

## *Titanium, How Small Substances Can Cause Large Problems*

Titanium is a metal that many people are quite familiar with. People in the aerospace and automotive industries are very familiar with titanium's unique ability to increase a metal's hardness and corrosion resistance, as well as reducing its weight. Athletic and exercise equipment also capitalize on titanium's unique hardness-to-weight ratio and have then brought us lighter tennis rackets and baseball bats, even camping equipment is now being made with titanium in order to reduce overall backpack weight for hikers.

Titanium has also revolutionized several branches of medicine, namely in the field of structural implants, such as repairing fractured bones and orthodontics. Titanium in dental implants has quickly become the industry norm. Another frequent use of titanium is in the field of human hip replacements. Because these titanium products have appeared on the market quickly it begs the question: have we really studied and understand the long-term health implications?

Titanium is considered a non-toxic substance in nearly all its forms and compounds. The reason is because titanium and its compounds are typically chemically inert substances that serve no biological purpose in the human body. Also, testing typically shows naturally-occurring titanium present in the human body, and thus the logic dictates that something that has always been in the body must not pose any health concerns.

Titanium is a relatively abundant element in the Earth's crust, but it is almost never found in its elemental form. It is typically found in trace amounts in a number of mineral ores all over the world. This means that humans have been exposed to titanium for millennia and further scientific logic states that if titanium posed a threat to the body, we would have evolved some defensive mechanism against it.

While it is true that our bodies have dealt with titanium extensively over the course of human history, what it has not encountered until the last few decades of intense industrialization are the titanium compounds like titanium dioxide.

Titanium dioxide is a white crystalline powder that is used in hundreds, if not thousands, of products ranging from plastics and paint, to sunscreen and toothpaste. Its primary purpose is to increase whiteness and increase opacity. While it does occur naturally in nature, it is never found as a pure white powder, but in ores like rutile and anatase.

In 2006, the International Agency for Research on Cancer, IRAC, classified titanium dioxide as a possible carcinogen after research showed that rodents that inhaled titanium dioxide dust had an increased risk of developing respiratory tract cancer. This information, however, has not been extensively studied to the point that anyone can conclusively prove that human workers exposed to titanium dioxide dust have an increased risk.

It is common knowledge, however, that workers exposed to toxic substances always have an increased risk of health disorders. The real question is: does titanium dioxide that is used in consumer products, including food since titanium dioxide is approved as a food coloring agent, white food coloring, pose a health risk to the public?

According to experts at the University of Ulster where groundbreaking research is taking place on the health implications of ultra-fine particles like titanium dioxide. One of their areas of research is in the connection between titanium dioxide in sunscreen and neurodegenerative diseases like Alzheimer's and Parkinson's. The type of titanium dioxide used in sunscreen is so fine that the grains of dust are measured in nanometers, which is one billionth of a meter. Manufacturers claim that these particles are not absorbed by the skin, but scientific research shows otherwise. These particles are entering the body and making their way into various organs of the body, including the brain. The University of Ulster is currently hosting a three-year study to determine the specific level of risk that these particles create and the exact toxicity mechanisms by which titanium dioxide increases these risks.

Though there is controversy surrounding whether or not titanium dioxide poses any serious health concerns, but this is simply because not enough research has been done to conclude that titanium dioxide is safe. The claim that it is safe is

based on a number of assumptions. Those assumptions are quickly being proven to be unfounded and simply untrue.

In November of 2009, a study was published by the Jonsson Comprehensive Cancer Center at UCLA. The study found that mice exposed to titanium dioxide suffered both single-strand and double strand DNA breaks, chromosomal damage, as well as increased inflammation.

This data shattered the assumption that titanium dioxide is safe because it is chemically "inert". All of those effects the mice showed from the exposure are thoroughly proven cancer risk elevators.

According to the study, the reason titanium dioxide produced these effects was because the body was unable to process or remove the titanium from the body. Because the particles were nano-sized, they could easily permeate any tissue in the body, remain there and induce oxidative stress.

Though critics argue that the level of exposure was high, approximately the equivalent of what a titanium dioxide manufacturing plant worker would be exposed to over a year and a half, because the body is unable to get rid of it how long would it take the average person to accumulate enough titanium dioxide to cause these effects. Even the UCLA researchers admit that more research is needed to answer that important question.

As a consumer, erring to the side of caution is an intelligent decision. In

this case, reading ingredient labels of toothpastes, OTC medications, sunscreens, deodorants, toothpaste, whitened foods, and even some vitamin products to ensure that titanium dioxide is not added to the product. If the body cannot get rid of it, and the more you are exposed the greater health risks you may face, common sense recommends that you steer clear of the danger.

Because avoidance is the best form of detoxification, it deserves the most attention. But if you are concerned that you may have already been exposed to significant amounts of titanium dioxide throughout your lifetime, other forms of detoxification may be necessary to remove the toxins from your body.

One of the most simple, all-purpose methods of lightly detoxifying your body of titanium dioxide, as well as a wide range of other toxic heavy metals and chemicals is the legendary combination of cilantro and chlorella taken simultaneously. Cilantro mobilizes the heavy metals present in the body, including those that have become stored intracellularly and draws them out into the blood stream. Chlorella binds with heavy metals it encounters and safely guides them to excretion from the body. Because cilantro mobilizes more heavy metals than it excretes, chlorella is required to make sure that as many heavy metals are excreted as possible to prevent them from simply being reabsorbed.

While this combination may sound like the most effective solution, the truth is that this combination is best suited for detoxifying recent and a

moderate amount of accumulated heavy metal toxicity. There are some individuals who have either been heavily exposed, or who have a genetic weakness to self-detoxifying heavy metals through their liver and kidneys and are thus more sensitive. These individuals may require a more aggressive detoxification protocol that utilizes a chelating agent that actively seeks out and binds to heavy metals in the body.

One of the most effective chelating agents for titanium is DMPS/DMSA. DMPS is administered intravenously and after circulating and binding to various heavy metals in the body, is excreted through the urine. This procedure requires an in-depth knowledge of detoxification and needs to be done as part of a strict program to be most effective and to prevent any unnatural deficiencies because DMPS also has slight affinity for essential minerals as well. When done properly, the results can be incredible.

Before beginning such a program, it is important to consult with a qualified medical professional who is familiar with your medical history and understands the intricacies of heavy metal detoxification and can help you make an informed decision.



4789 Vineland Ave.  
Toluca Lake, CA 91602  
(818) 761-1661

[www.nutrikon.com](http://www.nutrikon.com)

© Nutrikon, Inc. 2011 All Rights Reserved