinking water not exceed a range of 4 to 18 parts per billion. Perchlorate, a chemical used in rocket fuel, munitions and fireworks, can affect thyroid gland functions and lead to developmental difficulties in children. The FDA found perchlorate in 217 of 232 samples of milk and lettuce in 15 states. In 104 samples of milk, the average concentration was 5.76 parts per billion. In 128 samples of lettuce, the average concentration was 10.49 parts per billion.

[2] "Most adults in the Netherlands are exposed to approximately 2 picogrammes of toxic equivalents of dioxin-like substances per kilogramme of body weight per day. In general, it may be stated that in excess of 90% of human exposure to PCDDs, PCDFs and dioxin-like PCBs derives from the consumption of animal fats, of which 50% are contained in milk and milk products. Infants are exposed to these substances before birth as well as through the maternal milk," reported the Health Council of the Netherlands. http://www.borstvoeding.com/abon/bf_toxins.html

[3] The Atlantis Mobile Laboratory, just tested in Bermuda, reported that **50 out of 70 newborns surveyed had dangerously high levels of mercury.**Another study led by Mount Sinai School of Medicine in New York, through blood sampling, "found an average of 91 industrial compounds, pollutants, and other chemicals in the blood and urine of nine volunteers. The people tested did not work with chemicals on the job or live near an industrial facility. The body burden of a total of 167 chemicals found in the volunteers, showed 76, which cause cancer in humans or animals, 94, which are toxic to the brain and nervous system, and 79 that cause birth defects or abnormal development. The dangers of exposure to these chemicals in combination have never been studied. Body Burden. National Report on Human Exposure to Environmental Chemicals. http://www.oztoxics.org/cmwg/body%20burden/international.html

[4] Heavy metal poisoning has become an increasingly major health problem, especially since the industrial revolution. Heavy metals are in the water we drink, the foods we eat, the air we breathe, our daily household cleaners, our cookware and our other daily tools. A heavy metal has a density at least 5 times that of water and cannot be metabolized by the body, therefore accumulating in the body. Heavy metal toxicity can cause our mental functions, energy, nervous system, kidneys, lungs and other organ functions to decline.

[5] "Data from the CDC tells us that children are carrying around more phthalates and certain pesticides in their bodies than adults and that woman have more mercury and some other toxic chemicals in their bodies than men. This is very disturbing because children and babies in utero have some of the highest risks of adverse health impacts," said Charlotte Brody, RN, executive director of Health Care Without Harm.

[6] The World Wildlife Fund (WWF) visited 13 locations in England, Northern Ireland, Scotland and Wales in the summer of 2003 and took blood samples from 155 volunteers. Lancaster University analyzed the samples for 78 chemicals. 12 organochlorine pesticides (including DDT and lindane), 45 PCB congeners and 21 polybrominated diphenyl ethers (PBDE) flame retardants, including those found in the commercially traded penta-, octa- and deca-BDEs.
Their FINDINGS:

• Every person tested is contaminated by a cocktail of known highly toxic chemicals which were banned from use in the UK during the 1970s and which continue to pose unknown health risks.
• We found 70 (90 per cent) of the 78 chemicals we looked for in the survey. The highest number of chemicals found in any one person was 49, nearly two thirds (63 per cent) of the chemicals looked for.

• Every person is contaminated by chemicals from each group: organochlorine pesticides, PCBs and PBDEs (flame retardants).
• The highest concentration of any chemical found was 2,557 ng/g (ng/g. parts per billion) of the DDT metabolite pp.-DDE. The use of DDT was banned in the UK more than 20 years ago.
• The most frequently detected chemicals were PCB congeners 99 and 118 and the DDT metabolite pp.-DDE, which were detected in all but one of the 155 volunteers.
• Ten chemicals were found in more than 95 per cent of volunteers

[7] Journal of Advancement in Medicine Volume 2, Numbers 1/2, Spring/Summer 1989 Ninety Percent Reduction in Cancer Mortality after Chelation Therapy With EDTA Walter Blumer, M.D. and Elmer Cranton, M.D.

[8] Radiat Res. 1986 Sep;107(3):296-306. Reducing the cancer risk of 239Pu by chelation therapy. Jones CW, Mays CW, Taylor GN, Lloyd RD, Packer SM.
http://www.ncbi.nlm.nih.gov/sites/entrez?db=pubmed&uid=3749464&cmd=showdetailview&indexed=google

[9] http://www.gordonresearch.com/answers/chlorella_and_cilantro.html

[10] The earliest types of chelation involved synthetic agents such as BAL, penicillamin e and EDTA administered intravenously for acute toxic metal poisoning. Subsequently, DMSA and DMPS were utilized, first intravenously and later orally and now even transdermally. Chelation therapy provides a relatively safe, effective, and inexpensive alternative to the drugs and surgery often used for circulatory disorders such as coronary heart disease, carotid (neck artery) stenosi (blockage), and leg artery stenosis (blockage). Chelation is a process by which toxic substances in the body, particularly heavy metals can be excreted safely. However, numerous

negative side effects are associated with each of these chelators (with the exception of EDTA which is ‘relatively’ safe ) including allergic reactions involving the skin and mucous membranes (itching, exanthema or rash), as well as occasional cases of Stevens-Johnson Syndrome or erythema exudative multiforme.(11). Other side effects include nausea, headache, muscle aching, changes in taste, severe malaise, dizziness, numbness, insomnia, diarrhea, weight loss, extreme fatigue, leg cramps, cardiac arrhythmia, liver and kidney damage, abdominal pain, anxiety, severe restlessness, mental changes, tremors, inability to concentrate, poor memory, impaired equilibrium, chemical sensitivities and tinnitus. (12). Studies have shown up to 30% of patients have severe negative side effects as a result of these synthetic chelating agents, which may develop after a single dose. For warnings against DMPS all one has to do is go to the DMPS Backfire website.

[11] R. A. Goyer, M. G. Cherian, M. M. Jones, and J. R. Reigart. Role of Chelating Agents for Prrevention, Intervention, and Treatment of Exposures to Toxic Metals. Environmental Health Perspectives Volume 103, Number 11, November 1995

[12] Jones MM, Cherian MG. The search for chelate antagonists for chronic cadmium intoxication. *Toxicology* 1990;62:1-25.

[13] Korkina, L.G., et al. Antioxidant therapy in children affected by irradiation from the Chernobyl nuclear accident. Biochem. Soc. Trans., Vol. 21, 1993, p. 314S

[14] Gray AM, Flatt PR. Insulin-releasing and insulin-like activity of the traditional anti- diabetic plant Coriandrum sativum (coriander). Br J Nutr 1999 Mar;81(3):203-9.

[15] Chithra V, Leelamma S. Coriandrum sativum changes the levels of lipid peroxides and activity of antioxidant enzymes in experimental animals. Indian J Biochem Biophys 1999 Feb;36(1):59-61.

[16] Delaquis PJ, Stanich K, Girard B et al. Antimicrobial activity of individual and mixed fractions of dill, cilantro, coriander and eucalyptus essential oils. Int J Food Microbiol. 2002 Mar 25;74(1-2):101-9.

[17] Rotkovska D, Vacek A, Bartonickova A. The radioprotective effects of aqueous extract from chlorococcal freshwater algae (Chlorella kessieri) in mice and rats.

[18] Kumar S et al. Inhibition of radiation-induced DNA damage in plasmid pBR322 by chlorophyllin and possible mechanism(s) of action. Mutation Research. March 1999; 425(1):71-9.

[19] Qishen, P. et al. Enhancement of endonuclease activity and repair DNA synthesis by polysaccharide of spirulina. 1988. Pub. in Chinese Genetics Journal, 15 (5) 374-381.

[20]http://www.mercola.com/chlorella/research.htm

[21] http://mercuryexposure.org/index.php?article_id=648

# Protocol Components


Below is an updated version of my protocol components. For the first time I bring onto one page not only an outline of the protocol but links to the companies that sell the medicinals and medical devices.

The Natural Allopathic Protocol is powerful and at the same time extraordinarily safe because nutritional medicines, not pharmaceuticals, are employed. They are water-based highly concentrated nutritional medicines, not chemical, and the supreme ones areoxygen, magnesium chloride, magnesium bicarbonate, sodium bicarbonate (baking soda), selenium, sulfur, iodine and glutathione.

Vitamin C can be added to that list but unfortunately you mayhave to force doctors and hospitals with legal process to administer it intravenously when high dosages are needed. Court orders are effective in such cases and have been known to save lives because vitamin C is that useful in a medical pinch.

Every one of these medicines can be used to great advantage not only for emergency situations but also for cancer, diabetes, the flu, neurological disorders, heart disease and stroke. Few doctors or patients know how these medicinals can be used at home safely to treat ourselves and our loved ones. When used in combination with each other they constitute a new form of medicine that is powerful yet easy to learn.

Anyone who sees and comprehends the potential medical horsepower of the full protocol will indeed realize what a powerful approach we have for giving everyone the best chanceat not having to die from cancer. There are many ways to treat cancer, and combining the strongest and most necessary medicinals yields the best and most rational approach.

# Anti-Inflammatory Oxygen Therapy

At the top of the protocol is the Tiger Tank of the medical world, which thrusts the entire protocol beyond anything seen or available in the world of medicine, health, anti-aging, sports and beauty. The world of alkalinity and pH changed with the discovery that the **most important factor in creating proper pH is increasing oxygen.**

In my book *Anti-Inflammatory Oxygen Therapy* I will introduce a new way of injecting massive amounts of oxygen into the cells, which will profoundly affect them. In fifteen minutes one can blow the cells doors down allowing them to detoxify as they gulp down high levels of oxygen. The breakthrough is that it actually raises the arterial pressure back to youthful levels.

I have discovered a technique that offers much higher therapeutic results than an expensive, inconvenient hyperbaric chamber and can be done in your bedroom. A person needs an oxygen concentrator, exercise bicycle or, rebounder and a new mask kit with a reservoir that stores up enough O2, before you even begin to use it, to supply the correct amount of oxygen needed for one fifteen minute session. It offers a trip to cellular heaven.

This therapy is like putting out a candle flame with your fingers. In the first 15 minute session (or let's say first four sessions) the inflammation in the capillaries will be snubbed out and their toxins will be cleared. Oxygen will rush into the cells bringing the energy and the physiological processes necessary to heal.

Oxygen is all around us but hardly anyone gets enough. It is a paradox that few understand. But it is the reason that sodium bicarbonate is such a

wonderful medicine. It gives one instant access to more oxygen because the bicarbonates/CO2 dilate the blood vessels ensuring more blood and oxygen get delivered.

1. **Anti-Inflammatory Oxygen Therapy –** Live O2

2. **Bicarbonate/ Carbon Dioxide Medicine** (sodium and potassium bicarbonates)

3. **Magnesium Medicine** – Magnesium Oil, Magnesium Bicarbonate Water

4. **Iodine** (with possible inclusion of natural thyroid hormone)

5. **Liquid Selenium, vitamin E**

6. **Glutathione** (sublingual, nebulization, suppositories)

7. **Cannabidiol (CBD)** (legalized medical marijuana without THC) (THC where it is legal)

8. **Far-InfraredBiomats** (treatments for cancer and pain)

9. **Breathing retraining** (slowing the breathing down, cancer treatment, stress reduction)

10. **Tears of the Melting Heart** (connecting directly with one's own vulnerability)

11. **Vitamin C** (high ORAC antioxidant therapy)

12. **Sunexposure, vitamin D**

13. **Bioresonance Therapy** (frequency medicine fromDeta Elis)

14. **Water** (medicinal quality and full hydration)

15. **Sexual Healing and Health**

16. **Nutrition:** Super foods, spirulina, hydrochloric acid, natural chelation, enzyme therapy, vitamins A & B, juice fasting, aloe vera, organic sulfur (MSM), alpha-lipoic acid, sodium thiosulfate, seawater

17. **Intestinal health** (probiotics, enemas, colonics, clay, etc.)

18. **Exercise, yoga** (Social support, therapeutic support, therapeutic massage, spiritual processing, abdominal shiatsu)

19. **Ayahuasca,** Mistletoe (Viscumalbum)

The World Health Organization is on record saying that illness and deaths from cancer will increase by more than 25 percent over the next decade. Look at the above protocol and contemplate that just 200 mcg of selenium will decrease your chances of dying from cancer by 50%. In the Natural Allopathic Protocol for cancer we give up to 100 times that dosage, which is safe to do as long as the right type of selenium is used. Much safer than aspirin!