Safe, Natural Ways to Remove Heavy Metals and Toxins

Detox Wellness Guide
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Let’s face it: We live in a toxic world. News of heavy metals and environmental toxins showing up in everything from children’s toys to babies’ umbilical cords makes headlines each year, and these examples are just the tip of the iceberg.

Tap water in most cases is contaminated with heavy metals and environmental pollutants. Automobile exhaust fumes spew heavy metals and hydrocarbons into the air we breathe. Produce (both non-organic AND some organic) often contains heavy metals and persistent organic pollutants (POPs) which accumulate in the body. The truth is, it’s impossible to completely avoid exposure to heavy metals and environmental toxins.

The 2011 nuclear crisis in Japan is yet another tragic example of the potential for radioactive pollution, this time in the form of nuclear radiation fallout, to contaminate our environments and cause widespread repercussions for decades and centuries to come.

A Critical Turning Point

The news isn’t all bad. We live in an unprecedented Age of Information and we are using the power of that information to take necessary steps in lessening this toxic load -- for the planet AND for our health. We are recycling more, driving more efficient vehicles and making wiser choices in our daily lives, like buying locally grown, organic produce and choosing natural body care and cleaning products.

All of these lifestyle changes are vitally important—but sometimes they’re not enough, especially in the face of direct exposure to heavy metals or radioactive particles.

Unfortunately, these and other toxins can build up in critical places throughout the body -- like bone and soft tissue -- where they can potentially be stored for years. So in addition to minimizing your exposure to these dangerous toxins, it’s also important that you rid your body of heavy metals, radioactive particles and environmental toxins that may already be lurking there.

The way to do this is with gentle, regular detoxification practices using effective natural compounds which have been scientifically proven to remove these pollutants from our systems.

However, clinical detox therapies using IV treatments can be expensive, elaborate, and sometimes damaging to health. That’s why research on safer, more effective natural agents that can remove heavy metals and toxins is so important. This report will be sharing the results of some very exciting clinical studies demonstrating just that.

But first, let’s take some time to understand some of the common toxins we’re exposed to, where you’ll find them hiding, and just how they can affect us.

What are Radioactive Particles?

Radioactive isotope particles such as Cesium-137, Strontium-90, Iodine-131 and many others are typically byproducts of nuclear industry and are formed by a process of atomic fission which is used to create atomic energy. These highly unstable particles are present in nuclear fallout, a term used to describe clouds of radioactive material which escape into the environment. Radioactive particles affect numerous areas of health, mainly genetic, reproductive and cellular health.
Cesium-137 has a half-life of 30 years. It has biological activity similar to potassium, and becomes widely distributed in the body after exposure from the atmosphere, food, water or dust. Cesium-137 affects cellular health, DNA, cardiovascular health and other critical areas. Large tracts of land were abandoned after Chernobyl due to Cesium-137 contamination, and contaminated milk was one of the main sources of exposure for the surrounding population for years to come.

Strontium-90 is chemically similar to calcium, and tends to deposit in bone and blood-forming tissue (bone marrow). Thus, Strontium-90 is referred to as a “bone seeker.” Internal exposure to Strontium-90 mainly affects cellular health of the bones and blood. Strontium gets into the body primarily from ingestion of contaminated food.

Iodine-131 concentrates primarily in the thyroid and in breast tissue, thus significantly affecting thyroid and breast cellular health, as well as contaminating breast milk.

**What Are Heavy Metals?**

Heavy metals are metals with a specific gravity at least five times that of water. Because they cannot be metabolized by your body, they often accumulate in soft tissues and bones. They are unavoidable in today’s industrialized world and are often passed up the food chain and served for dinner in the form of seafood, fish, vegetables, processed food and the like.

Some heavy metals, such as iron, copper, manganese and zinc are beneficial. However, many other heavy metals, such as mercury, lead, aluminum and cadmium, are not. This guide outlines the most common heavy metals and gives a brief overview of what’s out there in the environment—and on your dinner plate—that could be adding to your body’s heavy metal burden.

**Mercury**

Mercury is far more ubiquitous than you might imagine. It occurs in three forms: elemental mercury, organic and inorganic mercury.

Elemental mercury is released into the air by natural processes, such as volcanic eruptions. It is also present in dental amalgam fillings, thermometers, electric switches, fluorescent lights and some batteries. It is absorbed through the skin, the gastrointestinal tract and as vapor through the lungs. It accumulates in your body over time.

Inorganic mercury (mercury salt) is oxidized and combines with other elements to create salts. It is absorbed through the gastrointestinal tract (eating contaminated food), the skin (using creams that contain it), and the lungs (breathing contaminated air). It is present in skin lightening creams, preserving solutions for biological specimens, analytical chemistry labs, photographic processing and metal etching solutions. It is also produced by mining operations, chloralkali plants, the paper industry, coal burning, and waste incineration. It is dispersed into the air and returned to the earth in rainfall, which runs into rivers and lakes, thereby contaminating fish and wildlife. It was added to paint until 1990, when it was banned.
Inhalation is still the most common cause of exposure to mercury and there is little we can do about that except protect ourselves from mercury toxicity with appropriate lifestyle changes and supplements, discussed later.

Organic mercury (also known as ethyl or methyl mercury) is the reactive form of mercury and can pass the blood-brain barrier more easily, and is therefore considered more serious. Methyl mercury is converted from the elemental form by microorganisms and accumulates in the environment, seafood and marine mammals. Most fish contain methyl mercury. Ethyl mercury is found in medical preservatives Thimerosal and Merthiolate, as well as in fungicides and antibacterials. All types of organic mercury are highly absorbable through the digestive tract.

Mercury interacts with the immune, neurological, genetic and enzyme systems in your body, and affects motor coordination and your senses of touch, taste and sight. Developing embryos are five to ten times more sensitive to mercury than adults are. Methyl mercury is 95-100% absorbed through the digestive tract, and crosses the blood brain barrier and the placenta.

The Problem Fish and Seafood

Most of us are unwittingly exposed to methyl mercury whenever we eat fish and seafood. According to a 2000 report on mercury, the National Research Council considered those at the highest risk of mercury exposure to be the children of women who ate fish and seafood during pregnancy. In many states, pregnant women are already close to the safety limit of environmental exposure alone. The Food and Drug Administration (FDA) advises pregnant women to avoid eating shark, swordfish, king mackerel and tilefish completely. No matter what your age or gender, should limit your intake of these fish, as well as canned tuna, shrimp, salmon, Pollock and catfish. According to the National Oceanographic and Atmospheric Association, nearly all fish contain methyl mercury.

Lead

We’ve all been made aware recently of the presence of lead in paint on toys and lead in other products, including food, from China. Lead is banned from paint in the United States, but older buildings that were painted before 1990 still release lead from the paint. Other common sources of lead include food grown in lead-contaminated soil, smoke from burning fossil fuels, batteries, ammunition, x-ray shields, solder and pipes, municipal drinking water, printing ink, gasoline, fertilizer, cosmetics and hair dyes.

Cadmium

Cadmium is used in nickel-cadmium batteries, PVC plastics, paint pigments, agricultural insecticides, fungicides and fertilizers, cigarettes, dental alloys, electroplating, motor oil, and exhaust fumes. We absorb 15-20% through our lungs by breathing. About 2-7% of cadmium ingested is absorbed in the digestive tract. Cadmium affects the liver, kidneys, lungs, brain and bones, and passes through the placenta.
Aluminum

Although it is not classified as a heavy metal, aluminum is regularly ingested in food additives, drinking water, antacids and buffered aspirin; and absorbed through the skin via astringents, nasal sprays, antiperspirants. It also enters our body from breathing automobile exhaust fumes in the air, using aluminum foil and cookware, soda cans, ceramics and fireworks. Aluminum affects the nervous system, kidneys and digestive system as well as cellular health.

Arsenic

Exposure to arsenic occurs mostly in the workplace, near waste sites, or in areas with high natural levels. It is also found in a number of foods such as rice. Chronic low levels of exposure can affect neurological, liver, skin and reproductive health.

How to tell what’s in your system

Just as we spring clean our homes and take out the trash, so, too, should we spring clean our bodies by ridding ourselves of heavy metals and environmental toxins. But the first step is finding out what your level of toxicity is—and for that, there are multiple methods, starting with a simple hair analysis and going all the way to an intravenous challenge with substances such as 2,3-Dimercapto-1-propanesulfonic acid (DMPS), administered by a qualified health practitioner.

A simple way to measure your heavy metal toxic load is through hair analysis with your doctor, and doing an audit of what you eat and drink. A hair analysis test will give you an idea of what heavy metals are in your body. It will test for levels of arsenic, cadmium, lead, chromium, mercury, manganese, uranium, zinc and other heavy metals. However, you should be aware that if you don’t eat fish, but have amalgam fillings, the hair analysis can be negative for mercury and you might still have high levels.

You can also ask your doctor to perform appropriate tests to ascertain your levels of heavy metals. Such tests include blood tests, liver and renal function tests, urinalysis and fecal tests.

Natural Detoxification Agents

Detoxification practice is not new. Traditional health systems around the world have used specialized cleansing and detox programs as a way to support the body’s organs of elimination for long term health and vitality. Today, research demonstrates a number of natural compounds, nutrients, supplements and practices that can aid the body’s natural process of binding and removing toxins, heavy metals, metabolic waste products and other accumulated junk.

The following natural detoxification agents are commonly used:

- Alpha Lipoic Acid (ALA)
- Vitamin C
- Modified Citrus Pectin (MCP)
- Alginates
- Glutathione
- N-Acetyl Cysteine (NAC)
- Dandelion leaf and root
- Milk thistle seed extract
Powerful yet gentle detox agents backed by clinical research

Together with fruit pectins, alginates from kelp were first discovered and used to remove radiation from victims of the Chernobyl disaster in 1986. In fact, it was this initial use of pectins and alginates in the aftermath of Chernobyl that prompted original research into the detoxification properties of these unique compounds. Both are natural ingredients that work in a very unique way in the body to help eliminate heavy metals and radioactive particles.

Modified Citrus Pectin (MCP) is even more beneficial than regular pectin, because it is modified to enter the circulation rather than remain in the digestive tract. MCP is derived from citrus pectin, and has been molecularly altered using a special enzymatic process to achieve certain size and weight specifications which ensure easy absorption into the blood stream, as well as giving it a high degree of bioactivity.

EcoNugenics introduced the first MCP to the nutraceutical market in 1995. Today, our PectaSol-C® MCP remains the only clinically researched MCP which supports safe detoxification, cellular and cardiovascular health, immunity and healthy galectin-3 levels.*

Binding and Removing Metals and Toxins

MCP belongs to a class of complex polysaccharides called polyuronides, and has a unique molecular structure that enables it to bind to heavy metals and radioactive particles by forming an “egg box.” This structure allows long negatively charged fiber chains to stack together in groups that create pockets. Positively charged heavy metal particles are attracted to these chains, and are essentially pulled from your soft tissues. They then become trapped in the pockets of the “egg box” where they can be excreted from your body—with even greater effectiveness than other forms of detoxification.*

This is a critically important point. Most other detox methods manage to loosen and bind toxins from your tissues, which are then dumped into your intestines. However, the heavy metals are then easily reabsorbed through the digestive tract, creating a vicious cycle that keeps toxins circulating in your body.

In order to block the re-absorption of heavy metals, toxins and radioactive particles in the intestines so they can be fully excreted from the body, we combined PectaSol-MCP with modified alginates from kelp. Like MCP, the structure of alginates enables them to trap heavy metals, toxins and radioactive particles in pockets.*

By pairing these two ingredients, we can block re-absorption of toxins through the digestive tract, and accomplish the goal of having them completely excreted from the body.*

Another benefit to using this combination of alginates and MCP is that they don’t bind and remove the essential min-
erals like calcium and magnesium that your body needs (a side effect of many conventional detoxification protocols). They also work more gradually and are therefore safer -- while still being equally as effective.*

(Figure 1. Polyuronides form stacks in solution in what is known as an “egg box” structure. Each pocket of the “egg carton” contains a positively charged ion to balance the negatively charged chains. Normally the positive ions are sodium and potassium. However, heavy metals especially lead, mercury, cadmium, and radioactive metals have a higher affinity for polyuronides than the essential ions like calcium, magnesium, and potassium. Heavy metal ions become trapped in the “egg box” structure and are eliminated from the body.)

**Published Clinical Data**

Research on the safety and effectiveness of PectaSol-C MCP and Modified Alginates for removing heavy metals is compelling—and recent years have ushered in some groundbreaking clinical studies with encouraging results.

In 2007 a small pilot study on PectaSol-C MCP was published in *Forshcende Komplementarmedizin*, an international peer-reviewed journal. This was the first study of its kind to examine the relationship between decreasing heavy metal loads using MCP and modified alginates and possible benefits for numerous areas of health.

PectaSol-C MCP either alone or together with the modified alginate complex, yielded an impressive 74% average decrease in heavy metal levels among all subjects—an outcome that confirmed the previous findings of another peer-reviewed clinical trial using PectaSol-C MCP, funded by the National Institutes of Health (NIH) and published in the *Phytotherapy Research* in October 2006.

In this clinical study, oral administration of PectaSol-C MCP resulted in a significant increase in the urinary excretion of heavy metals, including lead, mercury, cadmium and arsenic among healthy subjects, without affecting their essential minerals and without causing any adverse effects.

Another study published in *Alternative Therapies in Health and Medicine* in 2008 was conducted at the Children's Hospital at Zhejiang University School of Medicine in China. In this study, children between the ages of five and twelve were admitted for elevated lead levels. Each child was given 15 grams of PectaSol-C MCP per day—blood serum and urine excretion analyses were performed at the outset of the trial, and at days 14, 21, and 28.

The results of administering PectaSol-C MCP to the children stunned researchers. PectaSol dramatically lowered the lead levels in their blood and increased the lead excreted in their urine—in fact, the average changes registered in at a whopping 161% reduction in blood levels and 132% increase in urine excretion, respectively. The importance of these incredible results cannot be stressed enough.

The addition of this latest Chinese study to the growing body of research is crucial—and just as far-reaching. The impact of lead on childhood health should not be underestimated. And while exposure is most prominent in areas like developing countries, lead exposure is ongoing for millions of children worldwide, including in the US.

Fortunately, PectaSol-C MCP and modified alginates provide an effective, safe way for binding with and helping to remove heavy metals and toxins from the circulation and digestive tract. For this, EcoNugenics recommends PectaClear™ which is made exclusively with these two researched ingredients. This unique supplement also offers long term detoxification support at lower maintenance dosages.*
Enhancing Detoxification with Additional Botanicals

Safe and effective detoxification can be further supported by using targeted detoxification botanicals and nutrients. Such ingredients can help to remove heavy metals and toxins from deeper areas of the body like vital organs and tissues, while also providing important antioxidant protection, energy enhancement and support for the organs of elimination.

That’s why EcoNugenics recommends adding Detox Complete® together with PectaClear, to complete your detoxification program. Detox Complete is a unique herbal/nutrient detoxification formula which supports the liver, kidneys, lungs, circulation, skin and digestive system in detoxification and rejuvenation. It also provides critical support against rogue free radicals and helps maintain energy levels during a cleanse -- both critical functions in the world of detoxification. With ingredients such as dandelion, milk thistle, NAC, MSM, cilantro and unique traditional Asian herbal blends, this comprehensive formula can be used together with PectaClear, or it can be used alone at lower dosages for daily antioxidant, vitality and detoxification support.*

Medicinal mushrooms can also support a comprehensive toxin removal program. Mushrooms act like sponges, and help to absorb toxins and metabolic waste so the body can easily remove them. With all of their important health benefits, including immune, digestive, and vital energy support, beneficial mushrooms are excellent allies in any targeted detox program. EcoNugenics recommends Ten Mushroom® organic blend and/or botanically enhanced mushrooms found in Mycophyto Complex® for more thorough, comprehensive detoxification and overall health support.*

Diet and Lifestyle Tips

An unprocessed, whole food diet emphasizing vegetables, some fruits, sprouted grains and legumes, healthy fats and minimal animal products, is an excellent foundation for a total body detox program. Avoid (or eliminate entirely) common pro-inflammatory foods such as processed ingredients and meals, sugars, alcohol, trans fats, dairy, processed meats, and gluten. Drink plenty of filtered water, herbal teas and low sodium vegetable broths.

This type of diet alone can go a long way toward supporting long-term health. Add in regular physical activity, healthy stress relief practices, and targeted detoxification supplements, and you’ve got yourself a comprehensive foundation for safely and gently removing toxins, heavy metals and pollutants from your body.

How Long Should I Do It?

Remember, it took time for toxins to accumulate in your body. So we can’t remove them with an aggressive, weekend quick-fix program. However, even just adapting a gentle detox protocol for three or four days could make a difference in how you feel.

The supplements and recommendations in this guide are gentle on the body and generally act gradually, which allows people to adapt this program for ongoing, long-term detoxification support. Some people do programs lasting 3 weeks, others 3 months or longer. It’s helpful to consult with a knowledgeable integrative health provider to assist in determining your unique needs and help you design a detox program that’s just
right for you.

We are all bombarded daily with a plethora of heavy metals and toxins in the air, our drinking water, food and the environment in general, especially the urban environment. For a long and healthy life, gentle yet effective support against heavy metals and toxins is a time honored strategy for supporting optimal vitality, naturally.