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THE HEALTH RANGER

FOOD FORENSICS

The Hidden Toxins Lurking in Your Food and How You Can Avoid Them for Lifelong Health

INTRODUCTION

To pursue scientific research into food forensics, I oversaw the construction of a food forensics laboratory in central Texas. The lab's central feature was an inductively coupled plasma mass spectrometry instrument, called ICP-MS for short. It has the unique ability to detect metals and elements including nickel, lead, mercury, or magnesium at very low concentrations—in almost any sample you might want tested. I call it "Star Trek technology" because it seems to function almost as if by magic. But it isn't magic. It's just "sufficiently advanced technology," as Arthur C. Clarke once explained.

In the months after its installation and calibration by expert chemists and instrumentation engineers, the ICP-MS instrument began to lift the veil on what was really present in all sorts of foods: junk foods, fast foods, superfoods, herbal supplements, vitamins, and more.

That's when things began to get weird.

When the instrument identified very high levels of lead and cadmium in popular vegan protein products, I contacted the manufacturers of these products to suggest they pursue a voluntary recall of their products. A recall wasn't an option, I was informed, and I was urged to be careful about releasing anything publicly that would "impact sales revenues" of these companies.

When I discovered that popular ginkgo herbs grown in China contained a whopping 5 parts per million (ppm) of toxic lead—an element proven to cause cancer and brain damage—I was told that the lead contamination was "naturally occurring" and therefore didn't matter. Yet when I tested ginkgo herbs grown on U.S. soil, they tested remarkably clean, showing near-zero levels of heavy metals. It turns out that when ginkgo is grown in contaminated soils, it accumulates heavy metals in the herb. (This should not be surprising to anyone.)

When I found very high levels of tungsten (greater than 10,000 parts per billion, or ppb) in superfoods imported from China and Southeast Asia, I was told that tungsten was of no concern because "the U.S. Food and Drug Administration (FDA) has no limits on tungsten," and that therefore everyone should ignore the presence of this heavy metal in popular superfood products.

When I discovered an astonishing 11 ppm of lead in mangosteen superfood powder imported from Thailand, I went public with the finding and warned people not to eat mangosteen powder unless it had been tested. In response, I was blacklisted from several importers and not allowed to purchase their raw materials any more. (My company purchases raw materials to manufacture certified organic foods and superfoods in Texas, and we meticulously test each material before purchasing it in volume for manufacturing.)

Over and over again, as I began to find alarming levels of lead, aluminum, tungsten, mercury, arsenic, and other toxic elements in everyday foods, superfoods, pet treats, and even certified organic foods, the response I got from manufacturers of these products was, "*Don't tell anyone!*"

Before disclosing some of my results, it's important to understand the thresholds at which heavy metals begin to affect human health.

Mercury: According to the World Health Organization (WHO), mercury, even in small amounts, may cause serious health problems, earning it a spot on the top ten list of the most dangerous chemicals to humans. The EPA's maximum containment level goals for drinking water for mercury is 2 ppb.[1]

Tungsten: Cases of acute poisoning by this heavy metal can be caused by just 5 mg/L, or approximately 5 ppm. Exposure to high levels of tungsten has been linked to an increase in strokes.[2]

Lead: While there is no safe blood lead level in children, the U.S. Centers for Disease Control and Prevention (CDC) recommends the threshold at which a child is deemed to have lead poisoning is 5 micrograms per deciliter of blood, or 50 ppb.[3]

Arsenic: Long-term exposure to this heavy metal through drinking water and food may cause neurotoxicity, cancer, developmental

effects, cardiovascular disease, and diabetes, according to the WHO. The EPA has set the arsenic standard for drinkingwater at .010 ppb.[4]

Cadmium: Ingested in high doses, this heavy metal may cause nausea, vomiting, diarrhea, abdominal cramping, and severe gastroenteritis, according to the Agency for Toxic Substances and Disease Registry (ATSDR). The reference dose for dietary exposure to cadmium is 0.001 mg/kg/d.[5]

In just the first few months of ICP-MS research on samples of foods, vitamins, and consumer products, I discovered:

- More than 500 ppb mercury in cat treats and fish-based dog treats
- More than 10 ppm tungsten in rice protein products
- More than 5 ppm lead in ginkgo herb products
- More than 11 ppm lead in mangosteen powder
- More than 400 ppb lead in cacao powders
- More than 500 ppb lead and more than 2,000 ppb cadmium in rice proteins
- More than 6 ppm arsenic and more than 1 ppm lead in some spirulina products
- More than 500 ppb mercury in dog treats
- More than 200 ppb lead in brand-name mascara products

(Note: 1,000 ppb = 1 ppm)

In nearly every case, when I contacted the manufacturer of the product to warn them about the high levels of heavy metals found in their products, they insisted their products were perfectly safe while urging me to remain silent and keep their secret from the public.

A real-life conspiracy of silence

Conspiracies really do exist, of course. New York Attorney General Eric Schneiderman said that pharmaceutical companies conspired to set artificially

high drug prices in that state. U.S. federal trade authorities say the Chinese government conspires to dump cheap solar panels on the U.S. market to drive U.S. solar manufacturers out of business. And many food companies, I've discovered, actively conspire to keep their own customers ignorant of the toxic substances routinely found in their products.

The point of this book is to break that conspiracy of silence and reveal what's lurking in your favorite foods, superfoods, organic foods, dietary supplements, vitamins, and even pet foods. The information in this book is precisely the information these companies desperately hope you never see.

Recent experience has taught me some valuable lessons in how these companies operate:

Step 1: **Deny** the existence of heavy metals or other harmful substances in their products.

Step 2: **Attack** the source of the information. Try to create doubt about the motives of the researcher (me) or the accuracy of the findings.

Step 3: Should denials and attacks fail, **twist** scientific facts to claim that all heavy metals are "naturally occurring" and therefore don't count, even if they are found in high levels due to heavy industrial contamination of the farms where the food is grown.

Step 4: If steps 1 through 3 are unsuccessful, **lie** to customers by telling them that heavy metals are *good* for them! This strategy has already been invoked by one company whose products tested at high levels of lead and cadmium. Instead of announcing they would reduce the level of these metals in their products, they posted an article that claimed heavy metals were good for you and people shouldn't be concerned about eating them.

Sheer deception and consumer fraud

The process of denial and obfuscation I'm describing here is routinely pursued by companies of all sizes, including some companies catering to organic

consumers, raw foodies, vegans, vegetarians, detox patients, and health-conscious buyers.

The deceptions are quite incredible. One company that imports nearly 100 percent of the rice protein used by all the vegan protein manufacturers in the United States is fully aware that their product contains high concentrations of toxic lead, cadmium, tungsten, and mercury. On their website, however, they claim their material is "Prop 65 compliant," referring to Proposition 65 in California.

Prop 65 says that if your product exceeds 0.5 micrograms of lead per serving, then you must put a cancer warning on your product label. The rice protein material being imported by this company delivers over 16 micrograms of lead per serving, which is 34 times higher than the Prop 65 lead limit. So how is that "compliant"? Because companies using the material place a small cancer warning on their product labels to "comply" with Prop 65. So even though this material contains 34 times more lead than is allowed under Prop 65, the importer claims the material is "compliant" with Prop 65, thereby grossly misleading buyers into thinking the material has low lead composition.

This sort of deception and consumer fraud, I've found, is routinely carried out across organic foods, natural products, superfoods, and dietary supplements companies. Many companies that sell products emblazoned with phrases like "better than organic" or "high raw" are actually poisoning their own customers with toxic heavy metals. And they almost never test their own products for heavy metals, which is why they are so surprised when I confront them with the truth about what's found in their products. Even then, when made aware of the heavy metals concentrations found in their products, they invoke denial and obfuscation rather than transparency. Just like drug companies, or weapons manufacturers, or Wall Street investment houses, many natural products companies seem to be run by people who place profits over consumer safety . . . almost by default.

That's why this book is such an important public record of scientific truth. This book documents the heavy metals that are really found in these products, mapping out the actual metals composition of products that were acquired in 2013 through 2016, then analyzed via atomic spectroscopy for their elemental composition. In early 2016, we expanded our laboratory to include liquid chromatography–mass spectrometry (LC-MS) instrumentation for the detection of pesticides, herbicides, and other organic molecules.

We hope to report on those findings in subsequent books and website reports. (See labs.naturalnews.com for the latest analysis reports.)

This book will spur widespread denials and possibly even a few lawsuit threats. It will enrage unethical product manufacturers but empower consumers with a new source of information that should appear on Nutrition Facts labels but doesn't. This book will indict dishonest companies selling contaminated products, but it will also celebrate those many companies whose products are remarkably clean of toxic heavy metals (and yes, they do exist).

Substantial efforts to silence this work

I have been offered money not to publish this book. I've been offered large advertising contracts to leave certain products out of this book. I've been threatened with lawsuits for publishing laboratory results on the Internet. One of the largest natural products retailers in the United States, a $12 billion company, deliberately trained its employees to lie about me in very specific terms by telling customers that "Mike Adams doesn't have a lab" and that all the laboratory results I've been publishing are fictional.

Substantial efforts have been made to discredit me and silence this work, and yet the fact that you hold this book in your hands is proof that all of those efforts failed. No matter how much I am threatened, I refuse to remain silent on this crucial issue for public health and food transparency.

We live in a world that's heavily contaminated with industrial waste. Much of our organic food now comes from China, where the term "organic" is a cruel joke. Air quality in Beijing was recently recorded as being 1,100 percent higher than the maximum air pollution limits set by the WHO, reaching the astonishing pollution concentration of 268 micrograms per cubic meter.[6]

Much of our food is now grown on lands where that industrial waste is intentionally dumped and used as "fertilizer." As a result, many foods are heavily contaminated with toxic substances. The environmental science cannot be denied, and the scientific findings of this book can be replicated by any competent laboratory running ICP-MS instrumentation.

Please value what you now hold in your handsand understand how incredibly rare it is for this information to have finally been made public, despite all the threats and intimidation attempts that were unleashed in a

desperate effort to keep this information hidden. Ask yourself this question, too: "Why isn't the FDA conducting this research and publishing the results for the public to see?" I ask myself that same question every time I step into my lab. If the FDA really cared about food safety and public health, it would never have left this task to a private citizen scientists like myself. The only reason I've taken up this task is because everybody else refuses to do it. The FDA, food manufacturers, and mainstream media outlets funded by food advertising are all colluding to ignore this science and prevent the public from learning the truths you'll read here.

To stay up to date on the latest findings in this realm, visit the website of which I am the editor, www.naturalnews.com.

Laboratory methodologies and accuracy

Can you trust the data presented in this book? My laboratory is accredited by the ISO under its global analytical accuracy standards program known as ISO 17025. This is the gold standard for internationally recognized analytical laboratory accuracy, and it means we operate under a strict set of rules, guidelines, and procedures that are enforced by a third party audit.

The scientific methodologies we use for testing food and water are universally recognized by the scientific community and are sourced from organizations such as the AOAC (Association of Analytical Communities), the EPA, and the FDA. For example, we use a minor variation of AOAC 2013.06 for testing heavy metals in foods.[7]

For testing water samples, we use methodology EPA 200.8.

My lab was accredited in 2016 after two years of preparation, involving analytical repeatability determinations, validation of analytical methods, and exhaustive documentation of our laboratory quality control procedures and error correction processes. Because of this extensive experience in ICP-MS analysis and laboratory protocols, I even plan to announce my availability as a science consultant to other food manufacturers or retailers who wish to set up similar testing for their own operations.

But what is ICP-MS? How are heavy metals really tested in foods and beverages?

To help understand analytical accuracy a bit further, it's important to understand the nature of ICP-MS testing.

ICP-MS results across competent laboratories can and do vary by as much as 20 percent due to differences in methodologies and instrument sensitivities. Within the same lab, variation in results from different samples of the same product may vary as much as 10 percent due to several reasons, but competent laboratories demonstrate strong repeatability within a range of plus or minus 10 percent.

From lab to lab, analytical results of the same substance may vary slightly. So if two different labs test the exact same protein powder, for example, it is perfectly reasonable that one lab might report lead at 450 ppb while a second lab reports lead at 500 ppb.

However, you won't find orders of magnitude differences. No competent lab would report lead at just 45 ppb or at 4500 ppb for the same sample, in other words.

In summary, it's important to understand that ICP-MS laboratory results do have some natural variability within a reasonable range. Metals composition will also vary from gram to gram and lot to lot. Every production lot of a commercial product has a different metals composition from previous lots. Because of these simple truths, **all the numbers in this book should only be used as a general guide** to help you decide what to eat and what to avoid. They do not describe absolute concentrations that are consistent across all products of the same name.

It's also true that because of the efforts already made by myself and the launch of the Natural News Forensic Food Lab, some companies are making tremendous efforts to clean up their raw materials and produce cleaner products. That's why products sold on the market at the time you read this may be substantially cleaner than the products tested in this book. A book takes at least a year to go from manuscript to store shelves, so what you are seeing in this book is actually a snapshot of products that were available in the three years prior to publication. If you'd like to see more up-to-date results, you'll find them at labs.naturalnews.com

Many commercial labs deliberately produce artificially low results

Another important thing to keep in mind here is that many commercial labs that cater to food companies are in the business of producing artificially low

metals test results because that's precisely what their customers want to see. Producing artificially low results is very easy to accomplish by various means that are readily accessible to anyone who wants to commit such violations of ethics.

At the Natural News Forensic Food Lab, we use a slow digestion method that prevents the nitric acid from boiling. This retains nearly all heavy metals found in the original food sample. As a result, our metals tests are typically slightly higher than what most commercial labs produce, but they are also more accurate. Our open block digestion cycle typically takes two hours, not the forty-five minutes often used by other labs. We also use closed cell (microwave) digestion for difficult samples to ensure complete digestion.

Any competent university lab can easily reproduce our results within plus or minus 10 percent by using appropriate digestion equipment and procedures.

How we assure scientific accuracy at our lab

In the interests of full disclosure, here are some of the methods and safeguards we've used in the Natural News Forensic Food Lab (labs.naturalnews.com) to ensure the best possible accuracy:

- As noted above, our lab is ISO 17025 accredited, having achieved the global standard for trusted analytical accuracy in laboratories.
- All instrumentation is calibrated and certified accurate by its original manufacturer.
- All analytical methodologies we use are derived from globally accepted methodologies published by the AOAC International or other similar scientific organizations.
- All external standard solutions are traceable to National Institute of Standards and Technology (NIST) or other standards bodies. Custom standards are formulated and validated by highly competent, experienced custom formulations companies.
- We do not re-use sample digestion vessels or autosampler vessels. Our laboratory process relies on disposable vessels that eliminate vessel contamination concerns.
- After every tenth sample is run via ICP-MS, a blank vial and a calibration vial are run to ensure the ICP-MS instrumentation

remains well-calibrated. If significant analytical drift is detected (i.e., results of the mid-range calibration checks begin shifting), the run is halted, the instrument is cleaned (or consumable parts are changed out), and the run is repeated from the start. Analytical drift during our ICP-MS testing has been nearly eliminated through the use of the Niagara Plus sample injection system manufactured by Glass Expansion.

- ICP-MS instrumentation is routinely maintained in accordance with manufacturer recommendations. For example, sample cones and skimmer cones are routinely cleaned. Sample uptake tubing in the peri-pump is routinely changed. Argon air is in-line filtered, as is our helium source.
- For each food sample tested, three separate samples from the same product lot are run. Results are then averaged across the three to help eliminate variability and improve reliability.
- All sample test vials are archived for a period of one year so that any challenged result can be re-validated if needed.
- The validity of digestion methods and ICP-MS analysis methods are further validated through the frequent use of Certified Reference Materials (CRMs) with known concentrations of elements verified by more than a dozen other laboratories.
- Outside labs are used to further validate and spot-check in-house laboratory results. We have at times used a third party commercial laboratory as well as a university laboratory, both of which have confirmed our findings on multiple occasions.
- The dilution water used in sample preparation is laboratory-grade deionized water produced by a high-end Thermo Scientific water filtration system specifically designed for laboratories.
- Oxidation acids used for sample digestion are trace-grade acids and are routinely tested for their purity. The very small concentrations of elements (parts per trillion) found in these acids are measured at the beginning of each sample run, then subtracted from the results of all subsequent samples.
- Samples that show curiously high results are re-analyzed a fourth or fifth time to make sure the results are accurate.
- All raw sample data for each run is archived on multiple backup servers residing at two different physical locations.

U.S. Department of Agriculture (USDA) and Food and Drug Administration (FDA) have no heavy metals limits

Neither the FDA nor USDA has any official, universal limit on heavy metals in foods, beverages, and dietary supplements sold to U.S. consumers.

This fact is, of course, astonishing. Most consumers of USDA-certified organic foods automatically assume those foods are substantially free of heavy metals because they are labeled organic. But in our lab, we've found USDA-certified organic foods to consistently contain far higher levels of heavy metals than many conventional foods (which tend to be aggressively processed, removing minerals and heavy metals alike).

So why don't the USDA or FDA set heavy metals limits for the U.S. food supply? Surely they have their own explanations, but my view as a food researcher and investigative journalist is that both the USDA and FDA are far too intertwined with the interests of the industries they claim to regulate. Most of the top people at the USDA, for example, have a revolving-door history with the cattle industry or herbicide companies such as Monsanto and DuPont. Top FDA people, similarly, are far too cozy with drug companies and processed food manufacturers to make reliable decisions in the public interest.

Rather than regulating these industries for the benefit of the public, both the FDA and USDA seem far more interested in protecting these industries from public scrutiny. As a result, there is no real incentive to disclose the heavy metals contamination of agricultural products, or canned soup or beef jerky, for that matter. Because the truth of all this might "cause alarm" among consumers, government regulators essentially play along with the conspiracy of silence preferred by food manufacturers.

This is why I strongly support the establishing of heavy metals limits in foods, beverages, and dietary supplements. Without such limits, food manufacturers can get away with essentially any amount of toxic elements in their products.

It is noteworthy that, in February 2016, the nation was outraged over the discovery of 1–2 ppm of lead in the water supply of Flint, Michigan. Yet I have personally found food products with far higher levels of lead that are consumed by a consumer cross section of the entire nation. Strangely, there is so far no outcry over high lead levels in food products, even though lead

in water is widely recognized as so dangerous to children that many citizens of Flint, Michigan, called for the criminal prosecution of those responsible.

Moving toward a low heavy metals industry standard

Until the USDA and FDA come around to establishing heavy metals limits for foods, superfoods, and dietary supplements, we've created our own limits, which have been published online and embraced by several companies.

The website lowheavymetalsverified.org provides a voluntary heavy metals guide for manufacturers of foods, superfoods, and dietary supplements. The site describes a letter-grade self-certification system ranging from A+++ on the super clean side down to F for foods that are more heavily contaminated with heavy metals. (This grading system is printed in full on page TK of Part 3: The Data near the end of this book.)

Because these standards may be revised from time to time as more information is learned about the impact of heavy metals on human health, please refer to lowheavymetalsverified.org to view the latest numbers. In particular, we hope to begin the speciation of arsenic so that we can distinguish organic arsenic from inorganic. Once that is accomplished, we plan to alter this standard to consider solely *inorganic* arsenic (the dangerous variety).

Most food products available in the marketplace today fall between A and D on the grading scale. This scale sets a voluntary standard by which food products can be easily compared on their heavy metals composition. It also allows consumers to more easily shop for products that are cleaner than others. For example, almost every health-conscious consumer would prefer to eat grade-A chocolate rather than grade-B chocolate, assuming all other properties of the chocolate are equal.

The downside of this system is that it is purely voluntary and, as you might have already guessed, many companies will flat-out lie to their customers and claim lower heavy metals concentrations than really exist in their products.

For this reason, Natural News will be policing the industry by randomly purchasing products from companies who claim these heavy metals limits and testing those products for compliance. Products that do not comply with the claims levels will be published on naturalnews.com.

Our hope is that both the USDA and FDA will eventually take over this function and establish their own procedures for heavy metals limits and

industry spot-checking. Until that day comes, Natural News is the only organization on the planet that will be fulfilling this important role in the interests of public safety.

Some observers find it quite curious—perhaps even bizarre—that a private sector company is doing a better job of policing the U.S. food supply for heavy metals than the entire federal government, with a seemingly infinite budget.

I find it bizarre, too.

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This year, we are scheduled to bring you heavy metals testing results for protein powders, pesticide results on organic vs. non-organic foods, and glyphosate testing on a variety of consumer items.