



Safe, Natural Ways to Remove Heavy Metals and Toxins

ecoNugenics Detox Guide

Toxins and Health Today

Does the body store toxins, and if so, can we safely remove them? How does detoxification support long-term health?

These are the types of questions we hear every day. As detox becomes a popular trend marketed for weight loss, anti-aging and more, countless types of detox diets, products and services are promising a quick fix for chronic issues and overall vitality. Meanwhile, critics assert that detoxification is an unscientific practice and that such methods are unnecessary, unfounded, and potentially dangerous.

With all the conflicting information, it's no wonder so many people are unclear about why -- and how -- they should include detoxification in their health program.

It's true that the body has sophisticated systems for handling toxins. When functioning optimally, the liver, kidneys, skin, lungs, digestive, circulatory and immune systems are remarkable in their abilities to detoxify and nourish cells, tissues and organs.

But here's the problem: The daily barrage of toxins we're exposed to on a regular basis can easily overwhelm these natural detox systems.

The "toxic soup" of heavy metals, industrial pollutants, and unregulated chemicals found in our food, air, water and environments is impacting us in ways we're only just beginning to understand. The effects on reproductive health, cellular function, neurological health and much more demonstrate that our bodies simply aren't built to withstand the compounding levels of toxin exposure we face in our everyday lives.

But there are solutions.

Detoxification is an ancient practice. Traditional health systems around the world have relied on sophisticated detoxification therapies to clear buildup of metabolic byproducts, rejuvenate the body's elimination systems, maintain immunity and support long-term health.

Today, a selection of detox agents have been substantiated by scientific research, offering solutions to toxic body burden and associated effects. This report will outline some of the ways we can practice safe and effective detoxification, and in doing so, support long-term health and wellness.

First, we can make efforts to reduce exposure by choosing natural products, emphasizing organic foods and putting pressure on companies to limit the use of toxins in industry. There are numerous ways people are taking a stand against toxin exposure, committing to their health and the health of the planet with greener choices.

Second, we can take active steps to remove toxins which can hide for years within bone, fat cells, soft tissue and even the brain. The way to do this is with natural compounds that are scientifically researched and shown to safely remove these pollutants from our system.

There are a number of clinical detox therapies such as IV EDTA and DMSA that work to pull heavy metals from the body. However, these treatments can be expensive, elaborate, and even damaging to health because they remove essential minerals. Even worse, instead of eliminating toxic heavy metals, they can pull them from tissues and then redistribute them to other areas of the body such as the liver and brain.

That's why finding safe and effective natural detoxification agents is so important. This report will be sharing the results of some very exciting clinical studies demonstrating just that.

But first, let's take a closer look at some of the toxins we're exposed to, where you'll find them, and how they can affect us.

Radioactive Particles

We live in an atomic age. Pollution from the nuclear industry is increasing at an alarming rate, exposing us to radioactive isotopes such as Cesium-137, Strontium-90, Iodine-131 and others. These highly unstable particles seriously impact our most critical areas of health, including genetic, reproductive, immune 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 to 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.

Toxic Metals

Mercury contamination is widespread. 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, and can be absorbed through the skin, the gastrointestinal tract and as vapor.

Inorganic mercury (mercury salt) is oxidized and combines with other elements to create salts, and is absorbed through the gastrointestinal tract, the skin, and the lungs. It is present in skin lightening creams, preserving solutions for biological specimens, analytical chemistry labs, photographic processing and other materials. It is also produced by mining operations, chloralkali plants, the paper industry, coal burning, and waste incineration, where it is dispersed into the air and returned in rainfall, contaminating fish and wildlife.



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. Ethyl mercury is found in medical preservatives, 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. The National Research Council considers 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 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 municipal water, as well as in paint on toys and other products. 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, x-ray shields, solder and pipes, printing ink, gasoline, fertilizers, as well as cosmetics and dyes. Lead impacts the brain and nervous system, as well as the kidneys, cardiovascular system, immunity, reproductive health and more.

Cadmium

Cadmium is used in cosmetics, 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.

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, chicken, red wine and others. Chronic low levels of exposure can affect neurological, liver, skin and reproductive health.

How to tell what's in Your System

A first step in many detoxification protocols is finding out what your level of toxicity is, and for that, there are multiple methods, from a simple hair analysis 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.

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.

Many people work with practitioners to use these tests in designing personalized detox programs and to help measure the effectiveness of their protocols.

Powerful yet Gentle Detox Ingredients Backed by Clinical Research

There are a number of ingredients that are marketed and sold as detox agents, but very few have been substantiated with peer-reviewed, published clinical data.

This is not the case with ecoNugenics® products. As a research-based company, ecoNugenics is committed to providing scientifically substantiated and safe natural solutions that are gentle, effective and based on peer-reviewed clinical data and extensive in-practice application.

For comprehensive heavy metal and toxin removal, ecoNugenics recommends **PectaClear®** Environmental Toxin Cleanse. This researched product is a combination of **PectaSol-C®** Modified Citrus Pectin and alginates from kelp. Both ingredients have unique properties and research showing their abilities bind and remove specific toxins. This combination offers broad-spectrum support using two powerful yet gentle ingredients that grab heavy metals, radioactive particles and other toxins, and safely remove them from the body.

Removing Toxins WITHOUT Causing a Detox Crisis

PectaSol-C MCP and alginates belong to a class of complex polysaccharides called polyuronides. They have a unique molecular structure that enables them to bind to heavy metals by forming an “egg box.”

The egg box structure is made of long negatively-charged pectin and alginate fiber chains that stack together in groups, creating pockets. Positively charged heavy metal particles are attracted to these chains, and become trapped in the pockets of the egg box and are then safely excreted from the body.

This is a critically important point. Many other detox methods manage to loosen toxins from your tissues, which are then transported into your intestines. However, the toxins are easily reabsorbed through the digestive tract, creating a vicious cycle that keeps dangerous compounds circulating in your body. This can lead to what many people refer to as a “detox crisis,” producing symptoms such as GI discomfort, headaches, fatigue, brain fog, joint pain, cold and flu symptoms and more.

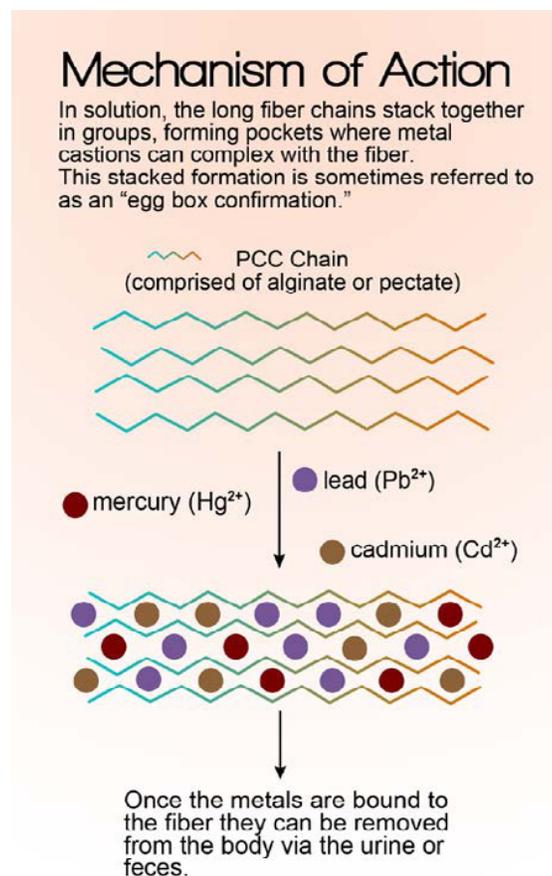
Contrary to what many people believe, a detox crisis is not a normal and healthy part of detoxification. Rather, it is a sign that your body is unable to manage the amount of toxins being mobilized, and as a result, inflammation and tissue damage can occur as toxins are redistributed instead of excreted.

The good news is that ecoNugenics detox products are physician-formulated to be gentle and effective, and protect against these common detox pitfalls.

The combination of alginates with PectaSol-C MCP in PectaClear Environmental Toxin Cleanse represents a key strategy in preventing reabsorption and redistribution of toxins.

While PectaSol-C MCP enters the circulation and binds to heavy metals and toxins in the blood stream, alginates work in the digestive tract to prevent reabsorption and help remove toxins that may be lurking there. Alginates are shown to bind not only heavy metals, but also radioactive particles as well as certain pesticides and other toxins, allowing for safe removal. They've also been shown to provide additional health benefits related to glucose metabolism and other areas of health.*

Another critical benefit to using MCP and alginates is that these are gentle detox agents -- they don't bind and remove essential minerals like calcium and magnesium -- a side effect of many conventional detoxification protocols.*



(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.)

History of Modified Citrus Pectin and Alginates

Together with pectins, alginates from kelp were used to remove radiation from victims of the Chernobyl disaster in 1986. It was this use of pectins and alginates that prompted further research into the detoxification properties of these unique compounds.

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



However, not all MCP on the market is the same. In order for it to be effective, MCP must meet very stringent weight and structural specifications (5-15 kiloDaltons and <10% esterification) which ensure absorption and efficacy.

ecoNugenics introduced the first MCP to the nutraceutical market in 1995. Today, our PectaSol-C remains the only clinically researched MCP which supports numerous critical areas of health including cellular and cardiovascular health, immunity, and together with alginates in PectaClear, broad-spectrum and safe detoxification.**

Published Clinical Research

Research on the safety and effectiveness of PectaSol-C MCP and alginates for removing heavy metals is compelling, with some groundbreaking clinical studies demonstrating their important benefits.

In 2007 a small pilot study on PectaSol-C MCP was published in *Forschende 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 alginates and possible benefits for numerous areas of health.

PectaSol-C MCP either alone or together with alginates, 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 or 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-C dramatically lowered the lead levels in blood and increased the lead excreted in 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 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.



Enhancing Phase I & Phase II Detoxification: Additional Ingredients

Binding and removing heavy metals and toxins from the circulation and digestion is a key strategy and important first step in successful detoxification. PectaClear Environmental Toxin Cleanse, along with a healthy detox diet (next section) form a foundation for deeper detoxification of organs and tissues using targeted ingredients that support elimination systems including the liver, kidneys, skin and digestive system.

ecoNugenics recommends adding **ecoDetox®** for a more complete detoxification program. ecoDetox is a unique herbal-nutrient formula which supports the actions of the liver, kidneys, and other organs of elimination. It also provides critical antioxidant, circulation and energy support, and helps enhance the body's detoxification capacity.

ecoDetox provides key nutrients and botanicals that optimize the Phase 1 and Phase 2 detox processes performed by the liver as it works to metabolize and remove toxins. Both Phase 1 and 2 require optimal levels of specific nutrients and antioxidants, as well as adequate energy to complete these critical detoxification and elimination processes.

ecoDetox is formulated based on ingredient research and Traditional Chinese herbalism principles, and includes a careful selection of powerful botanical extracts and nutrients to support detoxification and long-term health, including:

- Dandelion leaf
- Milk thistle seed
- Astragalus root
- Ginko leaf
- N-Acetyl Cysteine
- L-Methionine
- Dimethylglycine
- Cilantro leaf
- Folate
- Traditional Asian herbs
- Others

This comprehensive formula can be used together with PectaClear for optimal toxin removal, or it can be used alone at lower dosages for daily antioxidant and detox support.*



The Importance of Medicinal Mushrooms

Medicinal mushrooms are important additions to a detoxification program. One of their many benefits is that they can act like sponges, absorbing toxins and waste and helping to remove them. There are hundreds of varieties of medicinal mushrooms that have a long history of traditional use and offer broad spectrum support including immune, digestive, cardiovascular and vital energy support. With their abundance of health benefits, certain mushrooms are excellent allies for detox and overall wellness.

ecoNugenics recommends **Ten Mushroom®** organic mushroom blend for daily nourishment and detox support, and the botanically-enhanced mushroom formula **MycoPhyto Complex®** for more powerful and fast-acting immune, detox and long-term health support.*

Diet and Lifestyle Tips

An unprocessed, organic whole food diet emphasizing vegetables and low glycemic (low sugar) fruits, sprouted grains, seeds and legumes, healthy fats and organic meats is an excellent foundation for a total-body detox program. Avoid or eliminate 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.



Along with physical activity, healthy stress relief, and the right detoxification supplements, a cleansing detox diet can support a comprehensive program for safely and gently removing toxins and pollutants from your body, while supporting overall wellness and vitality.

How Long Should I Detox?

It took time for toxins to accumulate in your body, so it's important to take a gradual approach to detox. However, even a gentle 3-4 day detox with supportive supplements, diet and exercise can make a difference in how you feel. It can also provide momentum to continue with a longer program which can revolutionize your health and energy.

The supplements and recommendations in this guide are gentle on the body and act gradually, which allows people to adapt this program to meet their individual needs.

Some people do programs for 3 weeks, others 3 months or longer, depending on their toxic body burden and overall health goals. It's helpful to consult with a knowledgeable integrative health provider to assist in determining your unique requirements, and help design a detox program that's just right for you.

Whatever program you choose, ecoNugenics products can offer targeted, gentle and effective support to help you reach your health goals, safely and conveniently.

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