Do you know anyone who suffers from headaches, fatigue, insomnia, depression, skin rashes, spaciness or detachment, learning disorders or premenstrual syndrome? These can be symptoms of a copper imbalance. It is an extremely common nutritional imbalance. It is often overlooked, in part because it is not always simple to detect.

Copper is an essential trace mineral that is vitally important for both physical and mental health. It has been studied for years, including at government laboratories. However, its importance for health is still largely unappreciated. The following article is an introduction to the large subject of copper imbalance. The author is deeply indebted to Dr. Paul C. Eck, an avid copper researcher.

COPPER'S ROLE IN THE BODY

Copper has a number of important functions in the human body. The problem usually occurs when there is too much of it in the soft tissues of the body. Here are some of the important roles of copper:

1. **Bones and connective tissue.** Copper is required to fix calcium in the bones and to build and repair all connective tissue. This includes the tendons, ligaments, skin, hair, nails, arteries, veins and a few other tissues. Imbalances can contribute to osteoporosis and bone spurs. Others are most conditions of the skin, hair and nails. Others include most cardiovascular problems and many skeletal and structural imbalances as well.

2. **Energy production in the cells.** Copper is needed in the final steps of the Krebs energy cycle called the electron transport system. This is where most of our cellular energy is produced. Any problem here causes fatigue, depression and other imbalances related to low energy.

3. **Immune Response.** Copper must remain in balance with zinc. When imbalances occur, one is more prone to all infections, in particular fungal and yeast infections that are so common today. For example, most people have some intestinal yeast if they eat sugars and most people have
chronic sinus infections if they have common symptoms such as post-nasal drip and others.

4. The glandular system, particularly the thyroid and adrenal glands. The thyroid gland is extremely sensitive to copper. In part this is due to its nature and how easily it is influenced by the sympathetic nervous system. Common conditions seen with copper imbalance include hypothyroidism and even hyperthyroidism of a particular type that is very common that I all secondary hyperthyroidism. Grave’s disease usually due to stress, copper imbalance and often mercury as well. Anyone with a diagnosis of Grave’s disease or hyperthyroidism should have a hair analysis performed at a lab that does not wash the hair and properly interpreted.

Most often, the problem goes away with a properly designed nutritional balancing program. Reducing all stress and balancing the body chemistry are both required to resolve the condition naturally in my experience. Drugs may be needed temporarily to control the symptoms. Surgery or radioactive iodine treatment and too drastic and not needed, in my experience so far.

5. Reproductive system. Copper is closely related to estrogen metabolism, and is required for women's fertility and to maintain pregnancy. Imbalance can cause every conceivable female organ-related difficulty such as premenstrual syndrome, ovarian cysts, infertility, miscarriages, sexual dysfunctions and more. It affects men less than women in this area, but it may affect men's potency and sexual drive as well as that of women.

6. Nervous system. Copper stimulates production of the neurotransmitters epinephrine, norepinephrine and dopamine. It is also required for monoamine oxidase, an enzyme related to serotonin production. As a result, copper is involved deeply with all aspects of the central nervous system. Copper imbalances are highly associated with most psychological, emotional and often neurological conditions. These include memory loss, especially in young people, depression, anxiety, bipolar disorder, schizophrenia and others discussed below.

THREE COPPER IMBALANCES

It is possible for a person to become copper-toxic, copper-deficient or to have a condition called biounavailable copper. The first two of these are fairly
easy to understand. Copper is found in certain foods in greater quantity such as meats, eggs, poultry, nuts, seeds and grains. Other foods are quite low in copper such as fruits, in particular. Others that tend to be low are vegetables and some nuts and grains.

Refined food diets are low in copper in many cases. Also, some, especially children, need much more copper than others. This has to do mainly with their metabolic type or body chemistry. Fast oxidizers need more copper while slow oxidizers often have too much. Those who we find are fast oxidizers require a lot more copper. This is a technical area, but it is an observation that holds true in most all cases.

Slow oxidizers often have excessive copper in their bodies. Thus they are far more prone to copper imbalance of this nature. To read more about this technical aspect of copper that is very important for practitioners, read Fast, Slow and Mixed Oxidation on this website.

What is biounavailable copper? In this very common situation, copper is present in excess in the body, but it cannot be utilized well. The reason it occurs is that minerals such as copper must be bound and transported within the body.

Biounavailability often occurs due to a deficiency of the copper-binding proteins, ceruloplasmin or metallothionein. Without sufficient binding proteins, unbound copper may circulate freely in the body, where it may accumulate primarily in the liver, brain and female organs.

When copper is biounavailable, one may have symptoms of both copper toxicity and copper deficiency. Copper toxicity and biounavailability are seen most often. These occur almost always in people who are in the state called slow oxidation. As stated earlier, copper deficiency occurs most often in people who are in the state called fast oxidation. This article uses the words copper imbalance when more than one of the three types of copper problems are possible.

**SYMPTOMS OF COPPER IMBALANCE**

Each mineral has “target organs” where it tends to build up. The places where copper accumulates are the liver first, then the brain and the reproductive organs. Copper may affect any organ or system of the body. However, it usually affects about four or five major systems of the body. These are the nervous system, the female and male reproductive system,
connective tissues such as hair, skin and nails and organs like the liver. Let us discuss each of these in detail.

COPPER AND THE NERVOUS SYSTEM

Dr. Paul Eck called copper the “emotional mineral”. The reason for this is that copper and imbalances related to it have such a profound impact on the central nervous system. The psychiatric implications of copper imbalance are tremendous, even if copper did not affect other body systems. We regularly work with every known psychological and psychiatric condition and most of these individuals improve when copper is balanced in the body.

The overall effect of copper appears to be to enhance all emotional states in a human being. Dr. Eck felt that copper stimulates the diencephalons or old brain. Zinc is needed for the new brain or cortex. This brain is associated with the “higher emotions” such as reasoning, compassion and love.

When an imbalance between these exists, the person tends to revert to the use of the old brain, also called the animal brain or emotional brain. This can lead to a tendency for every possible emotional condition affecting human beings.

Nervous system dysfunctions. We have seen improvement in 20 or 30 different mental and emotional conditions ranging from moderate to suicidal depression and anxiety to violence, obsessive-compulsive disorder, bipolar disorder, phobias, Tourette’s syndrome and schizophrenia. Others that respond amazingly well to balancing copper include epilepsy, ADD, ADHD, autism, delayed mental or emotional development and many others.

Panic attacks, migraines, spaciness, brain fog, mind racing, insomnia, nervousness, irritability and others also often involve copper. On this website are numerous articles that explore these conditions and often the relation to copper in greater detail.

Copper and world violence. Copper tends to enhance all the emotions, so violence can occur far more in those with copper excess – a common problem today in many parts of the world.

America is actually better in this regard because we can afford more beef and other meats. These foods are among the highest foods in zinc that balances copper in the body. Nations that cannot afford much meat may have worse copper imbalance, though this is not necessarily the case.
COPPER AND INFECTIONS

Infections, especially sinus and other fungal infections. Copper imbalance is also very much related to all fungal infections, in particular. These often include common sinus conditions that give few symptoms such as a stuffy nose or post-nasal drip in millions of people. Copper is also involved in acute and chronic candida albicans in the intestines and elsewhere.

Copper is critical for aerobic metabolism, so a copper imbalances allows fungal organisms to thrive in the body and must be corrected to reduce these infections, in most cases. This is why some people simply cannot get rid of candida albicans or chronic yeast, parasitic infections, sinus infections and others.

Copper is also linked to many other types of infections because zinc is needed for the proper immune response. Elevated or biounavailable copper often goes along with a low tissue zinc level, even though blood tests may be normal. Even a hair analysis is often normal.

One must always look for hidden copper signs on the hair mineral analysis for this reason. This is a great key to identifying copper imbalance today, as there are few other tests that may show evidence of it.

COPPER AND YEAST INFECTIONS

Our bodies use copper to help control the growth of yeast. This may be because copper favors aerobic metabolism, the type of cellular metabolism that human beings should have. More specifically, copper, along with iron, is required for the electron transport system, where most of our cellular energy is produced.

In contrast, yeasts and fungi are anaerobic. This means they ferment sugars for their energy production. Thus, when copper is not available to the body in sufficient quantity, aerobic or normal oxygen-using metabolism is crippled to some degree, while anaerobic metabolism or the fermentation of sugars flourishes in such an environment.

For this reason, for example, copper sulfate is often sprayed on crops to kill yeast and fungus. Copper is also used in some swimming pools and hot tubs to control yeast and bacterial growth.

COPPER AND THE REPRODUCTIVE SYSTEM
Women tend to have higher levels of copper than men. Women also have more symptoms related to copper imbalance.

**Premenstrual syndrome.** The symptoms of PMS mimic the symptoms of copper imbalance. This occurs because estrogen levels and copper levels correlate well and both increase before the menstrual period. For this reason, taking extra zinc and vitamin B6 before the menstrual period can often lower copper enough to reduce the symptoms of premenstrual tension for this reason. At times, however, the cause of PMS is more complex. For more information about this, however, read [Premenstrual Syndrome](#) on this website.

Other symptoms related to the sexual organs include amenorrhea, dysmenorrhea, fibroid tumors, ovarian cysts, pelvic inflammatory disease, fibrocystic breast disease, endometriosis and possibly pelvic inflammatory disease.

**Miscarriages and infertility.** Copper required to hold onto a pregnancy. Studies indicate that women with low estrogen and often low copper have more miscarriages. This is important for some women to know. Correcting the copper imbalance can help immensely with normal pregnancy. Infertility, on the other hand, is more common among women with elevated or biounavailable copper. This may be due, in part, to weak adrenals that, in turn, give rise to copper imbalance. Fertility problems, however, can be due to many factors.

**Low libido in women and men.** This is also linked to copper imbalance. Since copper raises the hair and tissue calcium level, women, in particular, with very high copper levels or hidden copper on their hair analyses, often lose interest in sex. Their energy declines and the body can become a bit “numb” because excessive tissue calcium tends to render the nervous system less sensitive.

Low sexual interest in men is also related to copper, which interferes with zinc metabolism in many instances. Men’s sperm and fluids are very rich in zinc. If they become depleted, male fertility and male sexual performance will always suffer. Most of the time, these problems are easy to overcome by correcting the levels of zinc and copper in the body using nutritional balancing methods.

Estrogen dominance and copper. Copper-toxic women are often estrogen dominant. This means they have more estrogen in their bodies, proportionately, than they have progesterone. However, we rarely use progesterone therapy. In fact, even natural or bio-identical progesterone therapy may be poorly tolerated in copper-toxic women and even men.
It also tends to be a little toxic, so we avoid it if at all possible. Instead, if we balance the copper, the symptoms of estrogen dominance such as premenstrual tension, vanish quickly and completely. Biounavailable copper and progesterone and body shape. Other women, usually those with biounavailable copper are low in estrogen. Their bodies are often more linear in shape and less “curvy”. Of course, copper is not the only factor affecting hormones. Some pesticides, for example, mimic the effects of estrogen and can affect the hormone balance.

**Men and copper imbalance.** Boys and men are far more affected when copper is out of balance than are women in many cases. Men should be zinc dominance. While most women have more copper in their bodies, men, by contrast, should be zinc-dominant. Zinc, a 'masculine' element, balances copper in the body and is essential for male reproductive activity.

Among the boys, symptoms that are most prominent are growth and developmental delay, ADD, ADHD, autism and related brain disorders. Among men, symptoms of copper toxicity, usually, include prostate enlargement, prostate infections and to some degree prostate cancer. Others include ED or erectile dysfunction that used to be called impotence, depression, anxiety and even violence. Others are testicular pain and testicular cancer in some cases.

Secondary sex characteristics and copper. Secondary sex characteristics are aspects of sexuality that are more mental and emotional than they are physical. For example, some men just love sex and women, while others are less sexual. The differences have to do with hormone levels, and often with the copper imbalance. Homosexuality, for example, is often related to copper levels for this reason. This is true for women as well as for men.

Birth control pills and copper IUDs (intra-uterine devices for birth control). These two birth control methods definitely affect copper metabolism in the body. While some women can handle them, others experience depression, anxiety, personality shifts and many horrible side effects from them, either acute or chronic.

This aspect of women’s “sexual revolution” has probably caused more disasters in women’s health than any other. Developing cancer, for example, can take years so women do not understand the dangers. The truth is, even if a woman quits taking the pill, for example, her risk of cancer remains high her entire lifetime.

Excessive sexual desire or sexual dysfunctions in women. Another curious effect of copper excess in women can be excessive sexual interest.
This has something to do with the estrogen levels and liver toxicity due to the copper imbalance. Other sexual difficulties in both men and women such as pain on intercourse, vaginal dryness and others may have to do with copper imbalance as well.

**COPPER AND CONNECTIVE TISSUE**

Copper is required for collagen formation. Copper deficiency is association with atherosclerosis and other cardiovascular conditions. Excess copper or biounavailable copper often causes connective tissue problems, interfering with the disulfide bonds in connective tissue.

**Copper and vitamin C.** Copper and vitamin C are direct antagonists. This means that they oppose each other in the body. This is one reason many people feel better taking a lot of vitamin C. Copper tends to oxidize and destroy vitamin C in the body. Meanwhile, vitamin C chelates or removes copper from the body. This requires a dose of vitamin C of at least about 500 mg daily, far higher than the minimum daily requirement of about 60 mg. Many readers know that vitamin C is critical for connective tissues. One of the prominent symptoms of scurvy, or vitamin C deficiency, is bleeding, such as bleeding gums. This is due to connective tissue weakness.

Thus, a copper excess can easily lead to a deficiency of vitamin C in the body and with it many symptoms of vitamin C deficiency. Oddly, however, a copper deficiency also causes connective tissue problems, especially in the heart and cardiovascular system where it is associated with a tendency for aneurisms and atherosclerosis.

**Symptoms.** Symptoms associated with connective tissue and joints include arthritis, osteoporosis, stretch marks and joint problems of other kinds. Others include scoliosis, kyphosis (bad posture) and many of the conditions of the skin, hair and fingernails and toenails. Others are some diseases the muscles, ligaments and tendons.

Among the most common, for example, are hair loss, especially in women, tendonitis, back problems due to muscle weakness and others.

**OTHER IMPORTANT COPPER-RELATED CONDITIONS**

**COPPER AND ADDICTION**

Addiction may be related to copper and the adrenals. The use of stimulant drugs, loud music, sex and even just exercise stimulates the
adrenals. This helps keep copper available and makes one feel better. Without this stimulation, unbound copper builds up quickly in the body and one may feel fatigued, moody or depressed. These are common copper imbalance symptoms.

This can easily result in a compulsive or addictive need for some kind of adrenal stimulant such as more exercise, more caffeine or even cocaine. In other words, part of the appeal of cocaine, caffeine, amphetamines or other stimulants may be their ability to help lower copper temporarily by stimulating the adrenals.

**Relation of cadmium to copper.** Dr. Paul C. Eck stated that cadmium found in marijuana and cigarettes drives copper back into storage. Therefore, these drugs may also make a person feel better temporarily by affecting the copper balance.

**THE COPPER PERSONALITY**

There exists a high copper personality. Positive traits include a warm, caring, sensitive, emotional nature, often with artistic orientation and a childlike quality. Often high-copper people are young-looking. Many traditionally feminine traits are associated with copper such as softness, gentleness and intuitiveness. This may relate to the qualities of metallic copper, which include softness, malleability and an excellent conductor of electricity.

When the personality is not fully integrated or the copper becomes too high, negative traits show up. These include spaciness, racing thoughts, living in a dream world and naiveté. Other qualities include childishness, excessive emotions, sentimentality, a tendency to depression, fearfulness, hidden anger and resentments, phobias, psychosis and violence. Artists, inventors and other high-copper types often "live on the edge", in part due to their high copper level.

The copper personality tends to accumulate copper easily. Copper can function as a psychological defense mechanism. It causes one to detach slightly from reality. This provides relief from stress for the sensitive individual. It works well as long as the copper does not become too high. Very high copper can cause a psychotic break from reality, a type of schizophrenia.

**Case History of schizophrenia.** An 18-year old schizophrenic patient had a hair copper level of 41 mg% (normal is 2.5 mg%). She hallucinated and attempted suicide twice while in the Scottsdale Camelback Mental Hospital. When her copper was brought back into the normal range with a
nutritional balancing program, her symptoms disappeared and she has remained well ever since.

**Copper and other food cravings.** Copper-toxic individuals may also be drawn to sweets or salty foods due to adrenal insufficiency. Some sea salt is often beneficial. Sweets, including fruit juices, provide a temporary lift but may worsen the condition.

**Anorexia and copper.** Another common symptom is a lack of appetite or some degree of anorexia. Excessive copper tends to shut off the appetite, whereas zinc is required for the appestat mechanism in the brain. Zinc is also needed for an acute sense of taste and smell. The anorexia situation ends to be the worst in teenagers. For one thing, they are under more stress than younger children in many cases. Also, their diets are often low in quality proteins such as meats that are rich in zinc. Instead, they eat a lot of carbohydrates such as pizza that actually interfere with zinc uptake in the intestines. This combination can be lethal for some teenage girls, in particular.

**Anemia.** Copper is needed for iron metabolism. Therefore, an important cause of anemia, especially in women, is a copper imbalance. On a blood test, it looks exactly like an iron-deficient anemia but it will not respond very well to the administration of supplemental iron. The copper imbalance must be corrected and then the anemia vanishes quickly.

**COPPER AND CANCER**

Copper imbalance impairs the immune system. Research is underway investigating the role of excess copper in tumor angiogenesis. Elevated copper on a hair mineral analysis, when the level is above about 12 mg% and persists at this level, is often related to a tendency for infections and even cancer.

Cancer is associated with all three copper imbalances – deficiency, excess and biounavailable copper, which is a combination of the other two. This is one reason for the cancer epidemic we experience today. The important topic of cancer and natural approaches to it, is discussed in other articles on this website. Here are just a few ways cancer is linked to copper imbalance:

1. The levels of estrogen and copper have a direct relationships. This means that as copper rises, often estrogen rises, too. This is one reason many women and even men are so-called “estrogen dominant” today.
Really, they have too much copper and cannot detoxify estrogen well enough. This imbalance is tied to cancer because estrogen is a potent carcinogen. It is the reason we never recommend supplementing even natural estrogen unless it is done with extreme caution. It is rarely needed if the body chemistry can be balanced using nutritional balancing science.

2. Copper causes liver toxicity when it is in excess or when it is not available. The liver is important to protect to avoid and to control cancer in every case, according to Dr. Max Gerson, MD, a pioneer in non-toxic cancer therapies.

3. Copper alters thyroid gland activity in most cases. This can also contribute to cancer and many other illnesses such as Grave’s disease, for example.

4. Copper imbalance is associated with fungal and other infections. These can often be at the root of a cancer situation. For example, it is known that root canal-filled teeth can give off bacterial toxins that help predispose the body to cancers of certain kinds.

5. Copper blocks anerobic metabolism when it is in balance. This can help prevent cancer when copper is in balance, but not when it is too high or too low in the body.

6. Copper in excess often interferes with zinc metabolism. Zinc is required for the immune response and for over 100 enzymes in the body from helping digestion to protecting the skin from invasion from infections and even some skin cancers.

COPPER AND CHILDREN

Copper has an incredible impact on children, particularly young ones. Common conditions such as ear infections, skin rashes and dandruff usually involve an imbalance between copper and zinc in children. Others in which we commonly find copper imbalance, along with other metal imbalances are learning and developmental disorders, colic, ADD and ADHD, sleep problems and childhood cancers.

This has to do with the extreme importance of copper in childhood development, especially of the developing nervous and immune systems. Children are born with high copper levels. Young children are very sensitive and intuitive. They often lose some of their sensitivity as their copper levels diminish around age four. Today, however, persistently elevated copper levels in children are commonly seen. At times, the copper is hidden.
Why children have copper imbalances. Copper imbalance problems for a child often begin when still in the womb. High-copper mothers pass on excessive copper (and often low zinc) to the fetus through the placenta. This is called congenital, rather than genetic high copper. It can be prevented by correcting one's copper metabolism before becoming pregnant. It can also be corrected after a baby is born, though this takes much more effort in most cases.

Once a baby is born, copper imbalance can develop as well. Inadequate zinc or high copper in the breast milk, in fact, is one reason children stop breastfeeding. Children’s diets are usually not great and often atrocious. Stress in the home or at school is another critical factor in sensitive children that can literally push them over the edge. Stress of any kind can lower zinc and raise the copper level.

Vaccination and the use of prescription drugs can aggravate a child's copper imbalance, usually by depleting the zinc level. Copper imbalance in children is associated with delayed development, attention deficit disorder, anti-social and hyperactive behavior, autism, learning difficulties and infections such as ear infections.

Beware of fast oxidizing young children. Do not restrict their copper. Most of them absolutely require extra copper. This is because they are fast oxidizers. This body type must have extra copper or they will exhibit violence, sleep problems or anti-social behavior such as ADD or ADHD. So beware, since avoiding copper will make these children decidedly worse.

COPPER AND THE CARDIOVASCULAR SYSTEM

Low or biounavailable copper is associated with atherosclerosis and a tendency for aneurisms as well. The arteriosclerosis or atherosclerosis is secondary, usually, to weakened arterial walls. The body tries to reinforce inflamed or weakened arteries by coating them on the inside with calcium or fatty plaques. High or biounavailable copper is associated with mitral valve prolapse and other cardiovascular problems as well. It is not directly associated with high blood pressure, but may be secondarily due to the reasons for arteriosclerosis explained above.

COPPER AND SOCIETY

Is it possible that our mineral balance affects our attitudes? Copper is called the 'love' mineral, the 'intuitive' mineral, and a 'feminine' mineral
because it is so important for the female reproductive system. Its level generally parallels that of estrogen. While many factors influence our attitudes and values, the rise in tissue copper levels in both men and women in the past fifty years parallels renewed interest in women’s issues, in religious and intuitive knowledge, and other “new age” and other movements.

Copper may promote or encourage these interests and activities by causing mild tissue catabolism that breaks down old tissues in the body, thus making way for the development of other types of tissues in the body. This sounds very vague, but apparently copper has this type of effect.

**VEGETARIAN DIETS AND THE COPPER BALANCE**

Excess copper interferes with zinc, a mineral needed to make digestive enzymes. Too much copper also impairs thyroid activity and the functioning of the liver. If severe enough, a person will become an obligatory vegetarian. This means they are no longer able to digest meat very well. Conversely, if one becomes a vegetarian for other reasons, most likely one's copper level will increase. Vegetarian proteins are higher in copper, and lower in zinc.

At times, the vegetarian orientation is health-producing. In many people, however, restricted diets do not work well. Fatigue, spaciness and other symptoms begin to appear. Many people, including the author, felt they were becoming more “spiritual” on a vegetarian diet, when in fact it was just copper poisoning! The taste for meat often returns when copper is brought into better balance.

Some people with high copper dislike all protein. They crave high-carbohydrate diets. Protein feels heavy or causes other symptoms. Eating protein stimulates glandular activity. This releases stored copper, which causes the symptoms. However, these individuals usually need to eat protein. The symptoms will eventually disappear.

**ADRENAL BURNOUT OR HYPOFUNCTION**

Adrenal burnout, characterized by chronic fatigue and other symptoms, is often related to copper imbalance. Although correcting emotional and other factors are necessary, improving the copper imbalance, supporting the adrenals and releasing fearful thoughts go hand in hand to restore optimum health. [Click here for more information about adrenal burnout syndrome.](#)

**SOURCES OF COPPER**
- Congenital high copper (children born with high copper or low zinc). Today, many children are born with excessive tissue copper. It is passed from high-copper mothers to their children through the placenta. Stress from any cause contributes to copper imbalance. Stress depletes the adrenal glands and lowers the zinc level in the body.

- Zinc deficiency. Whenever zinc becomes deficient, copper tends to accumulate. Our soil is low in zinc. Refined sugar, white rice and white flour have been stripped of their zinc. The trend toward vegetarianism reduces zinc in the diet, since red meat is the best dietary source of zinc.

- High-copper diet. Copper is found in many foods, particularly vegetarian proteins such as nuts, beans, seeds and grains. Meats contain copper, but it is balanced by zinc which competes for its absorption. Chocolate is high in copper. A desire for copper may help explain chocolate cravings.

- Copper pipes. Another source of copper is drinking water that remained in copper water pipes, or copper added to your water supply. During a recent dry summer, several Oregon cities added copper sulfate to their reservoirs to reduce algae growth. Accident and disease rates increased.

- Mineral deficiencies. Deficiencies of manganese, iron, selenium, chromium and other minerals can contribute to copper accumulation.

- Vitamin deficiencies. These include deficiencies in the diet of B-vitamins and vitamin C.

- Adrenal weakness. Adrenal hormones help stimulate the liver to produce ceruloplasmin, a major copper binding protein in the body, along with metallothionein.

- Liver and transporter problems. A sluggish liver or weak adrenal glands may cause copper to build up in the tissues. Other problems with metallothionein or ceruloplasmin often contribute to copper toxicity or biounavailability.

- Other sources of copper are copper cookware, dental materials, vitamin pills, fungicides and pesticides residues on food, copper intra-uterine devices and birth control pills. Hot tubs and pools may increase hair copper levels. Unfortunately, people who swim in pools or use hot tubs a lot can increase their copper levels for this reason. Hot tubs and pools are also breeding grounds for so many micro-organisms that are not killed by the chemicals that we don’t recommend either for optimum health. Much better to avoid all public pools and hot tubs and/or use about 250 parts per million of hydrogen peroxide to sanitize your hot tub. The web has information about how to do this. It works.
When copper is out of balance, our bodies cannot control yeast overgrowth for these reasons. This often lead to chronic candida albicans infections that are resistant to treatment.

**Case history.** Mrs. Robinson and her 6-month-old, breast-fed baby both began to experience hair loss. The cause was a daily prenatal vitamin containing 4 milligrams of copper, far too much for this high-copper mother. As soon as they stopped using

**DETECTING COPPER IMBALANCE**

Blood, urine, feces and hair testing are used to detect copper imbalance. Liver biopsy is also used on rare occasions. Let us examine each method from my experience. Blood serum or feces copper levels are not considered a reliable way to detect copper imbalance because copper may not accumulate in the blood or the feces. Serum ceruloplasmin is not much more accurate, and still often misses copper imbalance. Urine testing is also inaccurate because copper is stored deep in organs such as the brain and the liver.

**Urine challenge testing.** With this procedure, one first gives a dose of penicillamine and then collects the urine for 24 hours. However, this still will miss much copper that is stored deep within body organs and tissues. Chelating agents primarily remove minerals from the blood and arterial walls. A liver biopsy for copper can be very accurate. However, it is costly, invasive and in my experience unnecessary. However, it is used rarely to assess Wilson’s disease (a rare inherited copper storage disease).

Hair testing, in my experience, is far and away the best method to detect copper imbalances. It can detect not only copper excess and copper deficiency, but copper biounavailability, too. Hair is not a primary site of copper deposition. However, if one knows how to interpret the hair analysis, one can often rapidly and non-invasively assess copper status.

**COPPER ASSESSMENT VIA HAIR MINERAL ANALYSIS**

An ideal range of copper in the hair is about 1-2.5 mg% or about 10-25 ppm. Any number higher than this tends to indicate excessive copper in the hair tissue and, by extension, in other tissues of the body. Swimming in pools. Rarely swimming in pools regularly or even regular use of a hot tub increases the copper level in the hair. This is due to the use of copper
compounds added to the water as disinfectants. These, of course, are best avoided if one has symptoms of elevated copper.

Note that the hair must not be washed at the laboratory for accurate results. Only two labs in the United States, Analytical Research Labs and Trace elements, Inc., do not wash the hair at the lab, as far as I am aware. See the article on this site entitled **Introduction To Hair Mineral Analysis** concerning this important aspect of hair analysis procedure. Avoiding washing of the hair at the laboratory is also even more important to assess copper indirectly, our next topic below.

**Indirect copper indicators.** *The copper level on a hair mineral analysis is NOT the best way to assess copper status.* The reason is that copper does not often accumulate in the hair tissue and too many other factors can skew the reading. In fact, copper assessment is quite complex.

**Assessing Low Copper.** A need for copper supplements does not mean the entire body is low in copper. It just means that some is needed to balance the chemistry at this time. Following are hair indicators for a need for copper supplementation:

1) A fast oxidation rate. This is identified for you on tests from Analytical Research Laboratories. The criteria are a calcium/potassium ratio less than 4:1 and a sodium/magnesium ratio greater than 4.17;1.

2) A hair sodium/potassium ratio less than about 2.5:1. Copper may be low or is more often biounavailable. In this condition, one must give some copper, even if the absolute copper level on the test is high and even if the patient has symptoms of copper toxicity. This is difficult to understand, but it works in practice and is very important to assist some patients. I have written more about this in other articles on this website, such as **A Low Sodium/Potassium Ratio**.

**Assessing Biounavailable Copper.** Most or perhaps all the time when copper is high in the hair or when hidden copper indicators are present, copper is at least somewhat biologically unavailable as well.

This may give rise to a combination of symptoms of toxicity and deficiency. In addition to all the indicators below for hidden copper toxicity, other indicators of the biounavailability of copper are:

1) A copper level less than 1.0 in a slow oxidizer. This indicator is not too common, and may be related to more copper buildup in the brain, according to our recent research.

2) A sodium/potassium ratio less than about 2.5:1 in either a fast, slow or mixed oxidizer.
Assessing Copper Toxicity. The hair copper level is a very unreliable indicator for copper toxicity. So is serum copper, serum ceruloplasmin and many other tests because the copper can hide deep in the brain and the liver. A liver biopsy is a good indicator, but is a painful and somewhat invasive procedure. Dr. Eck found that a hair mineral analysis, however, offers indirect indicators that are very accurate. They include:

- Most slow oxidizers and all very slow oxidizers.
- Calcium level greater than about 70 mg%.
- Magnesium greater than about 10 mg%.
- Potassium level less than about 4 mg%.
- Zinc less than about 13 mg%.
- Zinc greater than about 20 mg% is often, but not always is a hidden copper indicator.
- Mercury level greater than 0.03 mg%. (see below)
- Slow oxidation with a copper level less than 1.0 mg%
- Copper greater than about 2.5 mg% on any chart indicates excess and usually biounavailability.
- Calcium/potassium ratio greater than 10:1.
- Sodium/potassium ratio less than about 2:1.
- Phosphorus less than about 12 mg%. This is a newer indicator with less research behind it.
- Four low electrolytes.
- Four high electrolytes.
- Sympathetic dominance pattern.
- Calcium shell.
- Step down pattern.
- Step up pattern.
- Double low ratio pattern.
- Bowl pattern.
- Passive-aggressive pattern.

In the book I co-authored with Dr. Paul Eck, entitled Toxic Metals in Human Health and Disease (1989), we wrote that the mercury level needs to be 0.4 mg% for hidden copper to be present. I believe this is an error and the level is closer to 0.03.

REDUCING EXCESS COPPER
I have dealt with severe copper imbalance in myself and experienced many of the symptoms of it. He has not had difficulty with it for many years and helps thousands of others, literally, with the same issues. Seven methods can be used at the same time to reduce copper in the tissues and are described below.

This section is divided into methods to reduce toxic levels of copper and methods for improving the activity of the adrenal glands.

**Reducing Copper In The Tissues.** At least several of the following methods should be used at the same time for best results. This is often overlooked, leading to temporary or incomplete restoration of health.

1) Balance body chemistry, enhance energy production and improve adrenal gland activity. To support the adrenal glands, avoid sweets, eat protein with each meal. Supplements that assist the adrenals include vitamins A,C and E, manganese, zinc, adrenal glandular and B-complex vitamins. Animal protein is very helpful due to its higher content of zinc, B-vitamins and sulfur amino acids including cysteine and taurine. Adrenal glandular substance is also frequently helpful.

2) Reduce fear and stress. Methods range from a change in location or work to meditation, therapy, more rest and other changes. 1) Inhibit the sympathetic nervous system. This is easier said than done. Copper toxic individuals often complain of their mind racing. Turning off the sympathetic or fight-or-flight nervous system can be a challenge. Methods that are helpful include electric light sauna therapy, meditation, relaxation techniques, deep breathing, supplemental calcium, magnesium, ox bile, pancreatin, kidney glandular and coffee enemas.

3) Reduce exposure to sources of copper like copper intra-uterine devices, swimming in pools and high-copper vegetarian diets.

4) Enhance the eliminative organs, such as the liver, skin and colon. Digestive enzymes, especially pancreatin, are very important. Also excellent is sauna therapy, especially with an near infrared electric light sauna. Other methods of enhancing the eliminative organs are coffee enemas, colonic irrigation and skin brushing.

5) Antagonists such as zinc, manganese and iron compete with copper for absorption and utilization. Other antagonists include vitamins B6, folic acid and selenium. Research indicates copper may be excreted by binding with glutathione and metallothionine which require these nutrients.

6) Chelators are not needed or helpful in most cases. These are substances that bind to copper and help remove it from the body. Click here to read more about why we avoid Chelation Therapy. Synthetic chelators
may be used, but can have harmful side effects. The most common one is penicillamine, sold under the names Cupramine or Depen. This toxic method has been around for years. It is not recommended ever, due to side effects that can include kidney damage, blurred vision, B6 deficiency, ringing in the ears, ulcers, jaundice and other liver damage, abdominal pain, bloody urine and more.

Note that just taking copper antagonists and chelators may not work very well. This is because these, of themselves, do not assist to rebalance body chemistry. In fact, they can make the overall balance of the electrolytes worse. This is why a complete program of balancing body chemistry with nutritional balancing science is far preferable. I will assist any practitioner who wishes to learn about this method of copper removal.

For example, zinc is often used to correct a high copper. However, it lowers the hair tissue sodium level, which is often dangerous if persisted in. Molybdenum, another excellent copper antagonist and chelator, raises sodium. Vitamin C, when used in high doses, tends to cause other imbalances because it can remove other metals besides copper.

Each vitamin and mineral affects overall body chemistry. For best results, I strongly recommend an integrated nutrition, lifestyle and detoxification program based on a properly performed and interpreted hair mineral analysis. It is worth the extra time, cost and energy to get better results. It can also avoid the purchase of unnecessary and costly supplements and other problems that come from their use. Also, be careful with chelating methods, including natural products such as Metal Free, NDF and others. We do not like these products, as they often remove some essential minerals as well as removing toxic metals.

**Adrenal Gland Restoration.** Restoring the adrenal glands is often absolutely necessary to prevent copper from accumulating over and over again in the body. This is because the adrenal glands signal the liver to produce ceruloplasmin, the principal copper binding agent in the body, along with metallothionein. To restore the adrenal glands, the following methods may be extremely helpful and necessary in many instances.

1. Rest is number one. Get at least 11 hours of sleep daily. This may be broken into nighttime plus a nap or two. A year of more of extra rest is often needed.

2. Diet is also critical. The diet should be high in fresh vegetables, in particular, as well as healthful proteins and some whole grain rice and corn, if these can be tolerated well. For the recommended diet, see the document [Slow Oxidizer Diet](#). This diet is appropriate for most of those with copper
imbalance, though not all. A small number are fast oxidizers. They must have much more fat and oil in their diets, and less protein at times. Other special cases also exist due to more complex nutritional imbalances, food sensitivities and other rarer conditions.

Equally important, the diet must be as low as possible in sweets and sugars as possible. These foods, along with all stimulants, stress the adrenal glands and tend to make copper imbalance worse. Stimulants include sugars, caffeine and food additives such as MSG, aspartame and other excitotoxins in the diet. Many other food chemicals and additives, however, even including too much salt, also stress the body and are not helpful for copper imbalance. Strict vegetarian diets usually aggravate copper imbalance badly. Wheat and refined flour products, in general, are also not helpful at all. These are some of the most important dietary considerations, especially for slow oxidizers.

2. Carefully chosen nutritional supplements are also extremely important to reduce copper imbalance. These are best determined by the use of a hair mineral analysis, in our view.

Many doctors give symptomatic remedies for copper. These are nutrients that are known to lower or to balance copper in the body. They include vitamin C, garlic, zinc, molybdenum, vitamin B6 and others. I do not endorse or recommend this method at all. It is far too likely to fail, though it will often give some quick relief. Please beware of using remedies to lower copper without getting a hair mineral analysis from a doctor or nutritional consultant who understands how to interpret the test.

Programs we design always help to support the adrenal and thyroid glands and include a digestive aid along with targeted nutritional support depending on the mineral ratios in the body. I also do not like the use of most herbs for the adrenal glands. We do not use ginseng, licorice and other herbs that may be stimulating, as these eventually cause more severe problems, though, once again, they offer quick results in many cases.

We also do not need to use any hormones such as DHEA, pregnenolone, testosterone, progesterone or cortisol. These also give quick relief in most cases, but upset the delicate hormone balance and eventually usually worsen copper imbalance. Click here to read more about Hormone Replacement Therapy.

4. Lifestyle modifications. Most people with copper imbalance are very sensitive. Many also need to slow down, relax more, let go of anger and learn to meditate, perhaps. Some also need to make big life changes in their relationships, location, work and other important aspects of their lives so that
they “live their truth” to a greater degree. Living a lie can be an important problem, in fact.

5. Detoxification. Copper imbalance responds beautifully to the use of coffee enemas and colonic irrigation if enemas are not possible. In addition, the use of a near or far infrared sauna is absolutely essential for some people, especially those with emotional problems connected to their copper imbalance.

Other methods of detoxification are less effective, in our experience. These include methods such as cleansing diets, which can make the copper problem worse.

COPPER DETOXIFICATION SYMPTOMS

One of the difficulties in reducing excess copper are symptoms that arise during the process of elimination. As the body begins to mobilize excess copper from tissue storage sites, it enters the bloodstream on its way to the liver and kidneys for elimination. While in the bloodstream, the copper can cause headaches, skin rashes, racing thoughts, strange odors, digestive upset, mood swings and energy fluctuations. In men, testicular pain is not uncommon. Women’s periods may be affected.

Certain methods of lowering copper cause these symptoms more than others. Zinc, vitamin C and manganese tend to cause more symptoms, perhaps because zinc and manganese replace copper in the liver. Molybdenum and sulfur compounds such as Russian black radish tend not to produce copper elimination effects.

If one knows what is occurring, it is possible to take measures to minimize these temporary elimination symptoms. Enemas, sweating, and drinking more water can help promote copper elimination. Reducing the nutrition program for a few days may also help slow the reactions and reduce symptoms if they are severe. Supplements of molybdenum, bile acids, laxative herbs and vitamin B6 may also mitigate elimination symptoms. Much more on this topic is contained in an article entitled Copper Elimination Symptoms. An excellent copper toxicity case history is available by clicking here.

ATTITUDES AND SPIRITUALITY HELP BALANCE COPPER

Besides more rest and sleep, techniques to reduce all stress and improve coping ability are wonderful to assist with copper imbalance. In
addition, people with copper imbalance are often the more aware or sensitive people in society. They must acknowledge this and love themselves more for it. Life is not always easy for the copper-toxic person. One can become resentful, angry or depressed easily. A method we highly recommend is a meditation-observation exercise that we offer on a compact disc. It is also offered on the internet by Mr. Roy Masters at www.FHU.com. This is a Judeo-Christian exercise that is tremendously grounding and centering. It was a great help for me with copper imbalance and has helped hundreds of other clients as well. We cannot recommend it highly enough. It is simple to do and will slowly reduce all causes of stress as it brings more truth and light into one’s life. In addition, prayer, reading the bible and any other true spiritual activity will often assist copper-toxic individuals. This is the case because it helps them to know they are all right, they are loved and God is present in their lives. This can be vital for a copper-toxic person, though it is helpful for everyone who cares about spiritual matters.

THE BLESSING OF COPPER TOXICITY

I suffered from copper toxicity for at least 10 years before I even knew why I felt so bad. I was always tired, depressed, achy and often anxious, too. However, today, some 30 years later, I know clearly it was a blessing in disguise. Copper toxicity led me into natural healing, into meditation and eventually into myself and my gifts. Copper imbalance, indeed, is often a sign that one is not living one’s gifts and truths. If it takes copper imbalance to move you in a different direction, then it is a wonderful thing, though the suffering may not seem worth it right now.

With enough compassion for yourself and a complete nutritional balancing program based on hair mineral analysis, almost all our clients become well and much happier, also. Then the creative, intuitive and loving qualities of the high-copper individual can shine through to the world.

Resources
4. Pfeiffer, C., Mental and Elemental Nutrients, Keats Publishing, New
Canaan, CT., 1975.
6. Hundreds of technical articles on the sources, symptoms and correction of copper imbalance are available on the worldwide web. They are too numerous to list here. The books and articles mentioned above contain more complete references.

For more articles and information on Dr. Wilson please go to [www.drlwilson.com](http://www.drlwilson.com).