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Wise Traditions

IN FOOD, FARMING AND THE HEALING ARTS

A PUBLICATION OF THE WESTON A. PRICE FOUNDATION®



Education ♦ Research ♦ Activism

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Volume 19 Number 1

Spring 2018

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THE WESTON A. PRICE FOUNDATION®


Education ♦ Research ♦ Activism

The Weston A. Price Foundation is a nonprofit, tax-exempt charity founded in 1999 to disseminate the research of nutrition pioneer Weston A. Price, DDS, whose studies of isolated nonindustrialized peoples established the parameters of human health and determined the optimum characteristics of human diets. Dr. Price's research demonstrated that men and women achieve perfect physical form and perfect health, generation after generation, only when they consume nutrient-dense whole foods and the vital fat-soluble activators found exclusively in animal fats.

The Foundation is dedicated to restoring nutrient-dense foods to the American diet through education, research and activism and supports a number of movements that contribute to this objective, including accurate nutrition instruction, organic and biodynamic farming, pasture-feeding of livestock, community supported farms, honest and informative labeling, prepared parenting and nurturing therapies. Specific goals include establishment of universal access to clean, certified raw milk and a ban on the use of soy-based infant formula.

The Foundation seeks to establish a laboratory to test nutrient content of foods, particularly butter produced under various conditions; to conduct research into the "X" Factor, discovered by Dr. Price; and to determine the effects of traditional preparation methods on nutrient content and availability in whole foods.

The board and membership of the Weston A. Price Foundation stand united in the belief that modern technology should be harnessed as a servant to the wise and nurturing traditions of our ancestors rather than used as a force destructive to the environment and human health; and that science and knowledge can validate those traditions.

The Weston A. Price Foundation is supported by membership dues and private donations and receives no funding from the meat or dairy industries. 



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President's Message

This issue focuses on our exposure to mercury—one of the most poisonous substances on the planet—from the environment, from food and—most seriously—from the practice of medicine.

The fact that humans still suffer from mercury exposure today is particularly egregious since we all know about the Mad Hatter in *Alice in Wonderland*. The recognition that hat makers went insane from mercury exposure is part of our popular culture. In England in the eighteenth and nineteenth centuries, mercury was employed in the production of felt, which was used for popular types of hats. Mercury poisoning also occurred in the United States among hatters in Danbury, Connecticut, who developed a condition known locally as the Danbury shakes. Over time, the hat makers exhibited apparent changes in personality and also experienced tremors or shaking. Historians and public health officials understood the fact that mercury attacks the nervous system, causing drooling, hair loss, uncontrollable muscle twitching, a lurching gait, difficulties in talking and thinking clearly and, in severe cases, hallucinations. Yet mercury was used in common medicines—for everything from syphilis to rashes to teething—until well into the twentieth century.

Fast forward to today when our two major exposures to mercury—amalgam fillings and vaccinations—are worse than anything people experienced in the past. Amalgams are constantly outgassing mercury vapor just next to the brain, while vaccinations bypass our normal protective barriers through injection into the bloodstream. How can anyone justify these practices?

Fortunately, we can avoid such exposures by choosing alternative dental filling materials and just saying no to all vaccines. And for those who have suffered from mercury toxicity, there is a way to detoxify, the Cutler Protocol, described in these pages.

The nineteenth annual Wise Traditions conference will be here before we know it. This year's theme is "Nurturing Therapies for Chronic Illness." The conference will feature tracks on cancer, mental illness, conditions of the elderly, dental treatments and environmental toxicity. The hilarious Tom Naughton, producer of the documentary "Fathead," will give the keynote address at the banquet.

The conference will take place in Baltimore, Maryland, to satisfy hundreds of requests that we bring the gathering back to the mid-Atlantic area. The location is the beautiful Baltimore Hilton Hotel, and their kitchen staff is already psyched about doing delicious meals. Food costs are higher in the area so we are raising conference fees slightly to cover them. But we still offer plenty of work scholarships, so stay tuned for email announcements. We look forward to seeing many of you there!

Letters

A WELL-DEVELOPED FACE

Just thought I would let you know that after listening to your talks at the 2017 Weston Price Conference, I have been noticing everyone's facial structure. On coming home today, my husband was talking to a tradesman who was working on my neighbor's block. I joined in the conversation and noticed his well-developed middle third of the face and his excellent tooth structure.

I found out that his parents are Estonian and that whilst he was born in Australia, he grew up on a traditional Estonian diet with lots of meat, bone broths, liver, offal, cabbage stews and many different forms of fermented foods. He told me his mum always roasted meat and after it was eaten, always boiled the bones for use later. He was passionate about his traditional food and still cooks it himself at age fifty-one. He also showed me a photo of his four-year-old son who has the same well-developed face.

He now knows about Weston Price and the Foundation, and I also told him to phone his mum when he goes home and thank her. A modern-day proof of your wise words and those of Weston Price!

Rhonda Baker
Chapter Leader
Milton/Ulladulla, Australia

MASS MURDERS

Way back in August, 1987 I warned that there would be mass murders in schools. Five years ago, after Connecticut, the movie theater in Colorado, and Oregon mass murders, I warned that

there would be more mass murders. Unfortunately, I was correct as yet another young person has gone on the rampage, this time murdering seventeen innocent individuals at a Florida school. The blame game has started. And the only



thing worse than the blame game is the fact that there will be still more mass murders.

Everyone is getting in on the blame game—the guns are the cause, bullying is to blame, school leaders and school politicians are to blame, video games and Hollywood are to blame, politicians are to blame, parents fail their kids and are to blame, antidepressant drugs cause psychotic behavior and are to blame, the FBI could not even connect the simple dots and they are to blame, local authorities who fail to take action when a young person continually sends warnings that he will murder are to blame, and on and on.

The people who are never blamed are those in the processed food industry that makes, sells and promotes their

horrific nonfoods that make up the standard American diet (SAD)—which is devoid of real vitamin B. Then there is the medical profession that promotes the lowfat, high-carbohydrate diet—which is also devoid of most real vitamin B. And of course there is the pharmaceutical industry that owns the medicines and promotes only drugs for mental health—despite the fact that many psych drugs cause psychoses, suicides and violent behavior.

Of all the culprits, the processed food industry is the major underlying cause of adolescent violence. The typical adolescent diet is filled with nonfoods, produced by these industries by the megaton. These nonfoods are primarily carbohydrates, most of which are refined, full of sugar and highly processed. These nonfoods are nearly devoid of real vitamin B and omega-3 fats—the essential brain foods—and they make up the staples of the adolescent diet.

As youngsters become more and more deeply confounded and sick from their SAD and the B vitamin deficiency it causes worsens, they begin to suffer from B Complex Deficiency Syndrome (BCDS). This condition is nearly epidemic among adolescents as the youth population continues to gobble up soda, candy, pop-tarts, twinkies, cookies, doughnuts, bread, french fries, fast foods and all kinds of other concoctions produced for profit with no (zero) consideration given to their effects on the adolescent brain. These nonfoods are not only devoid of B vitamins, they make a B vitamin deficiency that already exists in a youngster even worse.



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Let's see, how can a diet devoid of B vitamins cause mass murders? Well, when you look into a textbook of human physiology, you will find that BCDS in young people most often starts out as depression. It can quickly worsen to nervousness, irritability, anxiety, mental fatigue, severe depression, manic depression, paranoid thinking and an overwhelming fear that something horrible is about to happen. But worse, over time it can cause morbid fears, rage and hostility.

Does this sound like Connecticut, the movie theater in Colorado, Oregon, Florida and others? Yes, it does! And most experts, including medical experts, parents, neurologists and more are completely unaware of the emotional changes going on in the brains of adolescents thanks to the SAD and the faulty brain chemistry brought about by BCDS—yes, completely unaware! Too often they are educated out of the brains they were born with or are brainwashed by the pharmaceutical industry that continues to pump more and more poison into our kids and adolescents. Most of the time they simply cannot believe that BCDS can produce these brain changes, or that B vitamins can help treat the brain by addressing the underlying cause of emotional problems.

Dr. Bruce West
Monterey, California

LECHEROS

I am taking Spanish lessons with a private tutor here in Nicaragua who runs a bakery, and have been so disappointed to find only UHT milk in the stores. There are people called *lecheros*

who bring raw milk in from the countryside. They are depicted in picturesque postcards, and you still see them with the cans of milk on carts pulled by donkeys. My teacher said she is sure they water the milk down a lot and she won't buy it from them. She also says that people boil it at home, so I think the message they get is to pasteurize it themselves. She also said they come in the morning and if you don't use the milk by the time it's hot, it's spoiled. I assume she is talking about homes that don't have refrigeration, or maybe the tradition is that you get it at room temperature and use it that morning.

You can buy all kinds of things from these carts. There is a guy who juices oranges from a cart he bikes around with. He offers you ice and sugar if you want, and pours the juice into a baggie, and then inserts a straw and ties the baggie around it.

I also got some *chicha* from another who had a variety of juices in baggies (not squeezed fresh in that moment, just ready to go), which I understood had corn (*maiz*) in it but not sure what else. I asked about the pink color and he said, I think, vanilla, which wouldn't give it a pink color. I pressed and he said strawberry, but it didn't much taste like it. I suspect red food coloring (after having googled *chicha* and seeing the many types of recipes that get called *chicha* throughout Central and South America).

Finally, I've also tried *pinolillo*, which is ground toasted corn and ground cacao (so it's sludgy) mixed with milk or water and sugar—so popular the Nicaraguans call themselves *pinolleros*—and *semilla de jicaro* (the

photo of the white drink in the baggie) which is a version of *horchata* (a drink made from rice in Mexico) made with *jicaro* seeds (a strange tree only found in Mexico and Central America, with these green “cannonball” fruits that almost nothing living near it except humans and horses can crack open, https://en.wikipedia.org/wiki/Crescentia_alata). I am not sure how many of these beverages are made in truly traditional ways. (See photos, page 5.)

Jill Nienhiser
Managua, Nicaragua

THE NEED FOR SUN

I saw the letter to the editor in the last journal (Winter, 2017), about getting vitamin D from the sun, in response to Dr. Seneff's article. The writer was wondering what amount of sun exposure is safe and made some of his own calculations to help determine that. I have a few reservations about the writer's recommendations.

In addition to some of WAPF's articles, I've read some of Dr. Mercola's articles about vitamin D from the sun. He gives advice for safely spending time in the sun and how much time is adequate. He also talks about the many health benefits of (safe) sun exposure, including for the eyes and for the reduction of stress, among many other things.

The biggest thing I noticed in the letter was the recommendation to avoid mid-day sun, not necessarily completely, but to get more of our sun exposure in order to absorb vitamin D closer to 10 AM and 3 PM, when the sun is at a thirty-degree angle or so in the sky. According to Dr. Mercola, we can't synthesize vitamin D from the sun

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unless it is at least a fifty-degree angle to us in the sky, which means closer to mid-day, as both your articles and Dr. Mercola's recommend. It's because the UVB rays (the ones from which vitamin D are synthesized) are shorter than the UVA rays, and cannot reach us through the atmosphere unless the sun angle is fifty degrees or higher. This also means that in many locations, vitamin D cannot be synthesized at all during the winter and sometimes the months surrounding it depending on

where we are; furthermore, weather and atmospheric conditions like cloud cover, pollution, ozone layer, surface reflection as well as altitude and elevation, among other factors, may affect our vitamin D production.

Another reason it is better to get our vitamin D mid-day is that, according to Dr. Mercola's articles, the balance of UVA to UVB rays is healthier for our skin: UVB is higher, so we don't need to spend as much time to absorb vitamin D, and we can be exposed for

a shorter period of time to the UVA rays (more damaging and more likely to cause melanoma and cancer).

Apparently, according to Dr. Mercola, we also need to be careful to avoid washing (at least with soap) our exposed skin areas for up to forty-eight hours after sun exposure to allow the vitamin D (an oil-soluble steroid hormone) to fully absorb into our bloodstream from the surface of our skin.

There is a website that will calculate the angle of the sun on any given

DRINKS IN NICARAGUA

Clockwise from top left: *Lecheros* bring milk to town. Bag of *semilla de jicaro*. Grocery shelf of *pinolillo*. Fresh squeezed juice available from carts.





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day, in any given location in the world: the Sun or Moon Altitude/Azimuth Table (<http://aa.usno.navy.mil/data/docs/AltAz.php>). I've gone here to be aware of which days I can make vitamin D each year. In my particular location (NW Washington state) this year, the sun will be at fifty degrees from April 12th through August 30th, and on these (first and last) dates, only for about twenty minutes or so right around 1 PM (adjusted from noon because of daylight savings time). On June 21st, the sun is at fifty degrees from about 10:40 AM until about 3:50 PM. For my relatives in Texas, the "vitamin D" dates are February 21st through November 20th.

It's just bothered me knowing of people who have intentionally spent time in the sun in order to make vitamin D, but have done it early or late day, or during times of the year that we can't make any (because they just didn't know), and it certainly doesn't help that radio announcements and other media sources mislead people because they are unaware of these facts.

VK

Bellingham, Washington

ALUMINUM IN THE BRAIN

I continue to enjoy reading *Wise Traditions*, especially Caustic Commentary. In the winter 2017 issue it states, "There is only one way the aluminum could have gotten into the brain in such quantity—by injection directly into the blood through vaccination."

Actually, aluminum passes directly into the brain by a process known as axonal transport by way of the nose or olfactory nerve. Other pathways include a direct path via the sinus and by an indirect path through the sinuses

and lungs via the blood stream. Since aluminum has been found in high concentrations in chemtrails, the possibility of their influence is great since the air we breathe is regularly filled with aluminum. The effect may even be more profound since the aluminum is processed to make particles smaller (nanoparticles).

Many of my patients suffer from dental complaints that were referred from sinus inflammation; when treated to eliminate the aluminum, their complaints are resolved. Many of the same patients have experienced unresolved coughing for an extended time that resolved with elimination of aluminum from their body. The increased frequency in these findings is remarkable. Of course, I am sensitized to the issue and am looking for the relationship. Unfortunately, it is not commonly considered as a part of a differential diagnosis.

Michael Baylin, DDS
Baltimore, Maryland

PRESCRIPTION MERCURY CHELATOR

Chronic mercury toxicity is a complex, nonlinear, and idiosyncratic phenomenon; and detox products, no matter how well designed, will never be as effective as prevention. Nonetheless, readers may be interested in the following. Mercury scientist Boyd Haley has developed a synthetic mercury chelator/antioxidant that is undergoing approval by the U.S. FDA and the equivalent agency in Europe. The product is described in the scientific literature under its chemical name, NBMI, at PubMed 22573916.

Dr. Haley was profiled in the 2015 documentary film, *Evidence of Harm*,

and his outspoken advocacy against mercury in medicine and dentistry can also be found on YouTube. His product was available as an over-the-counter supplement from 2008 to 2010, when it was known as OSR or Oxidative Stress Relief. It was popular among the biological dentistry community. It was pulled from the over-the-counter market at the request of the FDA, at which point Dr. Haley began the lengthy and expensive FDA approval process. The product has passed safety testing and is now undergoing efficacy testing.

When approved, it will be sold under the name Irminix by Dr. Haley's company, EmeraMed, by prescription only. Pending approval, this drug is available now as an "Investigative New Drug" for short-term "compassionate use" in the U.S. and in Switzerland, to physicians who seek "early access" for a "named patient" with a serious condition. Information on early access can be found at the company's website: EmeraMed.com.

Kris Homme
Berkeley, California

PANDAS

A little over a year ago my quirky, spirited and brilliant seven-year-old son started to experience some really weird symptoms. He complained often about tingling in his hands and feet. He started falling a lot and he complained that his legs stopped working from time to time. He couldn't get into a restful state for the EEG and I refused an MRI until we had more information.

I did ask for his heavy metals to be tested and his arsenic level was really high, but we never figured out what that was all about. I was told that people on



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a gluten-free diet often have really high arsenic levels from their rice intake, but we weren't heavy rice consumers. Soon after he started having pronounced tics (motor and vocal) including loud barking. Things got worse; my school-loving kid became school-phobic, had never-ending sinusitis (for a year), had intense neck pain, developed large, dark circles under his eyes, stopped eating most foods and became super picky about clothing textures, food, touching—everything sensory. Kisses were like punches to him, and he was rarely happy.

We saw lots of therapists, naturopaths, Kaiser MDs and so many other specialists. After reading some information on your site, I insisted that he be tested for strep and, sure enough, although he had no symptoms, he and his brother (the carrier) had strep. We treated the strep, and the tics and behaviors improved a bit. We started to treat his leaky gut by avoiding certain foods, using supplements and lots of bone broth and gelatin (Great Lakes makes third party-tested products for this) and we were seeing more improvements. The trouble was that the sinusitis kept coming back and that would trigger more tics and odd behaviors.

The diagnosis was PANDAS—Pediatric Autoimmune Neuropsychiatric Disorders Associated with Streptococcal Infections. A PANDAS specialist, Amy Joy Smith (she does phone consults and is amazing) recommended lots of supplements and local specialists including a chiropractor who she said “saved her son’s life.” After so many specialists, a PANDAS diagnosis and trying a ton of therapies, Larry Goldsmith, DC, in Sebastopol, California

was smart enough to look in my son’s mouth based on the fact that he had a swollen lymph node on the side with the painful neck. He told me that my boy had a severely infected root canal and that was the source of the inflammation. We had just gone to the pediatric dentist a few months prior and they said his x-rays looked fine. The next day, within ten minutes of our second opinion appointment with my dentist, my son’s diagnostic x-ray showed a large and severe abscess under the root canal that he had at age two and one-half (yes, we do brush well). My dentist said he had probably had this infection for at least six months and probably longer. Apparently, there is a really high fail rate for root canals in kids, especially in young kids, and it’s not good practice to give root canals to kids and hasn’t been for a while. My dentist took out the infected tooth on the spot. The roots were all decayed and mostly had eroded away. Within three days, the year of mucous had ended and my kid could breathe through his nose (he had a big scar under his nose from blowing so often). Within a week the circles had faded dramatically, and within a week and a half the tics had vanished.

A year later my kid is happy, healthy and thriving with no symptoms and we are still on the low-gluten and low-dairy diet with a few supplements and no need for specialists! My son has had two very short episodes of tics since then (a few days) and both happened right before his front teeth fell out. After giving him Motrin for the inflammation, the tics seemed to subside.

It is interesting because on the PANDAS Facebook support pages, parents often write about seeing many

more tics and behaviors when kids are losing their teeth and the prime age that kids lose their teeth is correlated with the onset of PANDAS. I am left grateful beyond belief and curious about the relationship between inflammation in the mouth as a trigger for tics.

I am a special education teacher by training and PANDAS is a very troubling rising epidemic. I have to wonder how many kids actually have this from infected root canals. The pediatric dentist we went to gives them to very young kids all the time. Can you help me get out our story in some way?

Lendri Purcell, VP
Jonas Philanthropies
Petaluma, California

NO REASON FOR A SOY HEART HEALTH CLAIM

To WAPF members, I thought you would be interested in the comments I submitted regarding FDA’s proposal to rescind the soy heart health claim:

As a nutrition professional and researcher, I know that soy is not heart healthy and not healthy for any purpose. The claim was based on faulty studies which are old and out of date. Consequently the food chain was flooded with GMO soybean oil (including soybean oil in infant formula).

There is a direct correlation between soybean oil and obesity. Refined soybean oil is not a natural product but the result of heat and hexane, a serious toxin. Soybean oil is a use for the mountains of soybeans that the Farm Bill supported in every farmer’s field. Farmers knew back to the 1940s that the way to fatten up the livestock was to give them soy products. Obesity is a risk factor in heart disease. Phytates in



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soy block absorption of minerals and the trypsin inhibitors block production of digestive enzymes. Consumption of soy products may be related to cancer of the pancreas and other cancers. Soy was not and never will be a food our body can healthfully utilize.

Drinking soy milk, eating soy products and the “man boobs”—gynecomastia—that many of our teenage boys experience are related. A search of *Environmental Health Perspectives* brings up articles regarding the longer-term consequences of feeding soy infant formula to male and female infants. Soy products contain isoflavones, which are estrogenic and no matter how you spin it, these exogenous estrogens have no place in a child’s diet. I strongly applaud and support the vigilant efforts of the Weston A. Price Foundation and their members as a public service in educating the consumer about the dangers of soy products.

Sylvia Onusic, PhD
Portage, Pennsylvania

BONE MARROW BALLS

Thanks for another great issue of *Wise Traditions*. In reference to the article about bone marrow helping leukemia patients (Winter, 2017), I would like to share my recipe for marrow balls. Take four beef shank bones, spoon out the marrow and melt it over low heat. Strain off the cracklings (they’re crunchy and tasty) and stir in bread crumbs, until all the marrow is soaked up, one cup and a half or so. The better quality the bread crumbs the tastier the balls.

Now season with salt, pepper, nutmeg, parsley and chives and let cool. Then add two to three egg yolks

and form little balls. Let them set, they keep for a very long time and can also be frozen. Add these marrow balls as a garnish to soups, traditionally wedding soups have marrow balls in them in Germany.

Anita Reusch
Eifel Chapter, Germany

AMAZING CONFERENCE

I know that putting together a conference of the magnitude that you all do, coupled with the amazing effort put into the menus and meals, must be extremely labor-intensive and certainly not lost on me. This last conference was my first, and I found it so impressive that I am not only looking forward to the next with anticipation, but hope I can attend every one in the future after that, too!

Paula Shaffer, LAc
Hampstead, Maryland

SCHOLARSHIPS

Thank you for the scholarships to attend the Wise Traditions conference in Minneapolis. My husband and I would never have had this opportunity without your financial support. I enjoyed volunteering for the farm class and Robert took tickets at the meals.

We were both excited to learn so much about food preparation and agriculture. I pray it will have an affect on our small farming operation in the future.

Mary Lou Witt
Macksburg, Iowa

WE LOVE RAW MILK!

Your organization has changed our lives—we appreciate all you do!

About ten years ago, after my

youngest went through five years of treatment for leukemia, I stumbled upon your work. I began to make changes in how I shopped and cooked for my family. I have not looked back! We are all well-nourished and healthy now and rarely get sick. We’ve been drinking raw milk for eight years now. We love it!

Brenda Veltman
Ada, Michigan

RAW MILK KEFIR

Thank you for your timely articles in your journal. As a child, I had raw milk until about six years of age, when we moved to a rural area. Our new neighbors were not dairy farmers so we bought milk in the store until I was about eighteen. At that time we started getting raw Jersey milk delivered and we started moving back to the old ways of preparing food—homemade butter, grass-fed meats, etc.—although I was still addicted to boxed cereals and packaged snacks. I had lots of acne and dry skin problems, low blood sugar and difficult menstruation.

Fast forward ten years. I am now married with three children. I’ve added cod liver oil to our daily diet and am eating mostly gluten free. Now our nutritionist told us to go off dairy, except for goat milk. So we got our own goat. Well, goat’s milk did not taste good to me, so I virtually quit drinking milk. As the fall months went on, I noticed I was increasingly fatigued, with frequent headaches and very interrupted sleep. My cycles were heavy with bad moods. My five-year-old daughter was also very moody and needed daily naps again, and her imaginative playing had disappeared.



Letters



After about six months of this, we got started with raw Jersey kefir and wow! All these issues we were dealing with disappeared in only a week's time! In my kefir smoothies I add raw egg yolks, raw liver, coconut oil and chia seeds.

What is your thinking on this? Were we not getting enough fats while on our goat milk diet, or was there something more lacking?

Susan Glick
Loysville, Pennsylvania

It's possible you and your family were not getting enough folate and vitamin B12 on the goat milk diet, as goat milk tends to be deficient in these two nutrients.

SO GRATEFUL

Thank you so much for everything you promote. There's not enough words to describe the life change and the amazing health in our young family. I'm twenty-three years, husband twenty-five and one son almost two years old. It's been a total lifestyle change for us and such a blessing. My husband suffered with arthritis over all his joints and now it's completely gone!

Ashley Gogan
Miami, Oklahoma

FIFTY POUNDS LIGHTER

I have been using the WAPF concepts for about six years, having been introduced to the Foundation by my naturopathic doctor. This program probably saved my life, or at least spared me a whole lot of chronic symptoms that were gathering. Three years ago I had knee surgery and was told I could expect knee reconstruction in two to

five years. I was also told that cartilage doesn't regrow and that meniscus tears don't heal. The surgery was a clean-up job with a gloomy prognosis.

Today I am over fifty pounds lighter, and I used the Weston A. Price diet every step of the way. I was a preemie baby, and giving myself butter and clean fats has been crucial. I used bone broth to heal my joints. I reconfigured my life and did a remarkable course in commercial cooking. Today I am most gratified to work for a local organic grocery as a salad and cold food chef. My knees don't hurt and I am developing a Tai Chi/Chi Gung practice. You need cartilage in joints to do that. The mainstream doctors were wrong.

I am most grateful and delighted to be a member and supporter of Weston A. Price. This program works for me!

Pat Howe
Sausalito, California

LAWN CHEMICALS

I have been a subscriber of the Weston A. Price Foundation for many years, and I find *Wise Traditions* to be one of the most informative publications I have ever read! Thank you for all you are doing to help keep us healthy!

May I make a couple of suggestions for future articles? Media's attention to agricultural pesticides has increased somewhat, due to the proven dangers of glyphosate, but the discussion seems to stop there and excludes mention of the additional dangers of lawn care chemicals, which are also pesticide poisons! It is obvious to me that many of our health issues could be attributable to these unnecessary and dangerous practices. How many cancer patients and diabetics do you know? And how

many are cats and dogs? Might the "endocrine disrupting" and "hormone mimicking" effects of these poisons be contributing to the cancer, obesity and diabetic epidemics, even in our pets?

As a volunteer for the local humane society, I've witnessed the surrender of animals due to the expense of caring for them once they become diabetic and cancer-ridden. Many cats and dogs are obese, as are their owners. From my research, I sincerely believe that home and yard pesticides (hormone "mimickers" and "disrupters") and improper diet (GMO and pesticide-drenched corn and soybeans) are contributing factors in the declining health of all animals. At least the medical profession and pharmaceutical companies (and the manufacturers of expensive, specialty pet foods) are profiting handsomely! Meanwhile, many patient families are finding it necessary to file for bankruptcy, due to mounting medical expenses and shrinking or non-existent coverage. Many become depressed, drug- and alcohol-dependent and possibly violent, due to feelings of powerlessness, with little or no money for vacations, entertainment and other healthy forms of pleasures that make life enjoyable. Many people just live lives of quiet desperation. Some of these people are veterans. Some become violent. . . and some unfortunate people die!

My husband recently died of multiple myeloma (an incurable cancer of the bone marrow). You may not be aware, but this cancer is on the Veterans' Affairs list of illnesses attributable to exposure to Agent Orange, a highly toxic exfoliate, used extensively on our enemy in Viet Nam! Unfortunately, "the chickens have come home to roost"



Letters



and this poison has affected (and still continues to do so) the veterans who served in that “conflict” many years ago. I saw many of these veterans during my thirty-two years as a volunteer at our local VA hospital, and even though they are receiving medical care and monthly taxpayer dollars to compensate for their illnesses, their lives, and those of their supportive families, have not and will never be the same.

Note: Many of these affected Viet Nam veterans died years prior to the VA administration’s acknowledgment of the connection! Their families never received a penny for their losses!

My husband was not in the military and there was no cancer in his family. But. . . I have several neighbors who hire lawn care companies every spring, in spite of the numerous cancers and deaths in our small neighborhood, including my now-deceased husband! I am an organic Master Gardener and he was my helper. And my home sits in the middle of this cancer cluster! Are my days numbered, no matter what I do to stay healthy?

Can your organization help to spread the word? I truly believe and hope that you can!

Susan Pennington
Martinsville, Indiana

An article on toxic lawn chemicals is planned for a future issue.

DYING TREES

What is happening to our trees and shrubs? Last summer as I drove around in about a hundred-mile radius of where I live in central Alabama and into Georgia, I couldn’t help but notice

practically everywhere I went how sick most of our trees and shrubs appeared, especially oaks (our most common tree), but other hardwoods too as well as softwoods—natives and ornamentals, large and small, young and old.

I have a college degree in botany and horticulture and know how healthy and unhealthy plants look, and am a “tree hugger” to boot who keeps a watch on the environment around me. Last summer the oak leaves appeared shriveled although they were still green; and whereas these majestic tree canopies would normally form a solid cover that time of year, they were actually thin and sparse and you could easily see much of the sky through them. Eventually these shriveled leaves began to drop and dead branches protruded from the tops of many trees. Often as the top died, the lower trunk would sprout with the new foliage causing the periphery, and therefore the landscape, to look green and healthy to the average person; although the shriveling seemed to continue down the trunk eventually catching up with the new sprouts too, completely defoliating some throughout the season. The pine trees also have yellowing needles and large masses of fungus growing on their trunks. An employee of the power company stated that this has been the worst year he’d ever known for dead trees on the lines.

Although we did have a rather severe drought in 2016, we also had a rather rainy year in 2017, and one would have thought that our trees and shrubs would be recovering from that; but as the summer progressed, so did the sick look in our trees and shrubs.


So what is going on here? One

obvious candidate is chemtrails. According to Dr. Russell Blaylock, these chemtrails contain nano-sized aluminum that can travel through the nasal passages into the brain. As a botanist and horticulturist, I know that high levels of aluminum are toxic to plants as well as humans.

I also called an Extension Service (ES) agent; her explanation was that many pests and diseases have appeared as a much delayed reaction to the 2016 drought. The worst was Sudden Oak Death because it attacks many different species and spreads rapidly.

Then one morning, I heard on the BBC a report that a fungal tree disease is an international crisis, and that it affects more than two thousand different species!

This brings me back to chemtrails. Even if you discount theories of deliberate spraying, we know that aluminum oxide is added to jet fuel, so aluminum (and other toxins) from thousands of planes is raining down on our forests every day. The trees are telling us that it’s time to wake up!

Susan Ledbetter
Waverly, Alabama 

Gifts and bequests to the
Weston A. Price Foundation
will help ensure
the gift of good health
to future generations.

Caustic Commentary

Sally Fallon Morell takes on the Diet Dictocrats

WAR ON OBESITY

Like so many Latin American countries, the nation of Chile is battling an obesity epidemic, which officials rightly blame on the onslaught of unhealthy processed foods, for sale at kiosks and vending machines everywhere. New regulations require explicit labeling and limit the marketing of sugary foods to children. The law prohibits the sale of junk food like ice cream, chocolate and potato chips in Chilean schools and curtails advertising to young children. Sodas high in sugar are taxed at 18 percent, one of the highest such fees in the world. However, the linchpin of the initiative is a new labeling system that requires packaged food companies to prominently display black warning logos in the shape of a stop sign on items high in sugar, salt,

calories. . . or saturated fat (*New York Times*, February 7, 2018)! So the baneful dietary guidelines, which by proscribing saturated fat make people crave processed food, are now enshrined in new labeling laws. If governments were really serious about protecting the health of their citizens,

they would promote and fund old-fashioned food carts, rather than eliminate them through onerous health laws, and would embark on a campaign to teach their populations the value of traditional foods, including traditional saturated fats.

RISKY FORMULA

Public health officials often express shock that we would recommend homemade formula based on raw milk; but what they don't tell parents is that powdered baby formula can be very risky. Recently more than twelve million boxes of powdered baby milk formula were recalled in eighty-three countries in a salmonella scandal involving the French company Lactalis. Lawsuits filed by parents who say their children became unwell after drinking the formula are ongoing—at least thirty-five cases so far in France and others in Spain and Greece. The company has stated that they believe the contamination was caused by renovation work at one of

their factories. One of the big dirty secrets in the food processing industry is the fact that powdered milk (or powdered anything) is never sterile.

MORE BAD NEWS ABOUT SOY

Researchers in Brazil fed soy milk to two groups of growing rats. One group got soy milk plus glyphosate (the main ingredient in Roundup) and the other group got soy milk without the added pesticide. Both groups exhibited endocrine disruption in the form of decreased testosterone levels, decrease in Sertoli cell numbers (Sertoli cells are involved in the production of sperm) and an increase in the numbers of degenerated Sertoli and Leydig cells. Those animals that

also got glyphosate had additional abnormalities (*Food and Chemical Toxicology* 2017;100:247-252). Yet a recent study published in the *Journal of Food Science and Technology* touts soy milk as the “best alternative to milk” (Jan 2018:55(1)10-20). Researchers looked at the “nutritional profile” of soy milk, rice milk,

almond milk and coconut milk and concluded that soy milk was best, largely because of a higher protein content. “Soy milk has been a substitute for cow’s milk for four decades,” said the researchers, “and had the most balanced nutritional profile of the four milks included in the study.” As for the isoflavones in soy that keep boys from becoming men, “these phytonutrients have anti-carcinogenic properties which can help prevent or delay cancer.” The “study” was funded by the Natural Sciences and Engineering Research Council of Canada and widely reported in the press—a sign that the soybean industry is on the move again to counter years of negative publicity about the tragic health effects of soy.

TOO MUCH PROTEIN

Use of protein-rich supplements and shakes is common among bodybuilders, a practice that we have consistently warned against. Too much protein can deplete vitamin A,



Caustic Commentary

leading to burnout, vision problems and many other unfortunate conditions. In the case of bodybuilder Meegan Hefford, the unfortunate side effect was death. The mother of two was found unconscious in her apartment and died in the hospital two days later. She had been ramping up her gym routine in the weeks before her death, living off protein shakes and supplements. According to reports, Hefford had a rare condition called urea cycle disorder, which stops the body from breaking down protein, leading to fatal levels of ammonia in the bloodstream and excessive fluid in the brain. But this could happen to anyone who is taxing their protein-breakdown mechanisms. The final cause of death was ruled an “intake of bodybuilding supplements” (Fox News, Aug 14, 2017).

YOLKS OVER WHITES

Often in the bodybuilding world, protein loading takes the form of eating lots of egg whites and throwing away the yolks. But a fascinating study from the University of Illinois at Urbana-Champaign indicates that whole eggs are a better bet for muscle building. Subjects consumed eighteen grams of protein from whole eggs or egg whites after engaging in resistance exercise. The post-workout muscle-building response in those eating whole eggs was 40 percent greater than in those consuming egg whites. So score one victory for whole foods. “This work is showing that consuming egg protein in its natural matrix,” said lead researcher Nicholas Burd, “has a much greater benefit than getting isolated protein from the same source” (*ScienceDaily*, December 20, 2017).

SATURATED FATS AND THE LIVER

Saturated fats like butter, lard, coconut oil and tallow are blamed for just about everything these days, including nonalcoholic fatty liver disease (NAFLD) and its precursor nonalcoholic steatohepatitis (NASH), which are occurring at epidemic levels. Fructose is a more likely culprit since all fructose has to be processed through the liver. Researchers in Belgrade, Serbia fed rats diets high in fructose along with various types of fat. Fructose fed with *trans* fatty acids resulted in NASH with fibrosis by inducing oxidative stress and inflammation; whereas fructose in combination with saturated fats caused simple steatosis (fat buildup) in the liver (*Eur J Nutr* 2017 1492-1). Fructose fed with peanut oil (rich in monounsaturated fatty acids) had no effects, but

lest we conclude that olive oil is the fat most protective of liver health, another group of researchers found that mice given a diet of starch and monounsaturated fatty acids developed fatty liver disease while mice fed starch and saturated fat had no undesirable effects (*CMGH* September 2017;4(2)4:223–23). The conclusion for a healthy liver? Avoid too much refined carbohydrate, especially fructose, but not healthy saturated fats.

MORE DIET WARS

The latest salvo in the diet wars is an article by Jane Brody in the *New York Times*, “Good Fats, Bad Fats” (January 29, 2018). Brody, as you may know, has been tireless, no, relentless—writing for the *New York Times* since 1976—in pushing the mantra that saturated fats (including coconut oil) are bad, bad, bad. In an attempt to stem the public realization that it’s all been a big fat lie, Brody reports on a twenty-six-page advisory released by the American Heart Association (AHA), prepared by a “team of experts” led by Dr. Frank M. Sacks of Harvard University. The report “helps explain why the decades-long campaign to curb cardiovascular disease by steering the American diet away from animal fats has been less successful than it might have been and how it inadvertently promoted expanding waistlines and an epidemic of Type 2 diabetes.” The reason: the public did a very bad thing by replacing saturated fats with refined carbohydrates when they should have replaced those calories with vegetables, spreads and polyunsaturated oils! (Never mind that the AHA gives its seal of approval to high-carb foods like Cheerios and orange juice.) Dr. Sacks’ team summarized the results of four cherry-picked “core” trials conducted in the 1960s, which found that replacing saturated fat with vegetable oil “rich in polyunsaturated fat,” primarily soybean oil free of *trans* fats “lowered coronary heart disease by 29 percent, similar to the benefit from taking a statin to reduce cholesterol.” But as Nina Teicholz, author of *The Big Fat Surprise*, points out, those core studies do *not* show that reducing saturated fats (along with dietary cholesterol) will prevent heart attacks (*LA Times*, July 23, 2017). And data from several studies indicating that the diet-heart theory is just wrong were not published. Teicholz notes the AHA’s “longstanding reliance on funding from interested industries, such as the vegetable-oil manufacturer Procter & Gamble, maker of Crisco, and Bayer, owner of LibertyLink

Caustic Commentary

soybeans.” The truth is that we are not going to make any progress in dietary science until we call out the American Heart Association for what it really is—the marketing arm of the industrial seed oil industry—and reveal the likes of Jane Brody as a mouthpiece for commercial interests, not a legitimate journalist.

UNNECESSARY HARM?

As the lipid hypothesis continues to unravel, we detect a note of panic in the medical journals. Recently a program blasting the use of statins called “The Big Bluff” aired on Franco-German public television and the response came in the form of an article published in the *European Heart Journal* (Feb 2018;39(5):335-336). Authors François Schiele and Steen D. Kristensen wrote that the program “encouraged physicians and patients to interrupt lipid-lowering treatments and avoid blood lipid assessments.” The broadcast, they said, “was dangerously irresponsible. After antibiotics, statins may have contributed more to prolonging life expectancy than any other type of medication. . . It’s time to set the record straight because the repercussions for the misinformed are potentially catastrophic.” So how catastrophic would it be if the public stopped taking statins? The truth is that statin drugs have never been shown to prolong lives, and their benefits even for those who have had a heart attack are minimal. Statin use is associated with increased risk of cancer, neurological disorders and muscle degeneration, and study after study confirms the fact that high cholesterol is associated with a longer life, especially in the elderly. As one researcher stated, “Statins do not have a proven net health benefit in primary prevention populations, and they when used in that setting do not represent good use of scarce health care resources” (*Therapeutics Letter* 77/March-April 2010). In fact, a 2015 paper published in *Expert Reviews in Clinical Pharmacology* (2015 Mar;8(2):189-99) proposed that statins actually cause atherosclerosis and heart failure. Meanwhile, new National Health Service guidelines in the U.K. recommend giving statins to children “who have inherited the risk of high cholesterol” (*The Telegraph Science*, November 2, 2017).

NOT SO GOOD FOR THE BRAIN

Canola oil is touted as heart-healthy because it can reduce your levels of LDL-cholesterol (the kind that carries nourishment to your cells), but a new study suggests that the

oil can hasten the symptoms of Alzheimer’s disease. Two groups of mice, selected for a tendency to Alzheimer’s but without any symptoms, were given either a normal diet or the normal diet plus two tablespoons of canola oil each day. Six months later maze tests revealed the mice on the canola diet showed a decline in their working memory capacities compared to the other group. The canola oil group had also gained more weight. The canola oil mice had an increase in amyloid plaques in the brain, a substance which decreases the number of contacts between neurons. By contrast a similar study using olive oil showed a reduction in amyloid plaque. The results are surprising because canola oil contains, in principle, omega-3 fatty acids, said to be important for neurological function. But of course, high temperature processing damages omega-3 fatty acids, creating breakdown substances that could be very detrimental to brain health (*Nature Scientific Reports* 2017;7:article17134).

DENTAL EMERGENCIES

We tend to think of dental emergencies as something only encountered in the Third World, not something that happens in the West where we enjoy the latest in dental care. But in the U.S., the number of root abscesses increased by 41 percent from 2000 to 2008 (the U.S. population rose only 8 percent during the period) and emergency room dental visits rose by 50 percent from 2005 to 2011. The truth is that many Americans lack dental care and suffer from embarrassment and even unimaginable pain. We need more dentists, for sure, but what’s needed most of all is education about the tragic effects of sugary foods and lowfat diets on our teeth (*New York Times*, May 23, 2017). ☯☯☯

FOR SCIENTISTS AND LAY READERS

Please note that the mission of the Weston A. Price Foundation is to provide important information about diet and health to both scientists and the lay public. For this reason, some of the articles in *Wise Traditions* are necessarily technical. It is very important for us to describe the science that supports the legitimacy of our dietary principles. In articles aimed at scientists and practitioners, we provide a summary of the main points and also put the most technical information in sidebars. These articles are balanced by others that provide practical advice to our lay readers.

Mercury: The Quintessential Antinutrient

By Sara Russell, PhD, NTP and Kristin G. Homme, MPP, MPH

Mercury is an unusually insidious toxicant that can cause or contribute to most chronic illnesses. Its effects on various body systems can be mutually reinforcing, setting up a complex process of damage and dysfunction. For example, by inhibiting the glutathione system, which is key to detoxification, mercury perpetuates a vicious cycle of susceptibility and toxicity. As a result, mercury promotes nutritional depletion, oxidative stress, hormonal disruption, immune alteration and neurotransmitter disturbances. These in turn can cause poor digestion, leaky gut, food allergies, altered gut flora and autoimmunity.

Despite its pervasive ability to damage the body, mercury easily eludes detection, and many affected individuals have no idea that their unexplained health problems are due to past or ongoing mercury exposures. Adding to the confusion, symptoms may manifest differently depending on an individual's exposures, lifestyle, genetics and micronutrient status. In one person, mercury toxicity might show up in the form of an autoimmune issue (such as Hashimoto's thyroiditis, multiple sclerosis or systemic lupus erythematosus), while someone else might experience mood, behavior, learning or psychiatric problems. Moreover, potentially long latencies mean that onset of symptoms sometimes occurs months or years after cessation of the exposure.^{1,2}

Many symptoms of mercury toxicity are vague, resembling premature cellular aging. On the other hand, some symptoms are more distinct, a case in point being erethism. The term erethism (or reddening), which derives from a person's tendency to blush,³ covers a constellation of personality traits including timidity, diffidence, contentiousness, insecurity, bluntness, rigidity, excitability and hypersensitivity to criticism and to sensory stimulation.⁴⁻⁶ Considering mercury's subtle but reproducible effects on emotions, it is likely that a number of problems blamed on character, personality or stress may in fact be caused or compounded by low-level mercury toxicity.

WIDESPREAD EXPOSURE AND TOXICITY

Health authorities are unlikely to provide useful guidance on mercury risks, for several reasons. First, mercury is both technically and politically difficult to study; thus, scientific conclusions about some risks remain couched in uncertainty. Second, mercury's effects are non-specific and multifactorial. Finally, much exposure is iatrogenic—caused by health care providers or institutions—making it an

unpopular topic. Thus, the public may receive mixed messages from health authorities and agencies about the risks of routine mercury exposures, depending on whether the exposure involves dentistry, seafood consumption or vaccines.

For most people, the major sources of mercury exposure (Table 1) are elemental mercury vapor from dental amalgams and methylmercury (an organic mercury compound) from dietary fish. Ethylmercury (another organic mercury compound) in certain thimerosal-containing vaccines provides smaller amounts, but these can be highly toxic during the vulnerable windows of gestation and early childhood.

All three forms of mercury are easily absorbed and readily distributed throughout the body. Being lipophilic (having an affinity for lipids), they leave the bloodstream quickly, passing through biological membranes and concentrating in cells, including brain cells.⁷ Mercury is especially drawn to high-sulfur organelles (specialized cell structures) such as mitochondria. Once inside a cell, mercury (chemical symbol Hg) is soon oxidized to Hg²⁺, which, as a hydrophilic (water-loving) and lipophobic form of mercury, cannot easily pass through biological membranes. This form of

Much mercury exposure is iatrogenic—caused by health care providers or institutions—making it an unpopular topic.

ARTICLE SUMMARY

- The chronic effects of cumulative, low-dose mercury exposure are under-recognized by both mainstream and alternative health authorities and consequently by the public. Mercury can cause or contribute to most chronic illnesses, including neurological disorders, cardiovascular disease, metabolic syndrome, chronic fatigue, fibromyalgia, adrenal and thyroid problems, autoimmunity, digestive disorders, allergies, chemical sensitivities, mental illness, sleep disorders and chronic infections such as Lyme and Candida. Mercury toxicity should be suspected in individuals experiencing multiple health problems.
- Diagnosis of chronic mercury toxicity is often difficult because the body's natural defenses may mask or delay symptoms. Natural defenses are a function of genetic susceptibility, epigenetic factors, micronutrient status and allostatic load (cumulative wear and tear on the body). Furthermore, individuals who retain mercury may counterintuitively show low levels in blood, urine and hair.
- The developmental window from conception through early childhood is one of extreme vulnerability to mercury. Mercury is an epigenetic toxicant (affecting future gene expression) as well as a neurotoxicant. Damage may be permanent; therefore, prevention is key.
- For most people, mercury is the most significant toxicant in the body. By promoting oxidative stress and depleting antioxidant defenses including the glutathione system, mercury impairs the body's response to toxicants in general—including to mercury itself.
- Mercury toxicity creates a need for extra nutrition, both to repair damage and to provide ample enzyme cofactors, which can push blocked enzymes. Carbohydrate intolerance can be a symptom of mercury toxicity, and fat can be a preferred fuel. Many people with chronic mercury toxicity have found a nutrient-dense diet to be a useful starting point for symptom relief. Individualized supplementation may also be helpful to overcome the extreme nutritional depletion and unnatural toxic state.

mercury thus becomes trapped inside the cells and causes ongoing damage.⁷ Mercury has a particular affinity for the brain, where it may be retained indefinitely.^{7,8} It also accumulates in epithelial tissues, organs and glands, such as the salivary glands, thyroid, liver, pancreas, testicles, prostate, sweat glands and kidneys, and the epithelium of the intestinal tract and skin.⁷

According to the Environmental Protection Agency (EPA), 2-7 percent of women of childbearing age in the U.S. have blood mercury levels of concern.⁹ There is reason to believe that regulatory levels of concern are too lax. A 2012 study showed blunted cortisol response and higher inflammatory markers at blood mercury levels well below the EPA's established level for potential health risks (5.8 micrograms per liter).¹⁰ In addition, four neurodevelopmental disorders (attention-deficit/hyperactivity disorder, autism, seizures and stutter) affect almost 11 percent of all U.S. births, up 30 percent over the past decade.¹¹ Subclinical decrements in brain function are even more common, affecting up to 15 percent of births.¹²

Mercury's toxicity may be amplified by exposure to other toxic metals, including lead, cadmium and aluminum. Mercury and lead, in particular, are highly synergistic. In fact, in one study, a dose of mercury sufficient to kill 1 percent of lab rats (lethal dose "LD01"), when combined with a dose of lead sufficient to kill 1 percent, killed 100 percent of the rats.¹³ A similar test involving mercury and aluminum in cultured neurons killed 60 percent of the cells when the two low-dose toxicants (LD01) were combined.¹⁴ Even antibiotics have been shown to enhance the uptake, retention and toxicity of

mercury.¹⁴ Additionally, testosterone appears to aggravate mercury toxicity during development, while estrogen protects against it.¹⁵ This may explain why more boys than girls are diagnosed with autism spectrum disorders and attention deficit disorders.

DENTAL AMALGAM FILLINGS

Dental amalgam, the material used in "silver" fillings beginning in the nineteenth century, is about 50 percent mercury. Health and dental authorities deemed amalgam safe based on studies that were designed to detect obvious harm but did not investigate subtle or long-term effects. Consequently, a loose scientific consensus has long discounted the idea of mercury toxicity from dental amalgams, pointing to population studies showing that people with high exposures and even people with a high body burden do not necessarily have toxicity symptoms. Those who blame amalgams for their illnesses have been viewed askance.

Mercury is highly volatile, however, and amalgams continuously off-gas in the mouth. Evidence indicates that exposure from amalgams is sufficient to cause harm to susceptible people.¹⁵ The authors of the mercury chapter in the most recent metals toxicology textbook estimate that roughly 1 percent of the population is incurring clinical illness from their dental amalgams.⁷ This calculation is likely to be a gross underestimate because it excludes other diagnoses that may have a mercury component, such as multiple sclerosis. The World Health Organization (WHO) estimates that the typical absorbed dose of mercury from amalgams is one to twenty-two micrograms per day, with most values in the range of one to five micrograms per day.¹⁶ Various factors, including gum chewing and bruxism, can increase these exposures to an upper range of about one hundred micrograms per day.⁷ Preliminary evidence also suggests that certain types of electromagnetic radiation, including EMR from mobile phones and from magnetic resonance imaging (MRI) may increase the release of mercury vapor from dental amalgams.¹⁷

Within the past ten years, human studies have documented over a dozen common genetic variants that convey increased susceptibility to mercury,^{1,18} indicating the fact that genes drive susceptibility (and resistance) to mercury toxicity.¹⁹ Hundreds more are likely to exist, because mercury attacks sulfur in proteins and the body has tens of thousands of genetically determined sulfur-containing proteins, many of which

TABLE 1: COMMON SOURCES OF EXPOSURE TO MERCURY

Types of Exposures	Form of Mercury	Exposure Levels
Dental amalgams	Mercury vapor	A filling may release a few micrograms of mercury vapor per day
Dietary fish	Methylmercury	Depending on the species, a portion may contain roughly 1 to 100 micrograms of methylmercury
Vaccines	Ethylmercury	A thimerosal-containing vaccine may contain 12.5 to 25 micrograms of ethylmercury per shot
Prenatal exposures	All forms	Levels are unknown but clinically significant

are likely to include variants that contribute to susceptibility.⁷ Candidate genes are involved not only in methylation and detoxification, but in vitamin and mineral (i.e., enzyme cofactor) absorption, transport and metabolism. Unfortunately, policy makers, health authorities and the dental industry have yet to consider the issue of genetic susceptibility. Indeed, for millions of children and adults covered by subsidized dental programs (including military family dental care and Native American services), amalgam is still virtually the only option for dental restorations.

In 2009, despite much scientific evidence to the contrary, the U.S. Food and Drug Administration (FDA) reiterated the safety of dental amalgam. As of 2016, public interest groups are challenging this “final amalgam rule” in federal court. Issues to be litigated include whether amalgam is deemed an implant, which would require manufacturers to provide proof of safety, and whether the toxicity warnings that are given to dentists via labeling requirements should also be given to patients. Norway, Denmark and Sweden have banned dental amalgam, and as of May 2015, a scientific committee of the European Commission recommends that non-mercury alternatives be used in fillings for pregnant women and children.²⁰

In fact, fetal neurons are more sensitive to the toxic effects of mercury than any other cell type.⁷ Mercury from the mother’s body readily crosses the placenta and accumulates in the fetus, as revealed in postmortem human and animal studies.⁷ In tissue culture, clear effects on nerve growth arise at mercury concentrations equivalent to those found in newborns of amalgam-bearing mothers with no other known exposures.⁷ Furthermore, mercury levels in amniotic fluid, cord blood, placental tissue and breast milk are significantly associated in a dose-dependent manner with the number of maternal dental amalgam fillings.^{7,21} Human and animal studies show increased rates of miscarriage, neonatal death, low birth weight and developmental disorders associated with mercury exposure.⁷

As if the cumulative effects of ongoing amalgam exposure were not enough, unsafe amalgam removal also can cause acute exposures to mercury vapor. Thus, patients wishing

to replace amalgam fillings with less toxic alternatives must evaluate dentists’ use of adequate protective measures. The International Academy of Oral Medicine and Toxicology (IAOMT), a professional dental organization, has developed a protocol and training program that attempts to minimize the exposure to mercury vapor to the patient, dentist and staff during amalgam removal. In women of childbearing age, removal of amalgam should be timed so as to avoid the twelve to eighteen months preceding conception as well as pregnancy and breastfeeding.

DIETARY FISH

Natural releases of mercury from the Earth’s crust and the oceans account for 60 to 70 percent of the annual releases of mercury to the atmosphere. The remaining 30 to 40 percent is attributable to human activities.⁷ Once released into the atmosphere through either natural or human activities, mercury is deposited in soil and water, where it enters the food chain. Mercury accumulates in fish, particularly large, long-lived ocean fish.

Mercury levels in fish vary widely by species and by individual, ranging from less than 0.1 part per million (ppm) for salmon and sardines to more than 1 ppm for some samples of tilefish, shark, swordfish and king mackerel. A typical 3.5-ounce (one-hundred-gram) serving of fish could contain anywhere from a few to more than one hundred micrograms of mercury. Tuna contains moderate levels, which vary by species. The FDA sets an action level for mercury contamination in commercial fish of 1 ppm. This means that federal officials are allowed to confiscate products that exceed this threshold—but it does not mean that they actually do so.

Due to natural releases of mercury, humans have always encountered some mercury in certain fish. As long as the body’s natural defense systems are working, one can consume mercury-containing fish in moderation. In healthy individuals, intestinal metallothioneins (a class of metal-storage molecules that can be cumulatively damaged by mercury) can sequester ingested mercury and slowly allow its excretion. Selenium, discussed below, also

Mercury levels in amniotic fluid, cord blood, placental tissue and breast milk are significantly associated in a dose-dependent manner with the number of maternal dental amalgam fillings.

No regulatory safety standard exists for ethylmercury.

offers some protection against mercury and is found in fish as well as other foods.

VACCINES

One of the most controversial aspects surrounding vaccines is their mercury content. Prior to about 2004, many childhood vaccines contained thimerosal, a preservative and adjuvant that is 50 percent ethylmercury. Childhood exposure to thimerosal rose sharply in the U.S. during the 1990s as the U.S. Centers for Disease Control and Prevention (CDC) added new vaccines to the childhood vaccine schedule. Infants strictly adhering to the CDC vaccine schedule during this time typically received up to 187.5 micrograms of mercury in the first six months of life alone.²² As shown in Table 2, this was from three doses each of the diphtheria-tetanus-acellular pertussis (DTaP), *Haemophilus influenzae* type b (Hib), and hepatitis B (HB) vaccines, with additional doses of DTaP and Hib given later.²³

No regulatory safety standard exists for ethylmercury. However, because ethylmercury is chemically similar to methylmercury (the form of mercury present in dietary fish), we can compare the 187.5-microgram ethylmercury dose to the safe reference dose for methylmercury set by the EPA. This reference dose is 0.1 microgram per kilogram of body weight per day for chronic exposure, equivalent to about 0.3 micrograms per day for a newborn and 0.6 micrograms per day for a six-month-old baby. Averaging the 187.5-microgram exposure (actually delivered in a number of concentrated doses) over the six-month period, the resulting dose of 1.04 micrograms per day is signifi-

cantly higher than the EPA's "safe" reference dose of 0.3–0.6 micrograms total per day for methylmercury exposure in infants. Moreover, the EPA safe reference dose for methylmercury may be too lax,^{24,25} especially when applied to ethylmercury. Indeed, there may be no threshold that precludes adverse neuropsychological effects in children,^{24,26} whose brains are rapidly developing. Furthermore, unlike methylmercury ingested from fish, injected ethylmercury is not subject to the natural defense mechanisms related to ingestion, including metallothioneins and selenium.

In 1999, the U.S. Public Health Service called for the elimination of thimerosal from childhood vaccines. Due to supply and demand issues, it took several years to transition to reduced-thimerosal and then thimerosal-free alternatives.²² However, during the period in which thimerosal began to be phased out of other pediatric vaccines, the thimerosal-containing influenza vaccine became an important new source of mercury exposure for fetuses and children. This is because the CDC began recommending in 2002 that the influenza vaccine be given to children aged six months to twenty-three months, as well as pregnant women in their second and third trimesters, even though the only vaccine approved for these groups at the time was preserved with thimerosal.²² Next, the CDC aggressively increased the dosing and expanded the target groups for the influenza vaccine, recommending a double dose for infants at both six and seven months, plus subsequent annual doses, and a dose for all pregnant women, no longer limited to the

TABLE 2: MERCURY CONTENT (IN MICROGRAMS) OF 1990S-ERA CHILDHOOD VACCINES RECOMMENDED DURING THE FIRST SIX MONTHS OF LIFE

Vaccine	Number of Doses in the First Six Months	Total Mercury Content (and Amount per Dose) ²³
Diphtheria-tetanus-acellular pertussis (DTaP)	3 doses*	75 micrograms (25 mcg per dose)
<i>Haemophilus influenzae</i> type b (Hib)	3 doses*	75 micrograms (25 mcg per dose)
Hepatitis B (HB)	3 doses	37.5 micrograms (12.5 mcg per dose)
TOTAL	9 doses	187.5 micrograms

* With a fourth dose given after six months of age, for a total of 100 micrograms each for DTaP and Hib across the four doses.

second and third trimesters.²² As of 2013, more than half of influenza vaccines were still preserved with thimerosal,²² with the availability of non-thimerosal versions subject to supply-and-demand dynamics. A thimerosal-free flu vaccine shortage during the 2015 flu season led California’s governor to sign an exception allowing thimerosal-containing vaccines to be administered to infants and children despite a previous statewide restriction.

Like the multidose influenza vaccines, some multidose meningococcal meningitis vaccines and tetanus toxoid (booster) vaccines (not recommended for children under six years of age) also contain thimerosal as a preservative, in amounts ranging from 12.5 to 25 micrograms per dose.^{27,28} As of 2016, some other childhood vaccine preparations, such as the multidose DTap and the DTap/Hib combination vaccines, still utilize thimerosal in the manufacturing process. In these vaccines, most of the thimerosal is then filtered out, leaving “trace amounts” of thimerosal, according to the CDC.²⁹ The end result, according to thimerosal researchers, is that “the approximate maximum lifetime exposure to [mercury] from Thimerosal-preserved vaccines...is now more than double what it would have been had the pre-2000 vaccination schedule been maintained.”²²

A few isolated court cases in the U.S. and elsewhere have recognized post facto that a limited number of well-documented genetic susceptibilities to vaccine injury—including some mitochondrial disorders—have caused certain children to suffer permanent neurologi-

cal damage. Genetic susceptibilities occur along a continuum, but the growing movement to mandate vaccines has so far failed to recognize this complex reality.

OTHER EXPOSURES TO MERCURY

A number of other products have exposed consumers to mercury over time. Until the 1960s, teething powders for babies contained mercury in the form of calomel, and broken mercury thermometers were a common exposure risk in many countries up to the early 2000s. Contact lens solutions contained thimerosal, and the once widely used antiseptic called Mercurochrome contained the mercury-bromine compound merbromin.

In 1998, the FDA banned mercury as an active ingredient in over-the-counter products, declaring that it was not “generally recognized as safe” (GRAS). Nevertheless, the FDA continues to allow use of mercury as an inactive ingredient, provided its content is under sixty-five parts per million. In the cosmetics realm, FDA regulations regarding cosmetics do not require labeling disclosure of ingredients that make up less than 1 percent of the product. As a result, some brands of mascara still contain thimerosal as an antimicrobial and preservative.

Compact fluorescent lamps (CFLs) typically contain about four milligrams (four thousand micrograms) of mercury, some of which is released upon breakage in the form of mercury vapor. Table 3 compares the concentration of this toxic release to various regulatory safety standards. CFL proponents argue that the en-

Genetic susceptibilities occur along a continuum, but the growing movement to mandate vaccines has so far failed to recognize this complex reality.

TABLE 3: MERCURY EXPOSURE FROM COMPACT FLUORESCENT LAMPS (CFLs)
(MICROGRAMS PER METER³ OF AIR)

CFL exposure	
Estimated initial release from typical broken CFL ⁶¹	200-800
Selected U.S. regulatory standards for inhalation of mercury vapor	
National Institute for Occupational Safety and Health (NIOSH) “Immediately Dangerous to Life or Health” ⁶²	10,000
Occupational Safety and Health Administration (OSHA) “Permissible Exposure Limit” (PEL) for healthy workers exposed 40 hours per week ⁶³	100
Agency for Toxic Substances and Disease Registry “Minimal Risk Level” (safe limit for continuous exposure) ⁶⁴	0.2

By depleting glutathione and disabling the glutathione-related enzymes, mercury impairs the detoxification of many toxicants, ironically including mercury itself.

ergy savings offered by CFLs, which include reduced mercury emissions from coal-fired power plants, make them desirable (a debate that is beyond the scope of this article).

Finally, significant sources of local exposure to mercury may include incinerators, coal-fired power plants, crematoria and other industrial processes. For over a decade, the EPA has attempted to restrict mercury emissions from U.S. coal plants by about 90 percent, but the rule is under litigation, and legal experts predict that enforcement is years away. In some countries, gold mining techniques that employ mercury remain a significant source of exposure for miners and local populations. U.S. miners used these techniques during the Gold Rush.

DEVELOPMENTAL AND EPIGENETIC TOXICITY

The developmental period from conception through early childhood is a window of vulnerability in which both epigenetic and neurological damage can occur at exposures far lower than those known to cause toxicity in adults. Epigenetics refers to the alteration of gene expression (turning genes on and off)—usually via environmental factors—without alteration of the DNA nucleotide sequence itself, in a manner that can be passed to offspring.

Mercury is a potent epigenetic toxicant of alarming scope, with both direct and indirect effects on gene expression. Mercury directly targets the cysteine that comprises the DNA-binding sites on most gene transcription factors. In addition, it targets the cysteine in DNA methyltransferase enzymes, which play a role (DNA methylation) in normal gene expression. Indirectly, mercury promotes severe oxidative stress. Early-life stressors are known to induce changes in gene expression that set the stage for disease in later life.³⁰ Thus, unfortunately, exposure to mercury in either parent, even prior to conception, can affect the child's own genetic expression.

Epigenetic damage may range from mild to severe, and the resulting phenotype may include characteristics such as dental deformities, myopia, asymmetries of the face and disproportions of the body. Such characteristics are described in Weston A. Price's pioneering

Nutrition and Physical Degeneration,³¹ whose ideas Chris Masterjohn subsequently developed in his research on fat-soluble vitamins; in Sally Fallon Morell's and Thomas Cowan's *Nourishing Traditions Book of Baby and Child Care*;³² and in the more epigenetically focused *Deep Nutrition* by Catherine and Luke Shanahan.³³

MERCURY AS ANTINUTRIENT

Mercury readily binds to sulfhydryl, a type of sulfur also called a thiol. The thiol is the major reactive site within the amino acid, cysteine, which is ubiquitous in biochemically active proteins such as enzymes. The human body contains tens of thousands of enzymes, which drive most fundamental biological processes.

Mercury also binds strongly to selenium, a cofactor for several dozen enzymes involved in vital tasks such as thyroid function and brain antioxidant protection. Although said to protect against mercury toxicity, selenium's protective scope is limited by its intracellular availability. This is governed by kidney processes that limit the amount of such minerals in the bloodstream and by specialized channels within the cell membrane that control mineral transport from the bloodstream into cells. Lipophilic mercury, on the other hand, has no such limits when entering cells. Moreover, mercury can block selenoprotein P, a substance that stores and transports selenium to cells.³⁴ Therefore, selenium offers only limited protection against mercury exposure.

The body's most important intracellular antioxidant mechanism is the glutathione system. Glutathione detoxifies mercury by binding it (in a process called glutathione conjugation) into a less toxic form suitable for excretion through the bile. The glutathione system has been found to be crucial in the detoxification of thimerosal.³⁵ However, because the glutathione molecule and its related enzymes employ cysteine, they also are targets for mercury. Mercury can damage the body's glutathione system both by depleting the glutathione molecule itself and by blocking the enzymes that synthesize and recycle glutathione and facilitate its use. By depleting glutathione and disabling the glutathione-related enzymes, mercury impairs the detoxification of many toxicants, ironically including mercury itself,

thereby leading to increased toxicity.

By damaging methylation enzymes, including methionine synthase, mercury dysregulates the methylation cycle, a biochemical pathway in which the sulfur-containing amino acid, methionine, is recycled, creating two important products: s-adenosyl methionine (S-AdoMet), the body's universal methylator; and cysteine, the precursor for the transsulfuration pathway, which in turn produces glutathione, sulfate and taurine. By impairing the methionine synthase enzyme, mercury blocks not only detoxification via the transsulfuration pathway that produces glutathione but also the production of many hormones and neurotransmitters that require methyl donors like S-AdoMet. A lack of methyl donors also inhibits the activity of the DNA methyltransferase enzymes, which regulate gene expression.

In addition to attacking the sulfur in enzymes, mercury attacks the sulfur in the functional proteins within cell membranes. These include membrane transport channels that allow micronutrients into cells. One result is altered homeostasis of many essential minerals, which can appear abnormally high or low on testing and is an aspect of many chronic illnesses that has no other obvious explanation. Mercury also may target the disulfide bonds in collagen, the connective tissue found in blood vessels, in the gut and throughout the body. More importantly, mercury impairs the ongoing synthesis and repair of collagen, bone and cartilage, both by impairing the necessary enzymes and by depleting vitamin C, which is a required cofactor. Thus, mercury can be implicated in arthritis, osteoporosis and connective tissue disorders.

OXIDATIVE STRESS

Mercury promotes oxidative stress in several mutually reinforcing ways. Within cells, mercury concentrates in mitochondria, the organelles that synthesize ATP (adenosine triphosphate) energy. There, mercury displaces iron and copper, converting them to free radicals with the potential to cause ongoing oxidative stress unless buffered by antioxidants. Mercury also blocks mitochondrial enzymes, creating an overproduction of reactive oxygen species, including free radicals. The resulting oxidative

stress further damages mitochondrial enzymes, as well as harming mitochondrial membranes and mitochondrial DNA.

Mitochondrial dysfunction can result in overproduction of lactic acid, yielding metabolic acidosis, which depletes minerals and may promote certain pathogens. Mitochondrial damage further drains cellular energy by creating a disproportionate need for repair, perpetuating a vicious cycle.²¹ Mitochondrial dysfunction can affect immunity, digestion, cognition and any energy-intensive system within the body and is a key component of many chronic illnesses.

Oxidative stress perpetuates another vicious cycle in which free radicals cause lipid peroxidation. In this self-propagating chain reaction, the unsaturated fatty acids in cell membranes are attacked, becoming free radicals themselves and ultimately leading to excess permeability in membranes and other barriers and provoking still more damage.

MINERAL DYSREGULATION

As already mentioned, metallothioneins are cysteine-rich metal storage molecules that appear to play a role in storing zinc and copper. They are found in high levels in the intestines. When metallothioneins become saturated with mercury, they can no longer store zinc or copper or protect the body from mercury.

It is much more common for mercury-affected people to suffer from low zinc than from low copper, for several reasons. First, dietary sources of zinc are more limited than for copper. Second, excess copper is excreted into the bile and removed from the body via the feces, but many people have sluggish bile flow and/or constipation, causing copper to accumulate in the liver. Additionally, estrogen dominance, which may be amplified in mercury-affected individuals due to common hormonal imbalances, causes copper retention. Estrogen dominance is common, especially in women, due to exposure to plastics, soy, flax and other estrogenic foods, as well as hormonal birth control products. Finally, copper pipes, copper IUDs and copper sulfate sprayed on crops as an antifungal (even on many organic crops) add to the overall copper load. Because copper and zinc are antagonistic, the more that copper is retained by the body, the

Mercury attacks the sulfur in the functional proteins within cell membranes. One result is altered homeostasis of many essential minerals.

more that zinc tends to be depleted.

Mercury induces anomalies in the transport of essential minerals such as magnesium and zinc that cause an extra need for these minerals in the diet. Furthermore, many health conditions caused by mercury toxicity are aggravated by low magnesium and/or zinc, including cardiovascular disease, fibromyalgia, autism spectrum disorder (ASD), attention deficit disorders and depression. Not every person with a history of mercury exposure is deficient in all of these nutrients, however, and it is important to note that minerals have complex synergistic and antagonistic relationships. As we have just seen, low zinc is often accompanied by high copper, and low magnesium is often accompanied by high calcium in soft tissues.

NEUROLOGICAL DISORDERS

Health authorities persist in citing a subset of studies that have failed to find a causal link between ASD and mercury,³⁶ and the association remains a taboo subject in mainstream medicine and the media. Nonetheless, many other studies suggest a connection, and such a link is widely viewed as biologically plausible.⁷ Autism is documented to involve oxidative stress, mitochondrial dysfunction, immune or inflammatory processes, impaired sensory processing and abnormal mineral homeostasis, all of which are consistent with mercury toxicity.³⁷ Autistic children have been found to have significantly higher exposure to mercury during fetal development and early infancy, as measured by metals in baby teeth.³⁸ Individuals with ASD also are frequently deficient in zinc.³⁹ Other commonly observed mineral imbalances in ASD include low calcium, iron, magnesium, manganese and selenium, as well as high copper and elevated toxic metals, although these can sometimes be difficult to detect through testing, as described later.

Attention deficit disorder (ADD) and attention-deficit/hyperactivity disorder (ADHD) are common early findings in mercury-exposed children.¹⁸ Zinc deficiency has been identified as a biomarker for ADHD,³⁹ and the abnormal mineral profile for ADHD appears quite similar to that for autism and mood disorders, with the exception that ADHD typically includes iron

overload. Additionally, copper dysregulation is a key factor in ADHD.⁴⁰ Many studies likewise report a close association between zinc deficiency and clinical depression, with severity of symptoms inversely correlated with serum zinc levels. Decreased levels of zinc, calcium, iron and selenium have been reported as risk factors for postpartum depression.³⁹

Other neurological and psychiatric disorders associated with mercury include narcolepsy, obsessive-compulsive disorder, schizophrenia, bipolar disorder, Tourette syndrome and borderline personality disorder, as well as neurodegenerative disorders such as Alzheimer's disease, Parkinson's disease and multiple sclerosis. Each has been documented to involve oxidative stress, inflammation, mitochondrial dysfunction and mineral imbalances, all of which can be attributed to mercury. These diseases are complex, such that human studies are unlikely to find a direct causal link with any one risk factor that is strong enough to satisfy skeptics, but a growing body of evidence suggests that mercury plays a major role.⁴¹

Exacerbating the mineral dysregulation associated with these many conditions are the neurotransmitter imbalances provoked by mercury. For example, mercury increases extracellular levels of the excitatory neurotransmitter glutamate, thus overactivating glutamate receptors on cell surfaces.⁴² The amplification of glutamate is further exacerbated by mercury's inhibition of the calming neurotransmitter GABA.³⁷ Mercury blocks GABA receptors, disproportionately destroys GABA-producing Purkinje neurons and impairs glutamate decarboxylase (GAD), the enzyme responsible for converting glutamate to GABA. Furthermore, mercury's dysregulation of glutamate and GABA is associated with depression and suicide.^{21,43,44}

ALTERED MICROBIOTA, DIGESTIVE DYSFUNCTION AND IMMUNE HEALTH

Mercury is known to alter the intestinal microbiota, yielding increased levels of undesirable mercury-resistant bacterial species, which may also develop resistance to antibiotics.^{37,45,46} For example, the opportunistic yeast, *Candida albicans*, may overgrow, causing a host of unpleasant symptoms. This dysbiosis may be exacerbated by mercury's dysregulation of the immune system as well as its promotion of metabolic acidosis. All of this has negative implications for digestion, immunity and mental health.⁴⁷⁻⁴⁹

Mercury also inhibits several enzymes affecting digestion, including gastric hydrogen-potassium-ATPase, the enzyme that allows the synthesis of hydrochloric acid via the stomach's proton pump. In addition, by promoting oxidative stress, mercury moves the autonomic nervous system into sympathetic (stress) mode, inhibiting digestion. Furthermore, the mitochondrial dysfunction from which many mercury-affected individuals suffer impairs digestion as well as other bodily functions. By damaging both the gut and the blood-brain barrier, mercury leads to leaky gut, which in turn leads to food allergies and brain disorders caused by maldigested proteins entering the bloodstream. As a fairly common case in point, partially digested proteins in foods containing gluten and casein may be metabolized into the opioid peptides, gluteomorphin and casomorphin.⁵⁰ This is often seen in children with ASD and explains

many parental reports of symptom relief on a gluten-free, casein-free diet.

Mercury's effects on the gut can exacerbate its effects on the immune system. Mercury is known to cause allergies, reduced immunity and autoimmunity,⁵¹ and such immune dysfunction plays a role in many chronic illnesses. Reduced immunity yields susceptibility to chronic infections such as Lyme and Candida. Finally, although technically not an allergy, multiple chemical sensitivities can result from mercury overloading the body's detoxification system and blocking metabolic enzymes in the liver and other tissues, such that common but undesirable chemicals such as fragrances are metabolized incompletely, yielding toxic intermediates.

THYROID, HPA AND STRESS-RELATED DISORDERS

Mercury concentrates in glands, including the thyroid and pituitary glands, and impairs the hypothalamus-pituitary-adrenal (HPA) axis. HPA function and thyroid function are tightly interrelated, with impairment of one system often causing impairment of the other. Mercury blocks the selenium-dependent enzyme that converts the thyroid hormone thyroxine (T4) to its active form, triiodothyronine (T3). Unfortunately, despite symptoms, the resulting hypothyroidism often goes undetected by routine blood work, which typically only tests levels of thyroid-stimulating hormone (TSH), the hormone secreted by the pituitary to signal the thyroid gland to produce T4. Further suppressing thyroid function is the mercury-induced depletion of selenium and zinc, which are cofactors for thyroid enzymes.

The oxidative stress caused by mercury is a type of chronic stress that depletes the HPA axis. Thus, mercury is implicated in the cluster of symptoms referred to as adrenal fatigue. An evolving view suggests that adrenal fatigue is not a glandular problem, but rather a brain-stress problem.⁵² Early-life exposure to mercury also causes epigenetic damage to the HPA axis, which can dysregulate the stress response throughout life. This may involve a tendency toward either high or low baseline cortisol as well as a loss of the dynamic cortisol response to stress.⁵³ The latter yields a disabling feeling of unwellness and stress intolerance. High baseline cortisol, on the other hand, may feel less debilitating, but this is a catabolic state that can promote degeneration of otherwise healthy tissues.

METABOLIC DISORDERS, OBESITY AND CARDIOVASCULAR DISEASE

HPA dysregulation and thyroid dysfunction have a strong impact on metabolism and weight. As an epigenetic toxicant, mercury can cause a host of metabolic issues, including blood sugar problems, insulin resistance and stress intolerance. These symptoms can persist throughout life and into future generations. In addition, mercury impairs many enzymes needed to metabolize food into energy, including pyruvate dehydrogenase, which is required for metabolism of carbohydrates but not fats or proteins. Hypoglycemic symptoms, which are common in mercury toxicity, may not reflect true low blood sugar but may indicate impaired enzymes within the brain and/or HPA axis. Other enzymes impaired by mercury include those of the citric acid cycle and the electron transport chain,

leading to low ATP energy. Mercury also blocks the insulin receptor, promoting high insulin and thus fat storage. Mercury can cause weight gain or weight loss, depending on whether metabolic dysregulation or gut dysfunction predominates.

Regarding mercury's role in cardiovascular disease, mercury oxidizes blood vessels as well as cholesterol, leading to arterial plaque. Mercury promotes thrombosis and endothelial dysfunction in blood vessels.⁵⁴ Mercury can cause high or low blood pressure depending on whether artery calcification or artery deterioration and HPA dysfunction predominate. In a remarkable example of how mercury accumulates in certain tissues, a biopsy study of thirteen patients with a type of heart failure found that mercury levels in the myocardium were twenty-two thousand times higher than normal.⁵⁵

NUTRITION

The alternative health community recognizes the role of micronutrients in promoting physical and mental health as well as optimal child development. Less well recognized is the role of toxicity in depleting one's micronutrient status and the analogous role of micronutrient status in exacerbating or alleviating toxicities.

Mercury damage creates a need for extra nutrition, both to repair damage and to prod blocked enzymes. Nutrient-dense diets are of critical importance, and targeted supplementation may help to overcome the unnatural toxic state. Because everyone's nutrient status is uniquely affected by mercury, it is wise to take an individual approach rather than supplement all potentially depleted nutrients across the board. In addition, it is common for people with mercury toxicity to have multiple food sensitivities, particularly to gluten, casein and soy. Dietary modifications are sometimes necessary to control the inflammation and other symptoms that result from these food sensitivities. Persisting in eating foods to which we are allergic or intolerant impairs detoxification by placing undue stress on the organs of digestion and elimination, putting the HPA axis on alert and increasing the level of inflammation in the body.

High-quality fat is a preferred fuel in mercury toxicity, supplying much-needed fat-

soluble vitamins and helping to stabilize blood sugar levels. It is important to eat a variety of healthy fats from both animal and plant sources. Because both brain tissue and the phospholipid bilayer of the cell membrane are built in large part from saturated fat, consumption of grass-fed animal fats such as lard, tallow, ghee and butter contributes to repair. Cod liver oil, liver, extra-virgin organic olive oil, red palm oil and lard are important sources of fat-soluble vitamins.

Fat metabolism requires fewer enzymes than carbohydrate metabolism and thus has less opportunity to be blocked by mercury. Impaired enzymes slow energy production and can create toxic intermediates, which can yield food intolerances to some carbohydrate foods. Carbohydrates also can raise insulin, the fat-storage hormone, which may already be high due to mercury toxicity. Finally, high-carbohydrate foods are more likely than high-fat foods to contain antinutrients such as phytates, oxalates and lectins.

Bone broth is ideal for repairing the digestive lining and connective tissue and for supplying easily assimilated amino acids and other nutrients. Daily consumption of bone broth can help repair the excessive gut permeability that often leads mercury-toxic individuals to develop food allergies and autoimmunity. Glutamine is one of the most important amino acids needed to repair the lining of the gut. Glutamine and glycine, both abundant in bone broth, are precursors to the body's production of glutathione. Vitamin B6 and magnesium may ease the conversion of glutamate to GABA.⁵⁶ In the event of sensitivity to glutamate, it is advisable to simmer the bone broth for no longer than three to four hours.

Beet kvass can improve the flow of bile and thus improve excretion of mercury and other toxicants through the bile, particularly in individuals who tend to be constipated. Other probiotic foods such as sauerkraut are also helpful as part of a healing program. It is a good idea to start with a small amount of probiotic foods and to increase gradually as tolerated.

Foods high in vitamins A, C, D and E confer important antioxidant and immune-modulating benefits. Vitamin C, for example, helps rebuild

damaged collagen and can be obtained from a variety of food sources as tolerated, although one should take care not to rely entirely on the sweeter fruits, which can be problematic for people with blood sugar issues. Good sources of vitamin C include rose hips, guava, acerola cherry, lemons, limes, oranges, grapefruit, kale, broccoli, cauliflower, Brussels sprouts, papaya, mango, pineapple, kiwi and strawberries. People who suffer from thiol sensitivity, discussed below, will need to avoid or limit the vegetables included on the list (see "Sulphur foods" in Resources sidebar p. 26). Bearing in mind that the liver has two detoxification pathways—phase I (breaking down substances) and phase II (building new substances)—it may be wise to consume grapefruit only occasionally. This is because grapefruit can stimulate phase II and slow down phase I. (The exception is if phase I is already known to be overly active with respect to phase II.)

Mineral dysregulation is significantly more pronounced in people with chronic mercury toxicity than in the general population,⁵⁷ as are other nutritional deficiencies and food intolerances. Each mercury-toxic person has a unique combination of mineral imbalances that affect how mercury toxicity is expressed and point to the particular nutrient combination that is likely to provide relief. In general, the two minerals most commonly depleted by mercury are magnesium and zinc. Organ meats are nutrient-dense and can help supply these depleted minerals as well as important vitamins. For example, liver is high in vitamins A and B12 as well as zinc, magnesium and selenium. Leafy green vegetables, nettles, properly soaked lentils (if tolerated) and properly prepared almonds also are good sources of magnesium. Nettles are a great source of numerous other vitamins and minerals and can be added to soups or enjoyed as a tea. Zinc-rich foods are critical, but unfortunately oysters, the richest source of zinc, also tend to be high in cadmium and other heavy metals. Thus, red meat and poultry, along with properly soaked sesame and pumpkin seeds and pine nuts, may more suitably sources of zinc for mercury-affected people, keeping in mind that we absorb zinc much more efficiently from animal foods than from plant sources.

Brazil nuts are a good source of selenium, and unlike fish, which is also high in selenium, do not contain potentially problematic levels of mercury. However, the selenium content of Brazil nuts varies according to the soil where the nuts are grown (as is the case for all foods). Brazil nuts are high in unsaturated fat and may not keep well if soaked extensively, but overnight soaking works well in temperate climates. Regarding the selenium in fish, evidence suggests that once the body's natural defenses have been overrun by mercury, the selenium in seafood is less effective in buffering the mercury. Thus, people who know or suspect a mercury problem must consider both the benefits and risks in determining their fish consumption level. Those who choose to limit their seafood intake should consider taking cod liver oil and perhaps fish oil to derive some of the nutritional benefits of fish while keeping mercury exposure as low as possible.

Overall, one's goal should be to eat the least restrictive nutrient-dense diet possible. Elimination and reintroduction of suspect foods is the best way to assess whether specific foods are problematic. Many children and adults with mercury toxicity benefit from a gluten-free, casein-free

diet, while others can tolerate one or both of these foods. Additional intolerances too numerous to list may affect mercury-toxic individuals to varying degrees. Regardless of the particular diet, the body's ability to detoxify will be reduced by intake of alcohol, sugar, refined starches, processed foods, caffeine and medications, and will cause unpleasant symptoms in many affected individuals.

The common intolerance to sulfites in wine suggests impairment of the sulfite oxidase enzyme needed to convert toxic sulfite to beneficial sulfate. This enzyme can be boosted by supplementing its cofactor, molybdenum. Because mercury blocks metabolic enzymes such as phenolsulfotransferases, some food compounds such as phenols can become partially metabolized into toxic intermediates, often resulting in reactions such as red cheeks and/or ears and hyperactivity after consuming foods high in phenols.⁵⁸ Yeast overgrowth can increase sensitivity to high-thiol and high-oxalate foods.

Foods high in free thiols may be poorly tolerated by some mercury-affected individuals, particularly if the transsulfuration pathway is compromised, as can occur with molybdenum deficiency. Other sulfur-rich foods, such as red meat and organ meats, do not cause such problems. Of course, it is important to consume a diet that includes all the essential amino acids, including those that contain sulfur. The late Andrew Cutler, author of *Amalgam Illness: Diagnosis and Treatment*⁵⁶ and *Hair Test Interpretation: Finding Hidden Toxicities*⁵⁷ noted that foods high in free thiol (which include legumes, dairy, the cabbage family and eggs) can provoke symptoms in a significant subset of mercury-affected people, in part by increasing plasma cysteine, which may rise in response to mercury and its biochemical effects. Vegetarian diets are particularly deleterious to a significant subset of people suffering from mercury toxicity, because it is virtually impossible to obtain sufficient protein on a vegetarian diet that is modified to reduce free-thiol sources.

Another problematic food for many mercury-toxic individuals is cilantro leaf, which contains a chelating substance capable of redistributing mercury, thus exacerbating symptoms in sensitive individuals. Unfortunately, alternative health practitioners sometimes recommend cilantro in large amounts in both food and supplement form. Also often recommended is chlorella, which is inadvisable as a supplement due to its potential for contamination from the environment in which it is grown and to its lipopolysaccharide content, which can cause inflammatory stress.⁵⁹

TESTING

Unfortunately, testing for mercury toxicity is not straightforward. Mercury may accumulate in organs like the brain, even while blood, urine, fecal and hair levels are low. It is advisable to avoid urine challenge tests, which involve administering a chelator in a dosage high enough to cause significant oxidative stress due to redistribution of toxic metals to target organs such as the brain and kidneys. A porphyrin panel can reveal the footprint of toxic metals including mercury. Porphyrins are undesirable byproducts that occur when enzymes are blocked by toxicants. However, because porphyrins are easily destroyed,⁶⁰ the risk of false negatives is high unless the sample is handled carefully.

A hair elements test is another option, revealing apparent dysregulation of essential mineral homeostasis—with essential hair minerals appearing abnormally high and/or low. Thus, the hair elements test may serve as an economical screening test for chronic mercury toxicity. Note that when hair essential minerals are dysregulated, a high level of an essential mineral may not indicate adequate intracellular status but may simply mean high excretion in hair.

It is beyond the scope of this nutrition-focused article to discuss mercury treatment options, but we recommend caution when considering detoxification protocols. For the highly mercury-toxic, many products may be either unsafe (such as chlorella and cilantro) or may be used in an unsafe manner (such as alpha lipoic acid). Many nutritional supplements include alpha lipoic acid without warning about its metal-chelating properties. When taken by individuals who have mercury dental amalgams or a body burden of mercury, alpha lipoic acid can pull mercury from the teeth and other tissues in an attempt to equilibrate levels throughout the body and brain. This is especially tragic when fetal exposure is involved. We suggest that anyone wishing to deepen their knowledge of mercury detoxification read the books by Andrew Cutler (see Resources sidebar).^{56,57} Cutler's work is the most useful compilation of science-based explanations of mercury toxicity and its myriad effects. It should be noted that Cutler's chelation protocol, though grounded in scientific theory, is controversial and not without risk.


CONCLUSIONS

Mercury's toxicity is uniquely far-reaching, creating a biochemical train wreck in the body and having the toxic power to cause or contribute to most chronic illnesses. In addition to disrupting fundamental biochemical processes, mercury promotes oxidative stress, depletes antioxidant defenses and destroys biological barriers. It causes numerous interacting effects across multiple organ systems,²¹ leading to a gamut of health issues ranging from fatigue and inflammation to endocrine and immune dysregulation and mood disorders. People who have multiple health problems should consider the possibility that they are suffering from un-

diagnosed chronic mercury poisoning.

Mercury depletes nutrients needed for vital functions and dysregulates mineral and neurotransmitter metabolism to a greater extent than any other common toxicant. Because of mercury's powerful antinutrient effects, a nutrient-dense diet may alleviate many symptoms of chronic mercury toxicity, but the nutritional depletion caused by mercury is so pervasive that affected individuals often also require nutritional supplementation. At the same time, it is important to note that many mercury-affected individuals are quite sensitive to a large number of foods, supplements and medications. Nonetheless, many people with a hidden mercury burden find relief by following a nutrient-dense diet, adapted as necessary to avoid gluten and/or dairy and to limit sugars and starches.

There are many reasons why chronic mercury toxicity remains under-recognized by both mainstream and alternative health authorities. These include the complicated, incomplete and easily misinterpreted scientific literature on mercury; mercury's complex, nonlinear toxicity; the influence of genetics, epigenetics and micronutrient status in shaping mercury susceptibility; the ability of the body's natural defenses to mask toxicity, creating long latencies between exposures and symptoms; and mer-

cury's varied and nonspecific symptoms, which may also be intermittent in the early stages. In addition, toxicity testing is not straightforward. Finally, because much exposure to mercury has been iatrogenic—via dental amalgams and vaccine preservatives—mercury research often is controversial. The unfortunate combination of ubiquitous exposures, iatrogenic involvement, long latencies, broad toxic effects, nonspecific symptoms and potentially irreversible damage renders chronic mercury toxicity an under-recognized epidemic. 

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RESOURCES

- **INTERNATIONAL ACADEMY OF ORAL MEDICINE AND TOXICOLOGY (IAOMT)**
IAOMT (IAOMT.org) is a professional dental association that provides fact sheets about mercury and information about IAOMT's safe amalgam removal protocol.
- **MERCURY FREE BABY**
Mercury Free Baby (mercuryfreebaby.org) is a joint project of IAOMT and the Coalition for Mercury-Free Drugs (CoMeD), which advocates for removal of mercury from all vaccines.
- **DENTAL AMALGAM MERCURY SOLUTIONS (DAMS)**
DAMS (amalgam.org) is a non-profit organization dedicated to educating consumers about unhealthy dental practices.
- **AMALGAM ILLNESS: DIAGNOSIS AND TREATMENT**
This 1999 book by Andrew Hall Cutler is still the most complete, science-based self-help book on chronic mercury toxicity. *Amalgam Illness* (ISBN 0967616808) is available at noamalgam.com as well as at online bookstores.
- **MERCURY POISONING: THE UNDIAGNOSED EPIDEMIC**
This 2013 book by David Hammond provides more context and less physiology than Cutler's book, in a rendition that some may find more readable.
- **"SULPHUR FOODS"**
This resource (livingnetwork.co.za/chelationnetwork/food/high-sulfur-sulphur-food-list/) explains why some people with mercury toxicity cannot tolerate thiols and how to identify thiol intolerance.
- **ENVIRONMENTAL WORKING GROUP (EWG)**
The EWG offers a Skin Deep® searchable online consumer database (<http://www.ewg.org/skindeep/>) that provides information about body care products such as soap, shampoo, sunscreen and cosmetics.

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The Ongoing Thimerosal Travesty Needs to End

By Robert F. Kennedy, Jr.

Thimerosal is the infamous mercury-containing preservative in use, to this day, in some vaccines and also in dozens of other pharmaceutical products approved by the Food and Drug Administration (FDA).¹⁻³ Public health agencies, government regulators and medical trade groups have repeatedly declared thimerosal to be safe,^{4,5} but the published peer-reviewed science argues that nothing could be further from the truth. For anyone who bothers to investigate thimerosal's appalling record, there is a vast, still accumulating and compelling body of research that contradicts the public health establishment's deceptive safety claims.

Thimerosal is almost 50 percent ethylmercury by weight. Ethylmercury is an organic mercury compound with toxicity mechanisms similar to methylmercury⁶ (the hazardous type of mercury in seafood). The danger posed by both types of mercury was evident in earlier eras when fungicides containing either ethyl- or methylmercury poisoned farmers, sometimes on a large scale, from the 1950s through the 1970s.^{7,8} Of the two compounds, the ethylmercury in vaccines is far more toxic to and persistent in the brain, where it has a propensity to accumulate as inorganic mercury,^{9,10} with an estimated half-life of as long as twenty-seven years.¹¹

The escalation of thimerosal use in consumer products occurred despite numerous studies showing that thimerosal actually was more effective at destroying human cells than killing pathogens.

HISTORY OF THIMEROSAL

Before the invention of modern antibiotics and antiseptics, physicians experimented with mercury-containing compounds to try to stave off microbial pathogens. Thimerosal was born of those efforts. Dr. Morris Kharasch, a university chemist and Eli Lilly fellow, developed thimerosal and filed for a patent in June, 1929, describing thimerosal as an “alkyl mercuric sulfur compound” with antibacterial properties. Eli Lilly and Company registered thimerosal under the trade name Merthiolate later that year.

Eli Lilly researchers reported in 1931 that animals seemed to tolerate high doses of thimerosal. However, many of those animals died of evident mercury poisoning just days after the study ended. Also noteworthy is the fact that in early animal toxicity studies and many later research efforts, researchers did not assess socialization behaviors or perform cognition tests. In other words, they did not consider the possibility of mercury-induced brain damage.

During this same time period, the Eli Lilly researchers reported on the first injections of thimerosal into humans. The unlucky recipients of large doses of Merthiolate were twenty-two patients hospitalized during a 1929 epidemic of meningococcal meningitis in Indianapolis. The thimerosal had no apparent therapeutic benefit, and all twenty-two patients died—seven of them within one day of thimerosal administration. The researchers nevertheless described the experiment as a success, and a published paper stated that “these large doses did not produce any anaphylactoid or shock symptoms” (neither of which is associated with toxic mercury exposure). However, the clinician who treated the meningitis patients apparently was not convinced of thimerosal’s efficacy, stating, “Beneficial effects of the drug were not definitely proven.” Moreover, any short-term neurological or other deleterious effects of the thimerosal would likely have been masked by or attributed to the patients’ meningitis infections.

For decades, Eli Lilly promoted its confident version of the Indianapolis results as evidence of thimerosal’s safety, paving the way for thimerosal’s inclusion in various antiseptic products, including nasal sprays, eyewashes, vaginal spermicides and diaper rash treatments. This

escalation of thimerosal use in consumer products occurred despite numerous studies from the 1930s showing that thimerosal was not, in fact, “highly germicidal” and actually was more effective at destroying human cells than killing pathogens. Thimerosal never measured up to its supposed *raison d’être* of safely preventing microbial contamination, and studies continued to chalk up clear and unequivocal evidence that thimerosal was deadly to human cells.

THIMEROSAL IN VACCINES

Nonetheless, starting in the 1930s, pharmaceutical companies began to use thimerosal in multidose vials of vaccine to extend shelf life and lessen the risk of bacterial and fungal contamination that arises when several doses are drawn from the same vial. Centers for Disease Control and Prevention (CDC) guidelines allow health providers to administer extra doses from multidose vials up until the printed expiration date “if the vial has been stored correctly and the vaccine is not visibly contaminated.”¹² (The CDC does not say what to do about contamination that may not be “visible.”)

Through the 1970s and 1980s, children in the U.S. generally received eight injections of three types of vaccines—oral polio, measles-mumps-rubella (MMR) and diphtheria-tetanus-pertussis (DTP) vaccine—in their first eighteen months. The DTP vaccine contained fifty micrograms of thimerosal per shot, translating into one hundred micrograms of mercury exposure by eighteen months. In 1986, after more and more people began suing vaccine manufacturers for serious vaccine injuries primarily related to the DTP vaccine, Congress took the unprecedented step of granting vaccine manufacturers full immunity from lawsuits. The National Childhood Vaccine Injury Act of 1986 established a compensation program “as an alternative remedy to judicial action for specified vaccine-related injuries.”¹³ By making it impossible for vaccine-injured plaintiffs to sue pharmaceutical companies, the result—whether intended or unintended—was to eliminate any financial incentive to make vaccine safety a priority.

Beginning in 1989, the CDC’s Advisory Committee on Immunization Practices (ACIP) began steadily increasing the types and total

number of vaccines required for school attendance, including thimerosal-containing vaccines. By 1999, the expanded vaccine schedule called for children to receive nineteen vaccine injections by age two, eleven of which contained thimerosal. Children born in the 1990s could be injected, therefore, with up to 237.5 micrograms of mercury by their second birthday, and as much as 62.5 micrograms at a single doctor's visit.

In my book, *Thimerosal: Let the Science Speak*,¹⁴ I quote school nurse Patti White, who noticed, early on, the vaccine-induced mercury overload in young children. In 1999, White testified before Congress about the thimerosal-containing hepatitis B vaccine administered to newborns:

The elementary grades are overwhelmed with children who have symptoms of neurological and/or immune system damage: epilepsy, seizure disorders, various kinds of palsies, autism, mental retardation, learning disabilities, juvenile-onset diabetes, asthma, vision/hearing loss, and a multitude of new conduct/behavior disorders. We [school nurses] have come to believe the hepatitis B vaccine is an assault on a newborn's developing neurological and immune system. Vaccines are supposed to be making us healthier. However, in twenty-five years of nursing I have never seen so many damaged, sick kids. Something very, very wrong is happening to our children.

School nurses were not the only ones to call attention to the mounting evidence that thimerosal-containing vaccines were having neurotoxic effects. In response to pressure from Congress and the public, the FDA conducted a review in the late 1990s that found that the amount of mercury in the childhood vaccine schedule surpassed some federal safety guidelines. Accordingly, the U.S. Public Health Service (USPHS) and the American Academy of Pediatrics (AAP) issued a lukewarm statement in 1999 about thimerosal's potential risks. The statement's authors called for the phase-out of thimerosal-containing vaccines "as expeditiously as possible," while still

avowing that "the large risks of not vaccinating children far outweigh the unknown and probably much smaller risk, if any, of cumulative exposure to thimerosal-containing vaccines over the first 6 months of life."¹⁵

THE SIMPSONWOOD CABAL

A year later (June 7-8, 2000), the CDC convened a secret scientific review panel of over fifty experts who began backpedaling from the AAP-USPHS pronouncement.¹⁶ The group that met at the Simpsonwood Retreat Center near Atlanta included high-ranking CDC and FDA representatives, state and international public health officials, vaccine company representatives and others. At the outset, the meeting's chair, immunologist Richard Johnston, expressed regret that the group had not met to consider the data sooner, "in advance of...the public health decisions [to phase out thimerosal] that were made last summer." Further betraying his preconceptions, Johnston stated that there was "no evidence of a problem, only a theoretical concern that young infants' developing brains were being exposed to an organomercurial."

The group then heard a presentation by Thomas Verstraeten, a research fellow at CDC who subsequently went on to a decade-long career at GlaxoSmithKline. Verstraeten had been working up a study using data from the Vaccine Safety Datalink (established by the CDC in 1990 to study rare and serious vaccine adverse events), scrutinizing data from roughly one hundred and ten thousand children born between 1992 and 1997 and enrolled at U.S. health maintenance organizations. The study sought to assess the relationship between thimerosal exposure (at one, two, three and six months of age) and neurological damage. After the initial findings showed a possible causal link, Verstraeten reworked the study design and analyses several times prior to Simpsonwood. Despite these apparent attempts to make the association "go away," Verstraeten was obligated to present the troublesome finding of linear and statistically significant dose-related relationships between thimerosal exposure and neurodevelopmental disorders to the group assembled at Simpsonwood.

Although differing viewpoints emerged, many of the Simpsonwood attendees were less

A school nurse testified before Congress, "I have never seen so many damaged, sick kids. Something very, very wrong is happening to our children."

The groupthink on display at Simpsonwood primarily illustrates that most public health and medical experts were itching to exonerate thimerosal, regardless of the science, and continue with business as usual.

than persuaded by Verstraeten's results. Some, such as John Clements of the World Health Organization's Expanded Program on Immunization, focused more on the public relations implications. Clements stated:

I hear the majority of the consultants say...that they are not convinced there is a causality direct link between Thimerosal and various neurological outcomes. ... The research results have to be handled, and even if this committee decides that there is no association...through freedom of information that will be taken by others and will be used in other ways beyond the control of this group. [...] My mandate... is to make sure...that 100,000,000 are immunized with DTP, Hepatitis B and if possible Hib, this year, next year and for many years to come, and that will have to be with Thimerosal-containing vaccines unless a miracle occurs and an alternative is found quickly and is tried and found to be safe. [...] How will it be presented to a public and a media that is hungry for selecting the information they want to use for whatever means they have in store for them? ...I wonder how on earth you are going to handle it from here.

Despite the clear association between thimerosal exposure and neurodevelopmental disorders demonstrated by the Verstraeten study, many of the industry and public health scientists present tried to minimize the implications by voting them away. When polled at the end of the day's discussion, most of them voted to rate the link between thimerosal and neurodevelopmental disorders as "weak." In his summary comments as meeting rapporteur, Paul Stehr-Green described Verstraeten's results as being only weakly indicative of a safety signal—defined as "information on a new or known adverse event that may be caused by a medicine."¹⁷ While acknowledging that the signal "deserved further investigation and...raised some perhaps disquieting possibilities," Stehr-Green concluded that "there was not anything close to sufficient evidence to support a finding of a causal relationship."

Attendee William Weil (a pediatrician representing the AAP) noted that even accepting Stehr-Green's assertion that Verstraeten hadn't proven a link to neurodevelopmental disorders, it was alarming that he hadn't disproven it, and there was insufficient evidence, he pointed out, to reject a possible causal relationship. He stated that "the possibility that the associations could be causal has major significance for public and professional acceptance of thimerosal-containing vaccines." Weil also observed that "the number of kids getting help in special education is growing nationally and state by state at a rate we have not seen before." Another of his observations was that thimerosal in vaccines represented "repeated acute exposures" and that "the earlier you work with the central nervous system, the more likely you are to run into a sensitive period for one of these [neurodevelopmental] effects." Finally, Weil pointed out the limitations of epidemiological studies, calling for further in-depth animal and developmental neurotoxicity studies and stating: "Some of the really gutsy questions from a person who is very concerned about neurodevelopment cannot be answered out of this." At the same time, Weil cautioned others not to overly minimize or "play with" the VSD data. Weil was the only reviewer present to rate the association between thimerosal and the neurodevelopmental outcomes as strong, giving it a four on a scale of one to six (where one was weakest).

The groupthink on display at Simpsonwood primarily illustrates that most public health and medical experts were itching to exonerate thimerosal, regardless of the science, and continue with business as usual. Following the Simpsonwood meeting, CDC moved aggressively to hastily gin up five poorly designed epidemiological studies¹⁸⁻²² to disprove the link between thimerosal and neurodevelopmental disorders. Written by industry scientists, the published studies focused solely on one injury (autism), and four out of the five were done on foreign populations with minimal exposure to thimerosal. Three of the five studies were published in a compromised journal, *Pediatrics*, which receives a significant portion of its revenue from vaccine-makers. In 2002, the AAP dutifully "retired" its 1999 joint statement on thimerosal.²³ In January 2013, the

AAP went even further in several articles in *Pediatrics*, going on record in favor of exempting thimerosal from an international treaty on the elimination of avoidable mercury exposures.²⁴

THE FALLACY OF TRACE AMOUNTS

Even when vaccines do not contain thimerosal as a preservative, manufacturers use it in some single-dose and multidose vaccines to impede bacterial growth during the manufacturing process.⁵ The CDC states that “when thimerosal is used this way, it is removed later in the process” and only “trace amounts” remain (no more than one microgram per dose).²⁵

The notion that “trace amounts” of a substance as highly toxic as mercury might be benign is exceedingly misleading. In a seminal 2014 publication in the prestigious journal *Lancet Neurology*, toxicology experts Philippe Grandjean and Philip Landrigan observed that the developing human brain is uniquely vulnerable to mercury and other neurotoxins, often “at much lower exposure levels than had previously been thought to be safe.”²⁶

Discussing methylmercury, the *Lancet* authors also noted that developmental neurotoxicity occurs at far lower exposure levels than “the concentrations that affect adult brain function.” Other investigators have argued that there may be no meaningful safety threshold for methylmercury.²⁷ Given the body of research indicating that ethylmercury is more toxic than methylmercury and that both have comparable mechanisms of toxicity, it stands to reason that warnings about the risks of lower exposure levels would also apply to ethylmercury.

A 2012 Italian study showed that ethylmercury-containing thimerosal diminished the viability of human cells in the lab at a concentration one-fiftieth that of methylmercury.²⁸ Although thimerosal’s apologists like to state that ethylmercury disappears from the bloodstream more quickly than methylmercury, this is no evidence that it has cleared the body. Ethylmercury migrates more rapidly to and then lingers in the organs.²⁹

A study that analyzed hair samples from babies’ first haircuts found that children with autism who had received thimerosal-preserved vaccines excreted lower levels of mercury into

their hair as infants compared with normal, same-aged children also receiving these vaccines, suggesting that the mercury had lodged in the autistic children’s brains and was hindering neurological development.³⁰

OPEN SEASON ON PREGNANT WOMEN

Thimerosal passes more easily from a mother’s bloodstream through the placenta than does methylmercury.³¹ Fetal cord blood mercury levels are typically about double the mother’s mercury blood levels.³² This is cause for concern for developing babies in light of the CDC’s 2004 recommendation that all pregnant women in any trimester get flu shots. By 2012–2013, uptake of flu shots during pregnancy had steadily increased to approximately 50 percent.³³ Manufacturers still preserve millions of flu shots with massive bolus doses of thimerosal (about thirty-six million flu shots containing twenty-five micrograms of mercury in the 2017-2018 flu season),³⁴ meaning that children born since 2004 have been increasingly likely to be exposed to thimerosal in utero.

A 2017 CDC study reviewing data from the 2010–11 and 2011–2012 flu seasons linked spontaneous abortions to flu vaccines, finding that women vaccinated with the inactivated influenza vaccine had 3.7-fold greater odds of spontaneous abortion within twenty-three days than women not receiving the vaccine.³⁵ For women who received the H1N1 vaccine in both seasons covered in the study, the odds of spontaneous abortion in the month after receiving a flu vaccine were 7.7 times greater. The vast majority of flu vaccines available during the seasons studied were multidose formulations containing twenty-five micrograms of mercury.

THIMEROSAL WORLDWIDE

While the thimerosal debate has carried on in the United States, children around the world have never stopped receiving thimerosal-containing vaccines. The mindset revealed by Simpsonwood attendee John Clements of the WHO—who described a “mandate” to vaccinate one hundred million children “this year, next year and for many years to come” with thimerosal-containing vaccines—has not changed. In fact, the medical community continues to argue


Manufacturers still preserve millions of flu shots with massive bolus doses of thimerosal, meaning that children born since 2004 have been increasingly likely to be exposed to thimerosal in utero.

Mercury is a potent immuno-suppressant, which has implications in low-resource settings where children already face numerous other health challenges and environmental pollutants.

that the benefits of keeping thimerosal in vaccines outweigh the risks and that thimerosal is “critical” for low-resource countries that rely on multidose vials as the most affordable option.³⁶ One of the AAP’s former presidents has asserted that, for the good of the global community, the Academy’s pro-thimerosal position is a “no-brainer.”³⁷ The WHO’s Global Advisory Committee on Vaccine Safety states that “no additional studies of the safety of [thimerosal] in vaccines are warranted.”³⁸

The global health authorities making cavalier and single-minded pronouncements on “life-saving vaccines” should consider the bigger health picture. For example, exposure to toxic metals such as mercury can contribute to malnutrition and, conversely, malnutrition may also increase susceptibility to mercury toxicity.^{39,40} Mercury is also a potent immunosuppressant, which has implications in low-resource settings where children already face numerous other health challenges and environmental pollutants.⁴¹

THE TIME IS NOW

The medical establishment’s defense of thimerosal’s safety has proven highly successful in tamping down deeper investigation into thimerosal and the vaccine industry. Perhaps because major pharmaceutical companies (the makers of vaccines) are among the biggest advertisers in the U.S., the mainstream press has accepted these government orthodoxies and ignored the ample evidence showing that thimerosal is toxic. In fact, the thimerosal saga illustrates the aggressive, knee-jerk rejection by the press, the medical community and allied financial interests of any scientific information suggesting that established medical practices are harming public health. Nevertheless, continuing to wait for more research is not a reasonable public policy option. Thimerosal is dangerous to human health and should immediately be removed from all vaccines (as well as other pharmaceutical and cosmetic products), both in the U.S. and globally. 

Robert F. Kennedy, Jr. has been one of the world’s leading environmental activists for over three decades, known for his advocacy for transparent government and rigorous science.

He is the founder and president of Waterkeeper Alliance and founder and chairman of the non-profit World Mercury Project. Kennedy’s 2015 book, Thimerosal: Let the Science Speak, presents extensive evidence supporting the immediate removal of mercury from vaccines.

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WAPF SPANISH FACEBOOK PAGE!

Announcing a new Facebook page for WAPF in Spanish! It will be an actively managed page. Information will be shared daily on topics such as Dr. Price's work and studies as well as dietary guidelines in line with the Foundation's philosophy and other articles on regenerative agriculture and holistic management. Here is the link that you can share with your chapter members and any other Spanish speakers you feel might benefit from this information: <https://www.facebook.com/wap-fenespanol/>

SPANISH PRESENTATION

In September 2017, chapter leaders Katie Williamson and Hilda Labrada Gore travelled to Perú to share Dr. Price's book, *Nutrition and Physical Degeneration*, in a country that Dr. Price himself visited back in the 1930s. In November 2017 at the annual WAPF conference, they professionally recorded the same presentation in order to reach an even larger Spanish-speaking population online. Dr. Price's book is not yet published in Spanish, which means that it is imperative that we share this talk (which contains numerous photos from his book) with as many Spanish speakers as possible. Dr. Price wanted us to "teach, teach, teach." Our goal is to teach and share his message with the entire Spanish-speaking world. Thank you for helping us make that a reality. Visit <http://www.fleetwoodonsite.com/wise/2017nutrition-spanish>

The Consequences and Challenges of Developmental Mercury Exposure:

What Thimerosal Does to the Developing Brain

By Janet Kern, PhD, David Geier, BA, Kristin Homme, MPP, MPH, and Mark Geier, MD, PhD

In the United States, neurodevelopmental disorders have been on the rise for several decades. In 1976, about one child in thirty was learning-disabled, but by 2013, it was roughly one in six.^{1,2} Similarly, one in one thousand children had a diagnosed autism spectrum disorder (ASD) in 1988 versus about one in forty-five in 2013³ and one in thirty-six as of 2016.⁴ Comparable trends have been observed for attention-deficit/hyperactivity disorder (ADHD)—from one in eighteen children in 1996 to one in eight by 2012⁵—and also for once-rare tic disorders. By 2012, up to 46 percent of school children had experienced tics during their lifetime, making it the most common movement disorder.⁶

These disorders have plagued our society and children—with increasing numbers of affected children now entering adulthood. Yet these individuals, their families and even their medical providers are usually unaware of the fact that their difficulties may have resulted from infant or fetal exposure to the mercury-containing vaccine preservative thimerosal, an exposure that dramatically increased in the 1990s.

AXONS AND THIMEROSAL

Within the brain, nerve cells called neurons are the basic building blocks of the nervous system. Neurons connect to one another, forming a network of communication (see Figure 1). Neurons send and receive information using tiny electrical and chemical signals, thereby allowing a person to perceive, think and understand the world.

A typical neuron has a cell body, an axon (a long, slender, thread-like projection that sends information) and dendrites (shorter branches that receive information). Although a neuron may have many dendrites, it has only one axon (see Figure 2).

Axons can vary in length from approximately one millimeter to one meter. Short-range axons, which are required for short-range communications within a single brain region, only need to span short distances.

Long-range axons are required for long-range neurons that aim to link distinct brain regions, and they sometimes must span long distances. For example, a long-range axon may extend from the frontal lobe (the front part of the brain) to the cerebellum in the back part of the brain. Long-range axons are predominantly used for sensory processing, for attention and for putting thoughts together from different areas of the brain.

Unfortunately, in neurons exposed to toxicants such as the mercury in thimerosal, the structural building blocks of the axon

(molecules called tubulin) are disassembled, causing the axon to disintegrate. Long-range axons—the ones that connect different parts of the brain—are especially vulnerable to these toxic exposures.

Neurons have a limited capacity to regenerate their axons, but for many reasons (some known and some unknown) the brain loses much of its ability to regenerate itself early during the developmental period. Postnatal, mature neuronal axons can only regenerate for very short distances, regardless of the original length of the axon. The shorter the distance between the regeneration site and its target, the more successful the regeneration of the axon.

Regeneration is particularly difficult for long-range axons. As the brain tries to regenerate after a loss of long-range axons, the regeneration process often results simply in an increase in the number of short axons. Studies show that when long-range connections decrease or are lost, short-range connections increase. Importantly, the opposite occurs in normal brain development. As the normal brain develops and matures over the years, its connectivity shifts from local to more global processing—that is, from short-range to long-range connectivity.

Coincident with increased thimerosal exposure, three neurodevelopmental disorders dramatically increased in prevalence beginning in the 1990s—ASD, ADHD and tic disorder. Research suggests that children who developed one of the three disorders following exposure to

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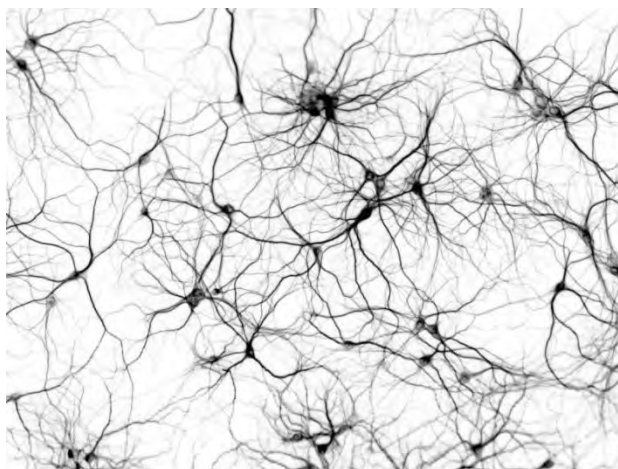


FIGURE 1: Neurons interconnect to send and receive information.

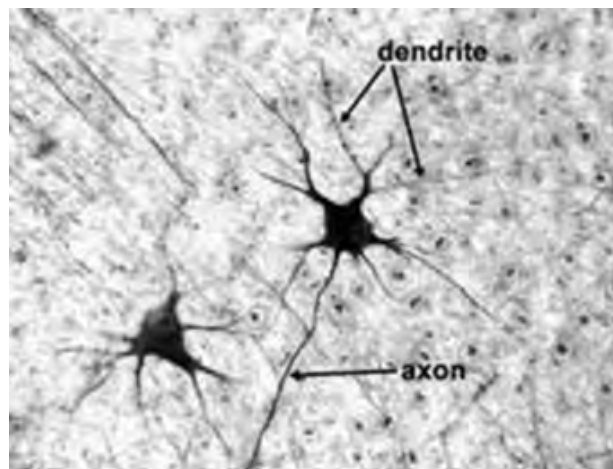


FIGURE 2: The dendrite receives information and the axon sends information.

Whereas long-range axons can be compared to super-highways, short-range axons are like side roads with lots of stop lights.

thimerosal may have lost a critical number of their long-range axons.^{7,8} These studies indicate that their brains try to compensate by sprouting short-range axons, and brain connectivity shifts from long-range to short-range.⁷ (Interestingly, in learning delay, also found to be associated with thimerosal exposure, research has revealed a loss of long-range brain connectivity, but without a concomitant increase in short-range axons.)

SIDE ROADS VERSUS SUPERHIGHWAYS

When brain connectivity shifts from long-range to short-range in individuals with thimerosal-induced ASD, ADHD or a tic disorder, a sensation or thought has to jump from one short-range neuron to the next and the next and the next, instead of traveling quickly down a single axon of a long-range neuron. This may occur, for example, with sensory impulses such as visual or auditory processing (see Figure 3).

Whereas long-range axons can be compared to superhighways, short-range axons are like side roads with lots of stop lights. You can get where you need to go on a side road, but it can be more complicated, time-consuming and exhausting. In the brain, this convoluted routing can result in a drastically decreased processing speed. It also requires more energy, which can be tiring. As a result, the brain may be better at localized processing than global processing. This may make it harder to pay attention and process sensory information, and easier to get

obsessed about small things.

When localized processing dominates, it also can lead to disruptions in attention, sensory processing and other big-picture thinking, as well as poor judgment and perspective. Although most children exposed to thimerosal retain high intelligence, their brains must work harder because their processing is more complicated and attention requires more effort.


IMPLICATIONS

Observed differences across individuals with ASD, ADHD or tic disorder are mainly in severity, with some variation in the areas of the brain most affected. This can depend on when the exposure occurred within the developmental process as well as on individual susceptibility. Importantly, the severity of a given disorder correlates with the severity of abnormal connectivity. In other words, the worse the long-range under-connectivity and short-range over-connectivity, the worse the severity of the disorder.

It is critical to recognize, therefore, that exposure to thimerosal during fetal and infant development can result in significant brain changes. ASD, ADHD and tic disorder all reveal similar changes to brain structure, showing long-range under-connectivity and short-range over-connectivity.⁷ This evidence suggests that the three disorders and possibly other neurodevelopmental disorders all fall within the broader category of connectivity spectrum disorders,



FIGURE 3: A schematic characterization of the difference between long-range and short-range axons.

which can result from neural long-range under-connectivity and short-range over-connectivity.⁸ An understanding of these brain changes may help individuals and their families better cope with the resulting challenges. 

Janet Kern, PhD, MACE, is a neuroscientist who has spent over two decades conducting clinical and epidemiological research with children and adults with ASD and other neurodevelopmental disorders. One of her primary research interests is in brain changes related to mercury. Dr. Kern was one of the first researchers to show a relationship between mercury body-burden and autism severity. She has published over seventy peer-reviewed articles.

Mr. David A. Geier, BA, and Dr. Mark Geier, MD, PhD, are co-founders and co-directors of two non-profits (the Institute of Chronic Illnesses, Inc. and CoMeD, Inc.) and were accredited participants on behalf of CoMeD at United Nations-sponsored meetings to help prepare the Minamata Convention on Mercury. Dr. Geier has worked as a research scientist (National Institute of Mental Health), assistant professor (Johns Hopkins School of Medicine), assistant research professor (Uniformed Services University of the Health Sciences) and laboratory director (Molecular Medicine, Inc.) and practiced clinical medicine for more than thirty years. Mr. Geier has coauthored more than one hundred studies, and Dr. Geier more than one hundred and fifty studies, in academic journals and medical textbooks, and both have presented at conferences around the world.

Kristin Homme, MPP, MPH, is a retired engineer-turned-science-writer who has coauthored peer-reviewed publications on mercury dental amalgam and thimerosal. She collaborates with the International Academy

of Oral Medicine and Toxicology and the Coalition for Mercury-Free Drugs to raise public awareness about the risks of routine exposures to mercury.

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Mercury: Poisoning Our Children

By Sylvia P. Onusic, PhD, CNS, LDN

A teratogen is a substance that causes malformation of a fetus, including birth defects and death. Teratogens also cause harm to the prenatal brain, affecting future intellectual, behavioral and emotional development and functioning. Exposures to teratogenic substances result in a wide variety of defects that range from infertility, prenatal onset growth restriction, structural defects and functional central nervous system (CNS) abnormalities to miscarriage or fetal death.¹

Exposures in pregnancy can affect the fetus as early as ten to fourteen days after conception. During development, certain organs form at specific times but some structures are sensitive to teratogens throughout the entire pregnancy. Extremely serious defects of the brain and spine, called collectively neural tube defects (NTDs), occur in the first three to five weeks. NTDs include anencephaly (partial skull), spina bifida (opening in the spinal column) and other conditions affecting the brain, spine or neck.²

Many commonly used substances like ethanol (alcoholic beverages), herbicides and even saunas can cause birth defects. Viral infections, radiation, drugs, maternal disease or metabolic conditions (diabetes, hypothyroid), heavy metals in the environment, malnutrition or nutrient deficiencies and goitrogens can also be major factors.³

Mercury (Hg) is a major teratogen, considered one of the most toxic substances on earth and a serious global pollutant. Natural emissions of mercury into the air and water occur from volcanic eruptions, through weathering of rocks, degassing of the earth's crust and evaporation of water. Man-made sources of mercury include industrial pollution, burning fossil fuels (the largest source of pollution), mining (gold, silver), refuse incineration, cremation and factory production. Mercury is no longer mined in the U.S.—most mercury today comes from mines in Spain, China, Kyrgyzstan and Algeria. Mercury is often used in gold mining, and many small operators in Africa use children to separate out the gold. Paints and building materials such as roofing shingles contain mercury, which can be released during use and disposal. Fossil fuel-burning power plants are the largest source of mercury pollution.⁴

Researchers have positively identified various teratogens through observation, anecdotal evidence, animal studies and examination of human exposures. Studies on animals have found mercury to be extremely cytotoxic, neurotoxic, immunotoxic and genotoxic; it is also an endocrine disrupter and a cause of infertility

and fertility problems. These toxic effects have been documented by the U.S. Department of Health and Human Services' Agency for Toxic Substances and Disease Registry (ATSDR). The extreme toxicity of mercury can be seen from documented effects on wildlife at very low levels of exposure. Because of its extreme toxicity, only one-half gram of mercury is required to contaminate the ecosystem and fish of a ten-acre lake to the extent that a health warning would be issued by the government not to eat the fish.⁵

Mercury is one of the most insidious and dangerous teratogens on earth because it has ready access to the human body even before birth, while the baby is in utero. The unborn are most at risk from the effects of mercury. It can be inhaled, passed through the skin or ingested. Mercury exposure even once during a pregnancy can cause harm to the unborn child's body and mind, while continued exposure causes increasingly serious defects.⁵

FISH CONSUMPTION

The Food and Drug Administration (FDA) and Environmental Protection Agency (EPA) recommend that women who are pregnant, breastfeeding or plan on becoming pregnant; women of childbearing age; and children consume more fish—two to three servings (eight to twelve ounces) from the “Best Choices” list or one serving from the “Good Choices”—but avoid seven specific fish highest in mercury. They say that children should eat one to two seafood meals per week starting at age two. The 2017 FDA chart “Advice about Eating Fish”

Mercury is one of the most insidious and dangerous teratogens on earth because it has ready access to the human body even before birth, while the baby is in utero.

FORMS AND SOURCES OF MERCURY

Mercury is a heavy metal that occurs in several basic forms: organic methylmercury (MeHg) and ethylmercury (EtHg), and inorganic (metallic or elemental) mercury. Organic mercury is the most dangerous form of mercury to human health.⁶

Historically, most of the research and concern regarding mercury's toxic effects on humans and in particular on fetal development has focused on MeHg, which is considered one of the six most dangerous chemicals in the environment.⁷ MeHg can easily cross into the brain and body organs and is also extremely neurotoxic, much more so than inorganic forms. MeHg is better absorbed and shows a higher mobility in the human body than inorganic mercury. Ethylmercury is present in thiomersal, which has been used as a major preservative in vaccines.⁸ Today it is still in use in the flu vaccines recommended for pregnant women and children older than six months of age.⁹

MeHg is found mainly through food, especially fish ingestion, although industrial pollution is also a dangerous source. Mass poisonings affected many in Iraq when people consumed bread made from seeds sprayed with mercury. There have been highly publicized major acute poisonings affecting many people and infants exposed through eating fish in Japan at Minamata Bay in 1956. The Minamata disaster was caused by release of MeHg into the bay by the Chisso Chemical Corporation.¹⁰

Marine fish
(but not
fresh water
fish) carry
their own
detoxification
agent in the
form of
selenium,
a powerful
detoxifying
agent known
to detox
mercury.

(below) provides more detailed information,¹¹ but this advice does not appear to differ much from the 2004 advisory, which recommended up to twelve ounces of fish per week and avoidance of specific fish high in mercury.¹²

The Centers for Disease Control and Prevention (CDC) have this to say about pregnant women and fish consumption: “Most fish purchased in the market in the United States do not have mercury levels that pose a risk to anyone, including pregnant women. Since mercury accumulates in the muscles of fish, larger fish that feed on smaller fish and live for long periods usually have larger concentrations of methylmercury (MeHg) than fish that feed on plants. For example, shark and swordfish normally contain the highest levels of mercury out of all ocean fish. Scientists have an ongoing debate about the value of fish in the diet versus any risk from increased exposure of pregnant women to methylmercury that may be in the fish. The safety of most fish sold commercially in the United States is regulated by the FDA. These fish pose no health risks to those who eat them. Only fish or wildlife containing relatively high levels of methylmercury are of concern.”¹³

Although most wild-caught fish are good

nutritional choices, wild-caught fatty fish, such as salmon, sardines and anchovies, are the best choices because they contain more of the important omega-3 fatty acids. Fish, often called “brain food,” contain important amounts of the omega-3 fatty acids EPA and DHA, which are important for proper fetal development, including neuronal, retinal and immune function. DHA is especially important for brain and eye development. Fish are also an excellent source of fat-soluble vitamins like A, D, E and K. Oysters are an excellent source of zinc and are on the FDA “Best Choices” list.¹¹

In addition, wild-caught fish contain antioxidants. Marine fish (but not fresh water fish) carry their own detoxification agent in the form of selenium, a powerful detoxifying agent known to detox mercury. Yellowfin, mahi mahi, skipjack, spearfish, wahoo, albacore, bigeye, and monchong contain high amounts of selenium.¹⁴ Other good sources of selenium are organ meats, such as chicken livers and gizzards, and brazil nuts. Experiments show that selenium-treated animals may remain unaffected, even when they have attained tissue mercury levels otherwise associated with toxic effects.¹⁵

Tuna protects itself by taking in an atom

Advice About Eating Fish

What Pregnant Women & Parents Should Know

Fish and other protein-rich foods have nutrients that can help your child's growth and development.

For women of childbearing age (about 16-49 years old), especially pregnant and breastfeeding women, and for parents and caregivers of young children.

- Eat 2 to 3 servings of fish a week from the “Best Choices” list OR 1 serving from the “Good Choices” list.
- Eat a variety of fish.
- Serve 1 to 2 servings of fish a week to children, starting at age 2.
- If you eat fish caught by family or friends, check for fish advisories. If there is no advisory, eat only one serving and no other fish that week.*

Use this chart!

You can use this chart to help you choose which fish to eat, and how often to eat them, based on their mercury levels. The “Best Choices” have the lowest levels of mercury.

What is a serving?

To find out, use the palm of your hand!



Best Choices EAT 2 TO 3 SERVINGS A WEEK			OR	Good Choices EAT 1 SERVING A WEEK		
Anchovy	Herring	Scallop		Bluefish	Monkfish	Tilefish (Atlantic Ocean)
Atlantic croaker	Lobster	Shad		Buffalofish	Rockfish	Tuna, albacore/white tuna, canned and fresh/frozen
Atlantic mackerel	American and spiny	Shrimp		Carp	Sablefish	Tuna, yellowfin
Black sea bass	Mullet	Skate		Chilean sea bass/Patagonian toothfish	Sheepshead	Weakfish/seatrout
Butterfish	Oyster	Smelt		Grouper	Snapper	White croaker/Pacific croaker
Catfish	Pacific chub mackerel	Sole		Hallbut	Spanish mackerel	
Clam	Perch, freshwater and ocean	Squid		Mahi mahi/dolphinfish	Striped bass (ocean)	
Cod	Pickrel	Tilapia				
Crab	Plaice	Trout, freshwater				
Crawfish	Pollock	Tuna, canned light (includes skipjack)				
Flounder	Salmon	Whitefish				
Haddock	Sardine	Whiting				
Hake						
				Choices to Avoid HIGHEST MERCURY LEVELS		
				King mackerel	Shark	Tilefish (Gulf of Mexico)
				Marlin	Swordfish	Tuna, bigeye
				Orange roughy		

*Some fish caught by family and friends, such as larger carp, catfish, trout and perch, are more likely to have fish advisories due to mercury or other contaminants. State advisories will tell you how often you can safely eat those fish.

www.FDA.gov/fishadvice
www.EPA.gov/fishadvice

EPA United States Environmental Protection Agency

FDA U.S. FOOD & DRUG ADMINISTRATION

THIS ADVICE REFERS TO FISH AND SHELLFISH COLLECTIVELY AS “FISH” / ADVICE UPDATED JANUARY 2017

of selenium for every mercury atom. Indeed, one paper shows that with increasing levels of mercury, selenium levels also increased.¹⁵ In one unique study, a researcher compared an analysis of tuna from the nineteenth century that was preserved in a museum display case with a sample from 2002. Both samples showed about the same levels of mercury, as well as protective levels of selenium.¹⁶

According to the FDA, fish that should be avoided are tilefish, swordfish, orange roughy, marlin and king mackerel.¹¹ Fish from local waters should be first investigated with the local fish commission before serving them for dinner.¹³

The idea that maternal fish consumption can reduce IQ in the child and cause neurological consequences is a contentious subject. As already mentioned, fish are a powerhouse of nutrients, including being good sources of DHA. The levels of DHA in the breast milk of American women are some of the lowest in the world.¹⁷⁻¹⁹ Restricting fish in the diet lowers the DHA levels even more, as do the high levels of omega-6 fatty acids that have pervaded the food system over the last century, because diets high in omega-6 inhibit conversion to DHA of alpha linolenic acid (ALA)²⁰ (the short-chain omega-3 fatty acid found in plant foods like flax and walnut).

As fish is a source of methylmercury, however, fish is a cause for concern for families and public health officials. When mercury is released into the oceans, it is taken up by fish, shellfish and sea mammals, who transform it by methylation into methylmercury. Larger fish contain more methylmercury; whale blubber and muscle meat, consumed by certain populations, contain the highest levels of mercury contamination.²¹

There have been downward shifts in children's IQ in the last century²² and some authorities think the decline is related to mercury in food.²³ However, some fish-eating societies produce children with higher IQs. The average national IQ is highest in Hong Kong, followed by Singapore, South Korea, Japan, China, Taiwan, Italy, Iceland and other Scandinavian countries. In most of these countries people eat a lot of fish. These figures came from the work of

Richard Lynn, a British professor of psychology, and Tatu Vanhanen, a Finnish professor of political science, who conducted studies in eighty countries. They concluded that IQ differences relate to national income, inequality, poverty, education quality and other factors.²⁴ According to the IQ society Mensa International, Finland, Sweden and the U.K., have the most geniuses per capita. All are big fish-eating countries.

The Japanese continue to eat whale and dolphin meat, which can be purchased in the grocery store. In 2003, packaged whale meat steaks in grocery stores in Japan tested dangerously high in levels of mercury.²⁶ In 2010 American scientists who sampled one thousand sperm whales were stunned at the high levels of toxins and heavy metals in the animals, which they called "jaw dropping."²⁷ These included mercury, aluminum, lead, silver, titanium and chromium, mostly in the blubber. A recent study found samples of dried pilot whale meat purchased in Japan contained 19 ppm mercury, 47.5 times over the legal limit. Dolphin meat contained 11 ppm.²⁸

In contrast, albacore tuna sold in the U.S. contains an average of .32 ppm of mercury while light tuna has .12 ppm.²⁹ However, results of a study done by the Mercury Policy Project, published in the report, "Tuna Surprise," found that mercury levels in light and white tuna from government-sponsored school lunch programs had mercury levels four times the average reported by the FDA.³⁰

MERCURY IN PROCESSED FOOD

In 2009, *The Washington Post* reported that "Almost half of tested samples of commercial high fructose corn syrup (HFCS) contained mercury, which was also found in nearly a third of 55 popular brand-name food and beverage products where HFCS is the first- or second-highest labeled ingredient, according to two new U.S. studies."

HFCS has been extensively used in the U.S. food chain from 1970 to the present. Carbonated beverages (soda), very popular with children and adolescents, contain very high quantities of HFCS but its presence is universal in almost all food products, even bread. On average, Americans consume twelve teaspoons of HFCS

Carbonated beverages (soda), very popular with children and adolescents, contain very high quantities of HFCS but its presence is universal, in almost all food products, even bread.

Seed grains are treated with methylmercury to kill fungus and were the source of contaminated wheat and barley that caused a major mercury poisoning in Iraq in 1971.

per day, but teens can consume 80 percent more than average. Starting in the 2000s, the food manufacturers began to remove HFCS from food products due to consumer education efforts and choices, but it is still very much apparent in the food chain, especially in fast foods favored by children and foods served to children in school lunches. In 2009, four factories in the U.S. were still using technology that used mercury to produce the product. HFCS's presence is still relatively unnoticed in condiments, such as mustards and ketchup, and in cheaper varieties of jams and other sweetened products.³²

Protein powders are popular with teens and young adults, as well as bodybuilders of all ages. Young women are especially fond of protein powders in shakes and smoothies. Yet these health-conscious groups are perhaps not aware that they are contaminating their bodies with heavy metals every time they sip their protein shake.

The Clean Label Project recently completed a study of one hundred thirty-four protein powders from fifty-two brands at a third-party testing lab, which screened for toxins like mercury and other heavy metals, pesticides and other contaminants associated with cancer and other diseases. Over 70 percent of the protein powders had detectable levels of lead, and 74 percent showed cadmium. In addition to lead and cadmium, the powders contained varying levels of mercury and arsenic.

Overall, products from plant protein such as soy or hemp contained twice as much lead and high amounts of other contaminants, which could be due to plants absorbing heavy metals from the soil.³³⁻³⁴ In 2010, *Consumer Reports* published a report about the heavy metals they found in protein powder.

The Clean Label website does not give an explanation of their five-star rating and how they assigned a score for each product for four elements: heavy metals, pesticides, contaminants and nutrition. They only mention that the heavy metal content accounted for over 60 percent of the score.³⁶

In 2017, the same company tested almost five hundred infant formula and baby food products for heavy metals and contaminants and found that over 30 percent of these products

contained lead, arsenic, mercury, pesticides and acrylamides. Soy formulas contained seven times more cadmium than other formulas.

Another big source of heavy metals in the food chain is rice, containing high levels of mercury and arsenic. Rice-based infant cereal can be contaminated by mercury leaching into soil. In the U.S., *Consumer Reports* tested domestic rice and found high levels of arsenic.³⁸

Rice baby cereal is the most common first food, which is introduced to the infant between four and six months of age. In a 2017 study in *The Journal of Food Chemistry*, researchers reported results from testing one hundred nineteen infant cereals sold in the U.S. and China and estimated the total mercury (THg) and methylmercury levels. Rice-based cereals contained methylmercury levels significantly higher than those of non-rice cereals. They concluded that cereal consumption could be a potential pathway for methylmercury exposure in infants.³⁹ Another 2017 study, from the University of South Carolina, measured methylmercury and inorganic arsenic in thirty-six baby rice cereals, eight teething biscuits and four baby cereals made with oats or wheat. Rice cereals and teething biscuits were 61-92 times higher in methylmercury and higher in total arsenic, compared to wheat or oat baby cereals.⁴⁰

Seed grains are treated with methylmercury to kill fungus and were the source of contaminated wheat and barley that caused a major mercury poisoning in Iraq in 1971. The seeds were imported from the U.S. and Mexico. People suffered major neurological consequences including numbness, lack of coordination and blindness. Around four hundred sixty people reportedly died. It was the largest mercury poisoning up to that time.⁴¹

MERCURY IN BREAST MILK

Inorganic mercury and methylmercury can pass from a mother's body into breast milk and into a nursing infant. The amount of mercury in the milk will vary, depending on the degree of exposure and the amount of mercury that enters the nursing woman's body. There are significant benefits to breastfeeding, so any concern that a nursing woman may have about mercury levels in her breast milk should be discussed with her

doctor. Methylmercury can also accumulate in an unborn baby's blood at concentrations higher than the concentration in the mother.⁴²

A 2002 study showed that levels of mercury and lead (Pb) in breast milk concentrations are low. The authors concluded that "even theoretical risks from current mercury or lead levels for the breastfed infant of a healthy mother [could] be ruled out."⁴³

MERCURY IN MEDICINE AND DENTISTRY

In a 1961 medical text, Dr. Ernst Baader reported that the term "quack," used to describe a person who pretends to have medical knowledge, originated from the German word *Quecksalver*—an individual who uses mercury ointments to treat disease.

Medicine is no stranger to the use of mercury, and children's and women's complaints were often the target. Calomel (mercury chloride) was once universally given to teething infants. Mercury was used in medications for women for "hysteria." Decades and generations of patients were subjected to constant exposure to mercury from medicines, a practice that has continued unabated to the present in one form or another.

Josef Wakany, MD, a teratogen expert, lamented the issue of mercury poisoning in his paper on acrodynia, or "pink disease," which was rampant between 1920 and 1950, but appeared earlier in Australia, the U.K. and worldwide. It killed, maimed and deformed many children. The disease was created by administering mercury to infants and children in teething powders, de-wormers and laxatives used for constipation, diarrhea and other conditions. Dr. Wakany said that physicians of the nineteenth century were familiar with symptoms of mercury poisoning and would have diagnosed mercury poisoning "at a glance." However, physicians of the twentieth century were slow to recognize that the symptoms of acrodynia were caused by mercury, and many children were harmed unnecessarily. Products containing mercury were not removed from shops and pharmacies until the 1950s. Even then, physicians debated the premise that mercury was to blame.⁴⁵

In addition to numerous physical symp-

toms, children also experienced psychiatric symptoms such as depression and melancholy. Physicians in 1946 described a depressive syndrome among children in a nursery (five to eleven months of age). Several of the children died and arrested development was noted in others. The doctors considered the illness comparable to melancholia in the adult and caused by "withdrawal of the love object." The psychic diagnosis was outwardly rejected by physicians who attributed the depression to acrodynia.⁴⁶

Dr. Ernst Baader reported many psychiatric symptoms of mercury poisoning, such as anxious seclusion, shyness, labile moods, forgetfulness, memory loss, feelings of intellectual inadequacy, fatigue, sleep disturbance, tremor, jerks, shaky handwriting, difficulty speaking, headaches, pressure over the head and sensory skin disturbances likened to crawling insects. These were often misdiagnosed as hysteria, schizophrenia or general emotional disturbance. These symptoms are similar to today's common psychiatric conditions.⁴⁶

In acrodynia, demyelination and degeneration of the insulative lipid sheath surrounding the nerve, also observed in multiple sclerosis (MS), was noted in biopsies of the time. Also noted were disturbances of blood circulation and temperature regulation; in severe cases fingers and toes could be lost by gangrene. Blood pressure and levels of the "stress hormone" adrenaline were often high. The victims exhibited extreme muscle weakness; they usually couldn't stand or walk. Loss of weight, tremor and shaking, cramps and uncontrolled movements, abdominal tenderness and gastrointestinal troubles belonged to the clinical picture. Conjunctivitis and fever were also reported in earlier descriptions. Fever was apparently very common in Germany and Switzerland, where the most common misdiagnosis was scarlet fever. In a considerable number of cases, there was excessive salivation, swollen gingiva, loss of teeth and necrosis of the jaws. All these signs and symptoms can be attributed to mercury poisoning.⁴⁶

Concurrently with doctors prescribing calomel in medicines and salves, dentists were putting another source of mercury into the mouths of children in the form of mercury amalgams,

Psychiatric symptoms of mercury poisoning included anxious seclusion, shyness, labile moods, forgetfulness, memory loss, feelings of intellectual inadequacy, fatigue, sleep disturbance, tremor, jerks, shaky handwriting, difficulty speaking, headaches, pressure over the head and sensory skin disturbances likened to crawling insects.

Dental amalgam in pregnant mothers is the largest source of mercury to the fetus and young infants.

also called “silver” fillings, which are 50 percent mercury. In fact, the first dental amalgam was placed in 1830 in the U.S. Dental amalgams are still being used and are the filling of choice for poorer children on the Medicaid program. The American Dental Association continues to endorse amalgam fillings as “safe, affordable and durable.”³⁴⁷

Proposition 65, passed by the state of California in 1986, lists mercury as a reproductive toxin and a cause of birth defects. Thus, in California products that use mercury and cause significant mercury exposure must provide warnings to the public of the known health risk. Use of dental amalgam by dentists in California requires such a warning. Several other states have passed similar laws requiring warnings by dentists about the known health risks related to use of dental amalgam. Dental amalgam has been documented by tests at medical labs to be the largest source of mercury exposure for most people who have several amalgam fillings, with exposure levels as much as ten times the average for those without amalgam fillings.⁴⁸

Dental amalgam in pregnant mothers is the largest source of mercury to the fetus and young infants.⁴⁹ It readily crosses the placenta and also the blood-brain barrier.⁵⁰ In order to minimize the chances of autism, developmental disability, lower IQ and physical defects, women of reproductive age and those contemplating pregnancy would be well advised to have their mercury amalgams removed by a dentist who is trained in such procedures as soon as possible before pregnancy occurs.

In the late 1940s, when the mercury etiology of acrodynia was clarified, the possibility of multiple sclerosis (MS) as an adult form of acrodynia was also considered. No general and widespread source of mercury was then recognized. However, in 1966, Baasch, a Swiss neurologist, recognized the possibility of amalgam fillings being such a source. He concluded that a mercury amalgam etiology could explain the known facts about MS and that additional protective or aggravating factors in the environment could play a role. Lead was also considered as a possible contributing factor because of its widespread occurrence, known demyelinating activity and some reports of MS after lead

exposure.⁴⁶

After calomel was removed from use, another source of mercury took its place. Thimerosal (ethylmercury) was first used in vaccines in the 1930s and the amounts increased beginning in 1989, with a sharp rise in 1990 as new vaccines were added to the schedule. This increase closely coincided with a dramatic increase in autism spectrum disorder (now at one in thirty-six children), a rise in attention deficit disorder, and a steady rise in the prevalence of developmental disability.⁹

Before 1989, the maximal dose of thimerosal by age two was 200 micrograms (mcg) but by the 1990s, it rose to 237.5 mcg. In the early 2000s, companies started to remove thimerosal from the vaccines. However, it is still present in the flu vaccine, which the CDC recommends to pregnant women and children over six months of age. The dangers of thimerosal were dismissed by experts who claimed that ethylmercury is quickly removed from the body. Studies show that it quickly clears the blood but is not excreted from the body. Instead it is deposited in organs and tissues, including the brain.

Thimerosal is used as a preservative in multi-dose vials of vaccine. If single-dose vials were normally in use, it would not be necessary. In 1999 when two pharmaceutical companies offered to supply thimerosal-free vaccines, the CDC rejected this offer and allowed the vaccine industry to sell its existing stocks which were not exhausted until 2003.⁹

That mercury can affect fertility is well known since mercury was commonly used as a spermicide in birth control products.⁵¹ Potential effects can be seen from effects on wildlife. Some Florida panthers that eat birds and animals that eat fish, frogs and turtles containing very low levels of mercury (about one part per million) have died from chronic mercury poisoning. Since mercury is an estrogenic chemical and a reproductive toxin, the majority of the remaining panthers cannot reproduce. The average male Florida panther has estrogen levels as high as females due to the estrogenic properties of mercury.⁵²

WHY IS MERCURY SO DEADLY?

Mercury severely affects humans because this heavy metal has diffuse and widespread

adverse effects on the human metabolism.

A wide distribution of sulfhydryl (SH) groups (organosulfur compounds) abounds in the human body. Methylmercury has a high affinity for sulfhydryl groups of amino acids, which are the building blocks for enzymes. As a pro-oxidant, mercury functions as a catalyst and oxidizes such groups. As with fluoride, mercury interferes with the formation and function of many proteins and enzymes by combining with them. It also disrupts protein synthesis, which is potentially the major cause of neurotoxicity. It also causes chromosomal breaks and DNA damage. Mercury is a radiomimetic metal with the same effects on the chromosomes and body systems as radiation.

Methylmercury is readily absorbed into the GI tract after ingestion, and 90 percent can be found in red blood cells bound to hemoglobin.

Mercury in low concentrations in cellular and animal experiments produces serious disturbances in basal metabolic processes, disrupting microtubules in the neuronal cytoskeleton. It binds to thiols in the tubulin and blocks the electric activity in microtubules, which are required for many cellular functions, including division and migration. It also affects the calcium balance in the microtubule.

The critical organ for methylmercury toxicity is the brain. Mercury causes damage throughout the brain. The target organs for elemental mercury are the brain and kidney. It readily crosses the blood-brain barrier and firmly binds to molecules in the brain. There is no innate mechanism for rapid removal.⁵⁰

Astrocytes in the brain have a special role in early brain development and methylmercury inhibits these functions. Methylmercury preferentially accumulates in astrocytes, which make up about 50 percent of the CNS volume and perform many important duties. They prevent leaky blood-brain barrier, which limits the transport of toxins into the brain and allows nutrients to pass. Astrocyte dysfunction is a main cause of neurotoxicity. Methylmercury inhibits glutamate uptake in astrocytes. It promotes and enhances free radical formation, which is known to play an important role in Alzheimer's disease, Parkinson's disease and amyotrophic lateral sclerosis (ALS). It activates specific

signaling molecules, which leads to induction of genes that contribute to cell damage.

Brains of infants and animals exposed in utero show cell loss, reduced brain size, decreased protein production and changes in neurotransmission resulting in cerebral palsy and mental retardation.⁵³


Retention is around 95 percent of intake for methylmercury, 80 percent for elemental mercury vapor, and 7 percent for inorganic mercury compounds. The toxicology of the three species of mercury intertwine because organic mercury and elemental mercury convert to inorganic mercury in the brain. The dose in the brain from dental amalgams and methylmercury may be cumulative. Inorganic mercury can remain in the brain for years. Daily excretion of methylmercury through the bile and feces is about 1 percent of the body burden.⁵⁰

Mercury depletes antioxidants such as selenium, which are needed for thyroid function, building selenoproteins and many other processes. Selenium depletion, as well as zinc depletion, influences neuronal function and produces defects in neuronal plasticity, which can ultimately affect behavior in children with attention-deficit/hyperactivity disorder.⁵⁴

PREVENTION

In the past, children were major targets of mercury poisoning through teething powders, laxatives, de-wormers, Mercurochrome, creams and salves. Today they are exposed to mercury in vaccines and dental amalgams, in addition to mercury in the air, water, soil, food, medicines, paint, cement, building materials, thermostats, thermometers, fungicides, light bulbs and other sources at home and at school. Some traditional Chinese and Hispanic remedies for stomach disorders contain mercury.

Parents should learn about sources of mercury and avoid bringing them into the home. Prevention and education are key to improving children's health by reducing mercury exposure. By breastfeeding and avoiding infant formulas, the infant will ingest a lower amount of many toxins, including mercury. If breastfeeding is not possible, homemade infant formulas are a superior choice to any commercial formula. Babies, toddlers and young children typically consume high amounts of cereals, teething biscuits and other items made from rice, which contain mercury and other heavy metals. Traditionally, first foods for babies were liver and egg yolks. These continue to be outstanding sources of nutrients for young children. Adolescents and young adults who use protein powders daily or even occasionally compromise their immune system and systemic health through ingestion of heavy metals. Consuming carbonated sodas and other beverages and foods containing HFCS adds further to the body mercury burden. Children's lunches and school events often feature food items that contain rice, HFCS or high sugar content, artificial color and flavorings, additives, maltodextrin and other sources of toxins.

Pediatricians, nurses, dentists and other health care providers must learn and understand the scope of mercury exposures and health problems among children and be prepared to handle mercury exposures in medical practice. Children, in contrast to adults, are the recipients of major sources of mercury through vaccines and dental amalgams. No "safe" level can protect the most vulnerable from mercury's toxic effects. 

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Using the Andy Cutler Protocol to Address Mercury Poisoning

By Rebecca Rust Lee

Mercury is poisonous. However, mercury's effects are very often misunderstood because the havoc it causes can masquerade under a variety of different names, including autism, chronic fatigue and multiple sclerosis. Mercury can affect practically every system in the body, producing a staggering array of symptoms ranging from anxiety and depression to full-blown psychosis; from asthma and allergies to autoimmune disorders; from scrambled hormones to neurological disease.¹ There are literally hundreds of other symptoms of mercury poisoning.

Different people experience different mercury toxicity symptoms, depending on their individual biochemistry, but many people carry around a mercury burden that is more than their body can manage. Although symptoms may come and go, mercury-related illness typically is progressive. A person might start off with anxiety and depression, treat the anxiety and feel better for a while, and then go on to develop hypothyroidism, allergies and asthma. Other common heavy metals like lead, arsenic and antimony have similar properties and display similar patterns of symptom variation from person to person.

Doctors rarely want to look into mercury poisoning, nor does medical school teach them how.

SOURCES OF MERCURY EXPOSURE

Mercury's use has been so widespread that people can get exposed to it without even knowing an exposure has happened. For example, if mercury gets splashed around somewhere and does not get cleaned up properly, it can keep on poisoning the surrounding area for decades. An unwitting person may never know that they inhaled a toxic dose of mercury vapor.

The biggest source of mercury exposure for the general public is amalgam fillings, which are 50 percent mercury by weight. Amalgam fillings leach mercury vapor into the body, where it then accumulates. Another route of exposure is through flu shots and some other vaccines, which are loaded with highly toxic ethylmercury in the preservative thimerosal. However, even people who have never had a thimerosal-containing vaccine or an amalgam filling in their life can still be mercury-toxic. This is because they might have been exposed to mercury long ago in a school chemistry lab or on the job, or they may move into a house previously inhabited by a kid who liked to smash fluorescent light tubes in the basement. An exposure that happened decades ago could be causing a whole slew of current symptoms that a doctor is unlikely to be able to explain. Plenty of people have been chronically ill their whole lives, never having figured out what was really the matter.

A HIDDEN EXPLANATION

Dentistry and medicine are the most common sources of mercury exposure, but doctors rarely want to look into mercury poisoning, nor does medical school teach them how. Given that modern doctors have about fifteen minutes to meet with each patient, when faced with a perplexing case, most doctors will not take the time to ask why the person is developing ever more disease conditions and will not even consider the prospect of mercury toxicity. Instead, doctors pile diagnosis upon diagnosis, when a single diagnosis—mercury poisoning—might account for everything.

Some doctors may be aware of the symptoms of acute mercury poisoning from an industrial accident or the like. However, this is distinct from the chronic poisoning that ensues

from having amalgam fillings that are constantly off-gassing, enjoying a predilection for sushi and tuna fish sandwiches and topping these off with a yearly flu shot. This kind of toxicity starts off slowly and builds on itself. Moreover, because mercury poisoning can cause personality changes, anxiety and depression, it can be mistaken for a psychological problem, with the accompanying odd illnesses characterized as “somatization disorders.”

Admittedly, even when doctors do think to check for it, mercury poisoning can be difficult to diagnose. Nonetheless, anyone with a chronic disease for which nobody knows the cause should at least consider mercury poisoning as a possibility. Mercury poisoning is curable, whereas most chronic diseases are not. It makes no sense to suffer and doom oneself to taking a lot of pharmaceutical drugs with terrible side effects, when detoxing may be the solution to getting better.

CHELATION

It is possible to remove heavy metals from the body through a process called chelation. (The word “chelation” comes from the Greek word for “claw.”) Chelation is a well understood principle for any chemist, who knows that mercury is particularly attracted to thiols or sulfur found in every cell in the body. A true chelator for mercury has two thiol groups per molecule, which are spaced the appropriate distance to fit around the mercury ion. When one of these chelator molecules comes along, it attaches to the mercury ion, forming a bond that is strong enough to rip the mercury away from wherever it is lodged.

Although the chelator molecule flowing along in the bloodstream with its mercury payload is destined to be excreted, it unfortunately does not have a perfect grip, and after a while it starts to lose its hold. When this happens, the mercury will zip off and reattach itself to some other attractive, sulfur-y location. This redistribution of mercury can cause new damage.

The potential for mercury redistribution highlights the importance of differentiating between harmful and beneficial chelation protocols. A harmful chelation protocol is one that causes preferential redistribution of mercury

from less sensitive to more sensitive locations in the body. To put it simply, mercury in the brain, liver, thyroid, adrenal glands and immune system cells will cause more serious damage because these organs and systems are sensitive. Mercury in muscles, bones, ligaments, lungs, skin or fat will be less harmful because these are not sensitive tissues. In the process of moving mercury out, we do not want to inadvertently move any of it into the sensitive tissues, which will make us sicker, not better—even if the total body burden of mercury falls. We do not want to let the mercury take any detours on the way out. This is why it is so important to identify the right protocol, follow the rules and chelate on a proper schedule.

THE CUTLER PROTOCOL

Andrew Hall Cutler, PhD, PE (who passed away suddenly in July 2017) developed a chelation protocol that keeps most of the harmful redistribution from happening. It does this by dosing the chelators on their half-life. What this means is that every time a chelator molecule drops its mercury burden, there is another dose right behind it, ready to pick up the mercury and carry it a little farther on its road to eventual excretion.

The Cutler protocol may use any of three different chelators: ALA (alpha lipoic acid), DMPS (2,3-dimercapto-1-propanesulfonic acid) and DMSA (dimercaptosuccinic acid). ALA removes mercury, arsenic and antimony; DMPS removes mercury and arsenic; and DMSA removes mercury, cadmium, antimony, arsenic and lead. ALA is the most important chelator because it is fat-soluble and can enter cells and

cross the blood-brain barrier. ALA is available over-the-counter and is found in many products, and for most people, it will be the only chelator they will need to use. However, it is essential to use ALA carefully because it can wreak tremendous havoc with improper chelation.

The Cutler protocol is designed to keep the levels of chelator in the blood stable. To this end, ALA gets dosed every three hours or less, DMSA every four hours or less and DMPS every eight hours or less. In practical terms, this requires setting alarm clock reminders to take the chelator on schedule, night and day.

The Cutler protocol also measures chelation in “rounds.” A minimum round is three days plus the intervening two nights, or about sixty-four hours. After a round, the person takes a break and starts all over again the following week, keeping this cycle up until they are well again. This process can take several months to several years.

SUPPORTING THE BODY DURING CHELATION

Mobilizing and excreting mercury and/or other heavy metals exposes the body to a great deal of stress. While following the Cutler protocol, it can be helpful to supplement with vitamins C and E as well as zinc and magnesium. People who are chelating also need to be on a Weston A. Price-style diet, at a minimum, to feel decent. This is because mercury impairs metabolism; consequently, many components of the Standard American Diet (SAD) become indigestible to mercury sufferers, even if other people who are not suffering mercury toxicity may be able to tolerate a SAD fairly well.

In the process of moving mercury out, we do not want to inadvertently move any of it into the sensitive tissues, which will make us sicker, not better.

CUTLER PROTOCOL TESTIMONIAL: TRESSIE

My son started with an Autism Treatment Evaluation Checklist (ATEC) score of over one hundred and thirty, and now he scores a big fat zero. (Total ATEC scores range from zero to one hundred and eighty, with the high end being the most severe.) By any definition, my son is fully recovered. No more special diets, no more yeast, no more diagnosis, no more IEP (individualized education program), no sensory issues, no tantrums. He is now in a regular classroom. He listens. In our community, when I tell people I have a child with autism spectrum disorder (ASD), they guess it is my youngest and not my middle boy, because the youngest is spoiled and my ASD kiddo is so smart and witty they don't guess it is him. We did over two hundred rounds of Andy Cutler's protocol, which is a chelation protocol, but there is more to it. There are other compatible things that Andy talks about and recommends to help with function while waiting for the metals to clear. We did those things—diet, supplements, yeast treatments, parasite cleanses. After a year of horrible experiences with high-dose oral chelation in the beginning, we did not do any traditional therapies or any biomedical interventions that were not compatible or recommended by Andy. With my ASD son, we saw a positive effect from the first round of Cutler protocol chelation.

The most important chelator in the Cutler protocol is alpha lipoic acid (ALA).

The good news is that the body will return to health as soon as it can, as long as we recognize the need to remove toxins and feed ourselves nourishing food. While chelating, it is also important to handle symptoms so as not to be miserable, whether through diet, supplements or medications. However, symptom management strategies are not a cure. If our symptoms come racing back as soon as we stop these interventions, we have not cured anything.

HOW ANDY CUTLER CAME UP WITH HIS PROTOCOL

Andy Cutler was a research scientist with a doctorate in chemistry from Princeton. He learned about mercury poisoning the same way I did—by getting poisoned. Like many of us, he got sick from his amalgam fillings. Andy spent a long time searching for the root cause of his various problems. Finally, the local “witch doctor” took the risk of telling him that he had mercury poisoning. I say “took the risk” because mercury toxicity is an issue that is embroiled in political

controversy. Dentists have been implanting the stuff in people’s mouths for generations, and the Centers for Disease Control and Prevention’s vaccine schedule is riddled with it, too.

Being familiar with kinetics, or the way chemicals move around and react with each other, Andy realized that the treatment the doctor suggested didn’t make any sense. He became a self-taught expert on pharmacokinetics and chelation, figured out what the appropriate protocol should be and used it to recover his health. Afterwards, he spent a lot of time talking to people with mercury problems, and many of them tried his approach. When most of them did quite well, he wrote his first book, *Amalgam Illness: Diagnosis and Treatment*² in order to get everything he had learned “out of his head.” He said he never expected the book to sell, but it did and has saved many thousands of people’s lives, health and sanity.

As mentioned, the most important chelator in the Cutler protocol is ALA. How Andy learned about its properties is an interesting

CUTLER PROTOCOL TESTIMONIAL: SARAH

My son was diagnosed with moderate to severe autism a couple of months before he hit age three. He did some early intervention therapy and almost a whole school year at his developmental preschool, with little change. In fact, he seemed to be getting even further behind his peers. When we first discovered Andy Cutler’s chelation protocol, we were hopeful but also very skeptical. We started my son’s first round of chelation the day after school let out for the summer. Although (looking back at my notes) I was noticing changes even within the first day, I brushed it off at the time as coincidence and figured I must be “reaching.” Surely it couldn’t be working *that* quickly. By my son’s second round, he started saying stuff he had never said before. This was when I realized there might be something to this protocol. By the third round, he started interacting with the neighborhood kids, and he suddenly was formulating questions! “Want this” turned into “Can I have this?” By round five, he suddenly developed an imagination out of nowhere. Previously, he would sit and fixate on a toy for hours while rocking back and forth on the floor. He also would spin wheels and stare at the wheels turning. He preferred to be alone. One day, I heard him yell in the other room, “Moooooom! Where are you?” That alone amazed me, but when I rounded the corner to see what he wanted, I realized he was playing with his toy mom, and her toy kid was talking to her in his play. By round eleven, he was playing *with* his sisters, not just next to them, and the “Wh” questions started. “Where is daddy?” “What is that?”

When I had first discovered the hope of biomedical intervention, I told a friend that I would be happy if I could just get my son to a point where he could ask a question—and here I was, eleven weeks in, and my ultimate goal had already been met. We just finished round twenty-eight. My son is a different kid. We can now go to restaurants. That is amazing, considering that six months ago my husband and I had agreed that was probably not in the cards for us ever again because our son would completely melt down with sensory overload. Now, I don’t have to pull the car over every five minutes to pull my son’s pant legs back down (because when they hit higher than his ankle it would completely freak him out).

He’s answering open-ended questions now. It takes him some time to process them, but I can ask him what he wants for Christmas and he will say “I want presents, mommy.” He’s making huge cognitive gains, can follow directions and sleeps! He used to wake at three in the morning and wandered the house aimlessly every night. Now, *if* he wakes, it’s typically to go to the bathroom, grab one of us to lie with him (which he wouldn’t do before) and then fall right back asleep. His teachers are commenting that he’s excelling. Oh, and he tells me he loves me. I could go on and on. My son’s expressive language is just a couple points outside of the average for his age now. If he were to be evaluated now, I believe he would probably fall more into the high-functioning category. We still have years to go, but considering we are only six months in and have a brand-new happy kid, I’d say we are on the road to recovery.

THINGS TO NEVER EVER DO

The Andy Cutler protocol takes into consideration mercury's tendency to redistribute from harmless places in the body to the brain and sensitive organs. In contrast, less well-thought-out detox methods can redistribute mercury indiscriminately. Thus, it is important to completely stay away from other commonly cited chelation vehicles and strategies, such as taking chelators off their half-life; using cilantro, EDTA or chlorella; using ALA for anything other than chelating; or using anything other than vitamin C intravenously.

DO NOT TAKE CHELATORS OFF THEIR HALF-LIFE: Taking a few hundred milligrams of DMSA twice a day, every eight hours or every other day, will make someone sicker than they already are. It mobilizes way more mercury than the body can possibly excrete and causes too much redistribution.

AVOID CILANTRO: From the horror stories we hear from people who tried to detox with cilantro, we think that it is an actual fat-soluble chelator that crosses the blood-brain barrier, similar to ALA. Nobody knows the active ingredient in cilantro, nobody knows its half-life and there are no standardized doses, so it is almost impossible to use properly. Although it is indeed “perfectly natural,” so are botulism, strychnine and hemlock. Some of the worst stories of regression we hear come from people who juiced cilantro or made cilantro smoothies or salads.

AVOID EDTA: EDTA (ethylenediaminetetraacetic acid) is not a clinically useful chelator for mercury. Although it increases the amount of mercury that shows up in the urine, it does not chelate mercury from sensitive organs nor clear it from the body. Using EDTA will actually make someone get worse by moving mercury out of harmless locations into the brain, liver and hormone-producing glands. EDTA does chelate lead very effectively, and it can also be used to clear minerals out of clogged arteries. It is unwise to use EDTA until after removing all amalgam fillings and doing several years of chelating with ALA.

AVOID CHLORELLA: A true chelator has two thiol groups that latch onto the mercury ion securely enough to get it moving along out of the body. Chlorella contains various molecules that have only one thiol group, so it picks up the mercury and flings it around indiscriminately. In nature, chlorella can absorb heavy metals—and is often contaminated with them—absorbing them from the inorganic environment, which has few thiols, not from other living things, which have plenty. In a living body, chlorella does not absorb heavy metals but causes their redistribution.

DO NOT USE ALA FOR ANYTHING OTHER THAN CHELATING: Chemicals do not care what we think or what the most important doctor in the world tells them to do. Chemicals act entirely according to the laws of nature. Many practitioners prescribe ALA because it is a powerful antioxidant. A common recommendation we have heard is six hundred milligrams a day to treat diabetes. Apparently ALA is effective for that, but it is also a chelator, and over time, if someone has any mercury in their body, the ALA regimen will concentrate mercury into their brain and other sensitive organs. In short, ALA acts as both an antioxidant and a chelator at the same time. Practitioners and patients will not realize that the neurological issues that slowly develop are due to the misuse of ALA. No matter what the practitioner's intent in prescribing ALA—whether as an antioxidant, for liver protection or to treat diabetic neuropathy—the ALA also will chelate any available mercury. Because it is not being given on a proper schedule, the result will be to gradually concentrate mercury into the brain and other sensitive organs.

DO NOT USE ANYTHING INTRAVENOUSLY EXCEPT VITAMIN C: Many (and even most) practitioners who treat heavy metals want to do intravenous (IV) chelation. However, an IV of a chelator is a hazardous proposition because it will mobilize a huge amount of mercury, the bulk of which will be redistributed. Glutathione is another IV never to do. A glutathione IV will mobilize mercury without getting any of it out of the body, causing a huge “redistribution event.” It is common for people to become mentally ill and develop bipolar disorder as well as many other problems after these IV glutathione interventions. At best, they provide only temporary symptom relief, and they don't remove any toxic metals from where they are doing damage. The most dangerous aspect about glutathione IVs is that people often have several good experiences with them first, so they ignore the warnings and keep on going until the bad one hits.

story. While he was doing his graduate work in chemistry at Princeton, he had a student job working in the chemistry library. He was in demand helping people with a very difficult index of chemical papers, and he got rather good at using the index. Because of this, Andy was able to discover a paper on chelating mercury in rats, written in Russian.³ Andy had studied Russian for one year and was able to sound out the words to a friend who spoke Polish. Between them, they managed to decipher the article. This article, and his graduate work in kinetics, put him on the right track for understanding the chelating properties and pharmacokinetics of ALA.

MY STORY

Some people are genetically more susceptible to being poisoned by mercury than others. One person might be laid low by two amalgam fillings whereas their neighbor with a mouth full of them may be perfectly fine. Other people can be more susceptible to mercury for acquired reasons—things that happened to them that aren't genetic. In my case, I had hepatitis, which made my liver unable to get rid of mercury as well as other people. I also had dental adventures that injured me even though many other people have had similar dental experiences without mishap.

My father was in the Foreign Service, and as a child I lived all over the world and got many vaccinations. Later, in my reckless youth, I traveled a lot, hitchhiking overland from Europe to India, back and forth three times. In the process, I wound up getting several different kinds of hepatitis, but as a young woman I recovered well and continued enjoying my life.

In the 1980s, when I returned from living in India for twelve years, my father took me

to his dentist to have my teeth evaluated. After this dentist x-rayed my mouth and told me that I needed to get all my fillings redone, I let the dentist drill out eight mercury amalgam fillings and replace them with new amalgam fillings. The dentist used no precautions whatsoever, and it never occurred to me that this could be a problem.

Some period of time after the dental episode, I had a nervous breakdown. I became so emotional that I pretty much cried all day. It came on suddenly, as though I had caught a virus. Unfortunately, I didn't put two and two together. Meanwhile, my brother thought that I was using drugs. The acute symptoms eventually calmed down, but from then on I dealt constantly with anxiety and depression and other odd symptoms. I went through weepy periods where I could be reduced to tears by a sentimental ad on television. I was so brain-fogged and distracted that I felt as though I was going to rear-end people on the road. I often couldn't remember which way to turn when I got out of a parking lot. I couldn't read non-fiction anymore because I couldn't retain any information. I had no libido. I couldn't lose weight and keep it off. I was waking up every three hours all night to pee. I was tired all the time.

At one point, an MD got me on Prozac, and I guess that helped, but I subsequently became a big patron of alternative doctors. I did liver flushes and ten-day cleansing fasts with colonics. I spent thousands of dollars on supplements. I did acupuncture and Chinese herbs. I corresponded by fax with a clinic in Mexico. With each intervention, I would get better for a while but it never would stick.

When I developed breast cancer, it scared me so much that I went to a very expensive chiropractor. This practitioner diagnosed chronic mercury poisoning. I was terribly excited to find an explanation for all my weird bad health. The chiropractor told me not to worry about my dental amalgams and just to take DMSA twice a day. I spent another two weeks sobbing all day until I had the sense to stop taking the DMSA. I later learned that I had been detoxing based on very bad advice.

I rooted around on the internet and finally found my way to Andy's protocol. After a marathon session with a holistic dentist and a few false starts, I got going on the process of recovering my health. Unsurprisingly, Andrew Cutler is my hero. He spelled out what I had to do when the medical profession was clueless about how to help me. He is a hero for a lot of other people like me, too.

Andy didn't think in black-and-white terms about mainstream

CUTLER PROTOCOL TESTIMONIAL: LINDA

I have been chelating off and on since 2005 and so far, I have reversed multiple sclerosis (MS) and ulcerative colitis, two conditions that are supposedly impossible to reverse. There are signs that my adrenal fatigue is getting better. Not sure about the hypothyroidism. In 1991, I had my first MS attack. The attacks were numbness, weakness, balance problems and difficulty walking. During the first attack, my legs felt like huge pieces of wood. I was diagnosed with relapsing remitting MS in 2000. I started the MS diet soon after that. Everyone was telling me that amalgam fillings were completely safe, but then I saw a doctor in 2004 who told me I had mercury poisoning and put that in my chart. This motivated me to remove my amalgams despite the exorbitant cost. I started chelation the next year. My MS diagnosis was reversed in 2008 by the same neurologist who gave me the original diagnosis. MRI lesions were either gone or reduced in size. I had a normal neurological exam and no MS symptoms at that point. Every time I had seen this neurologist from 1991 to 2007, I had MS symptoms and an abnormal neurological exam. The neurologist even got mad at me and told me not to come back because "MS isn't curable."

medicine. He never said that mainstream medicine is hogwash or that all drugs are bad and only natural remedies are virtuous and good. I don't subscribe to this simplistic way of thinking either. I accumulated mercury in my body because I had hepatitis C. Although I skated along for decades, ultimately, the hepatitis started to make me very sick. Recently, I was able to cure the hepatitis with a pharmaceutical drug, but if I hadn't chelated, I would still have all the neurological symptoms the mercury was causing. I needed both alternative and mainstream medicine to completely recover.

HOW TO TEST FOR MERCURY

On top of the fact that the mercury poisoning symptom picture is so chaotic and confusing, it is extremely difficult to test for mercury. It only shows up in the blood within the first three months of an acute exposure. Urine and stool are equally uninformative. This is a problem if you suspect that you may be toxic but are faced with thousands of dollars of dental work. You can't chelate until all your amalgam fillings are removed.

If you have no mercury fillings, you can easily determine whether you have a mercury problem by doing trial chelation rounds. Any reaction to the chelators, good or bad, means that there is something to chelate.

Although there are no really good tests, a hair test can often be informative. A toxic person's hair test will usually show very low mercury because the body is holding on to it, and this can be confusing to practitioners. Andy's book, *Hair Test Interpretation: Finding Hidden Toxicities*,⁴ explains how to analyze a hair test for deranged mineral transport, which shows up in the patterns of the essential elements. Only mercury causes deranged mineral transport.

A NOTE ABOUT LEAD

Lead poisoning has been in the news, particularly since the mass poisoning that occurred in Flint, Michigan. The consensus, according to the media and the medical community, is that the children in Flint

have been irreparably harmed and are doomed to have lower IQs, impulse and anger control issues and all kinds of learning disabilities for the rest of their lives. However, like mercury, lead poisoning is treatable. With appropriate chelation, these toxic children and adults can recover and live normal lives.

The chelation protocol for lead is a bit different from the protocol for mercury. This is because the body stores lead in the bones, and it comes out gradually as room is made for it in the blood. The treatment is to chelate the lead out of the blood, wait for it to fill up with lead again, and then chelate some more. The agent used for this is DMSA. The process can take several years, but that surely beats the alternative of a ruined life.

ANDY'S LEGACY


When Andy died on July 29th, 2017, everybody who knew him was devastated. He was a brilliant and intelligent scientist and a very witty and generous person. He spent hours of his time online and on the phone answering people's questions. At first, I was dismayed that he had died with so much knowledge still in his head, but I later comforted myself with the knowledge that he trained and counseled many people. His knowledge is in many, many people's heads now.

Andy was particularly kind and helpful to parents with injured children. I miss him sorely when our support groups get questions

CUTLER PROTOCOL TESTIMONIAL: PAOLA

My adrenal fatigue was my number one issue: debilitating, crushing, all-exhausting, zombifying, brain-numbing, life-juice-sucking fatigue. This is the reason why I started chelating, and now after one hundred thirty rounds, it is now as good as gone. It flares up now and then when I'm on round for a few hours, or when I increase the dosage. Most of the time, I feel like there is nothing holding me back any more. Whatever I want to do, I just get up and do it. What a concept! Other things that have improved immensely are motivation and procrastination. I'm active all the time. Whatever needs to be done gets done. My low blood sugar issues, which started with chelation, have now disappeared. They used to make me wake up in the middle of the night, and I had to eat to be able to fall back asleep. Sometimes at one, two or five in the morning, *every single night!* It was the most frustrating thing ever. This has completely resolved. I now eat just two times a day, like I used to years ago. My voracious, insatiable appetite has normalized. And my eyebrows have grown back! I wish I had taken before-and-after pictures, but I never expected that to happen! Migraines during "that time of the month" also are better. Before, I used to be knocked out cold for three days straight. Movement would cause an unbearable hammering in my temples. Now, the migraines are changing into headaches instead of hammers. The intensity is down by around 40 percent and the headaches are down to one day per month instead of three. There is still room for improvement, but things are sooo much better. Nausea is also better. My dietary problems are resolving. My thiol sensitivity has improved. I can now eat FODMAPs (like avocados, apricots and peaches) without a problem. A fantastic transformation has taken place. I'm forever grateful to Andy Cutler and the peeps in the Andy Cutler group on Facebook. I wouldn't have done it without them! [Note: The group is now called Andy Cutler Chelation: Safe Mercury and Heavy Metal Detox.]

about genetic or seizure disorders. Andy was very knowledgeable and could always suggest something. He was also good at telling parents what pitfalls to avoid in the medical system.

When the public learned that Andy had died, there was an outpouring of comments from parents. I found one post particularly poignant. A mother said her son had asked her why she was crying, and she answered, "Because the man who made you better died." The son replied, "Don't worry mom, he's in heaven and you have the recipe." So blessings on you, Andy! And thank you for leaving us the recipe. 

Rebecca Rust Lee was born to a U.S. Foreign Service officer and has lived all over the world,

including in New Zealand, Jamaica, Iceland, Belgium and India. She resided for twelve years in India's coastal state of Goa, where her three children were born. Rebecca has an Integrative Institute of Nutrition certificate as a health coach and was trained and certified by Andy Cutler on how to recognize heavy metal problems. She currently lives in Burlington, Vermont, where she coaches people on the practical aspects of using the Andy Cutler protocol to clear up mercury and other heavy metal issues. To learn more about support groups, books and websites, visit the Resources page of Rebecca's website at <http://www.maybeits-mercury.com/resources.html>.

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CUTLER PROTOCOL TESTIMONIAL: KAREN

In 1999, at age thirty-six, I was suffering from anxiety and depression. It's likely I suffered from anxiety my whole life without recognizing it. Being anorexic as a teen, I also had endocrine issues almost my entire life. In 2001, I started seeking alternative medicine, primarily for amenorrhea and poor brain function. In 2005, not having found any solutions and having read testimonies of people with cognitive issues that improved after having their amalgams removed, I thought I might as well try that myself. I had nothing to lose. I had my amalgam fillings removed by a dentist who practices safe amalgam removal. However, the chelation and detox protocol that my holistic doctor prescribed subsequent to the removal did me much harm. Rather than moving mercury out of my body, it mobilized it, moving even more of it into my brain. I did almost everything that Andy Cutler says *not* to do: intravenous DMPS and glutathione, EDTA, chlorella and cilantro. In 2011, my mental health worsened dramatically. It began with negative and obsessive thoughts. My sleep completely deteriorated. I would fall asleep but wake a few hours later feeling panicked and unable to sleep. Intense anxiety, regret, panic and obsessive thoughts plagued me twenty-four-seven. The magnitude of regret and panic over inconsequential decisions was unfathomable. I had extreme self-hatred and guilt and cursed at myself. I screamed at God to please stop torturing me and to take my life. I was on the verge of insanity.

At a friend's urging, I began Andy Cutler's chelation protocol in August 2013, with three milligrams ALA. For the first two years, progress was slow and up and down. Shortly after the two-year mark, I began experiencing relief, for which I am *extremely grateful*. Friends see a night-and-day difference in me, and I feel completely different. Prior to starting Cutler's protocol, I had been following a Weston Price diet (since 2000); I began Bee Wilder's anti-candida diet in 2010; I saw two homeopathic doctors, a specialized psychiatrist and two cognitive behavioral therapists; and I did one year of nutritional balancing. It was not until I started following Andy Cutler's protocol with proper supplements that I finally started getting better.



Karen before the Cutler protocol.



Karen after the Cutler protocol.

The Odyssey of Becoming a Holistic Dentist

By Carl McMillan, DMD

In May of 1985, I began my dental career as a freshman dental student. I was just twenty at the time, and I was extremely excited about the possibilities of the journey that I was embarking on. I came into the dental school not knowing what to expect, and wow, did I get off to a surprising start!

One of the classes we had that first year was a “dental materials” class, and the very first topic we discussed was dental amalgam. Dental amalgam fillings are the so-called “silver” fillings that many of us have had from youth. Given that dental amalgam actually is made up predominantly of elemental mercury (50 to 54 percent by weight)—along with silver, copper, tin and zinc—some have suggested that amalgams should be called “mercury fillings.”¹

Dental
amalgam's
convenient
mixture
of metals
makes it a
slow-release
vehicle for
mercury. This
slow release
allows
mercury to
build up in
the body.

As it happens, I had been in an undergraduate organic chemistry lab the semester before starting dental school. Our entire building was evacuated after we experienced a thermometer break, and a HAZMAT (hazardous materials) team had to come to the building to do the remediation. Thus, the presence of mercury in amalgam rang a few alarm bells for me.

In addition, I had taken an inorganic chemistry class the year before commencing dental school, and in that class, I had come to understand what makes a compound or chemical stable or not. In my dental materials class, I instantly recognized the fact that the concoction of metals present in amalgam could in no way be stable. When I challenged my professor and stated emphatically that “there is no way that the amalgam material can be stable chemically or electrically,” he first asked me what I meant and then told me I was wrong. I had a few choice words, telling him that he didn’t know what he was talking about.

It didn’t take long for word of my classroom challenge to get to the dean of the dental school, who called me in the next morning and told me to sit down, shut up and learn what I needed to learn. Otherwise, I could rest assured that I would not make it through dental school. Reluctantly, I did what I needed to do to get through my training—and continued to get indoctrinated that amalgam was safe and stable.

MORE QUESTIONS

After graduation from dental school in May of 1989, I began to practice general, traditional dentistry. Fortunately, I had kept my rebellious, questioning side, and after about three years, I started having serious reservations about the practice of putting mercury in people’s mouths.

My first approach was to attack the fact that amalgam expands and contracts more than tooth structure, which causes catastrophic structural failure of the tooth over time. This happens through a cascading series of events. The tooth, initially weakened by the decay, is further weakened when the dentist cleans out (drills) the cavity and again undermined with the placement of an amalgam filling that, through expansion and contraction, inevitably compromises the structural integrity of the tooth. Eventually,

the tooth cracks, resulting in the need for a crown and often a root canal. Although this issue of “dimensional stability”²—as it pertains to amalgam—still gets little attention from the dental profession, one study has noted that the use of amalgam (and gold) restoration materials dramatically increases the occurrence of longitudinal tooth fractures as compared to resin or porcelain.³

Despite questioning the structural implications of amalgam, it wasn’t until 1996 that I definitively reconnected with the question of safety and mercury exposure. I put it all together and experienced a paradigm shift when mercury touched my life personally. That year, my son was diagnosed on the autism spectrum and my fifty-six-year-old mother-in-law was diagnosed with early-onset dementia. There is no doubt that when something slaps us in the face personally, most of us take another look at our belief system. I did, and what I went on to discover rocked my world.

First, I found a network of physicians, dentists and scientists dedicated to the scientific safety of dental and health care: the International Academy of Oral Medicine and Toxicology (IAOMT), founded in 1984. The motto of this modest group is, “Show me the science.” Discussing what has come to be known as biological dentistry, the IAOMT states that biological dentistry represents “a thought process and an attitude that can apply to all facets of dental practice and to health care in general: to always seek the safest, least toxic way to accomplish the goals of modern dentistry and of contemporary healthcare.”⁴

What I came to deeply realize is that mercury is toxic to every cell in the human body and is particularly toxic to the central nervous system.⁵ In fact, mercury is only slightly less toxic than radioactive uranium (plutonium). Dental amalgam’s convenient mixture of metals makes it a nice slow-release vehicle for mercury—the only metal that is liquid at room temperature. This slow release allows mercury to build up in the body, and especially in the central nervous system and organs, because mercury is attracted to fatty protein-rich tissues. Unfortunately, the insidious release of mercury from amalgam makes it hard to draw a direct

correlation to any specific dysfunction of the body. The fact that symptoms of toxicity are variable and nonspecific has helped perpetuate the debate over amalgam's dangers.⁶

Of course, it is not just the mercury in fillings that is poisoning human beings. Mercury is in vaccines, the air, the soil, fish, light bulbs and other medical and consumer products. Although we can't completely avoid exposure to all these sources, at a minimum we can choose what we allow to be placed or injected into our bodies.

THE IMPORTANCE OF SAFE REMOVAL

With all of the knowledge that I gained from the IAOMT and many other individuals and groups, I made the decision to offer my patients safe removal of mercury fillings. This process is quite different from what traditional dentists are taught and do daily. Safe mercury removal involves attention to many details to protect the patient, the dentist and the dental staff.⁷

On the patient side, the teeth that have mercury to be removed have to be isolated with a non-latex rubber dam (surgical drape), which keeps mercury particulate and vapor from being swallowed or inhaled. The patient also needs a separate breathing source (oxygen through a mask or special cannula), skin protection to prevent splatter from getting absorbed and gut protection for any small amount of mercury that does get through (this is done with activated charcoal or a similar product that binds mercury). Finally, the patient needs nutritional support to ensure good digestion and liver function.

On the office and staff side, the practice environment where amalgam removal is taking place needs to be protected with capture devices. The dental office staff also need protection—both skin and inhalational. The wastes have to be carefully handled for recapture and encapsulation of mercury. Ventilation in the office has to be adequately cleaned and changed. In short, a safe removal office has to cover many bases to adequately protect all parties involved.

Another important aspect of safe amalgam removal is that each person needs to be assessed individually, and the removal plan must be tailored to work for their needs. In other words, not everyone can tolerate having removal done in the same way. For example, some people are

really sensitive chemically and electrically and may be able to handle the removal of only one mercury filling at a time. Others may be critically ill but want to remove as much at one time as possible to become amalgam-free quickly so that they can move on to working with health providers to restore their health. The typical patient has their dental amalgams removed one quadrant at a time.

Sometimes, patients think they have had all their mercury removed, only to discover that another dentist simply covered it up with other fillings or crowns. Mercury under metal crowns causes a galvanism that increases the release of mercury. Mixed metals in the mouth connected by fluid (saliva) create a measurable battery effect that is thousands of times greater than the body's natural electrical system.

While removing mercury from the teeth is very important, it is only the start of the detoxification process. Once the patient has eliminated the amalgam exposure, it is important to go through a program or protocol for detoxifying the body. In my opinion, this should be done gently in most cases. Detoxification should start with liver and colon cleanses and may also include saunas, hot baths with baking soda or Epsom salts and careful oral chelation. Detoxification should not be done without proper knowledge and supervision.

GROWING DEMAND

More than 80 percent of the patients in my practice come specifically for mercury and toxin removal. My average patient comes from more than one and a half hours away to seek this care. Many travel from states far away. This is because there are so few dentists who do this work in a truly safe manner. There is such a demand for safe removal of mercury fillings that patients are willing to make these journeys.

When patients choose to work with a holistic dentist, they do so because they want to avoid not just mercury but other toxins as well. Traditional dentistry does not recognize the toxic load it places on humans, and to this day, the profession has devoted very little thought to ending the use of toxic materials such as mercury amalgam.

I have noted a growing trend for dental

Safe mercury removal involves attention to many details to protect the patient, the dentist and the dental staff.

I have noted a growing trend for dental practices in more affluent metropolitan areas to phase out the use of mercury fillings, but this is due to clients' demand for more esthetically pleasing dentistry and not for any other reason.

practices in more affluent metropolitan areas to phase out the use of mercury fillings, but this is due to clients' demand for more esthetically pleasing dentistry⁸ and not for any other reason. A survey of five hundred pediatric dentists reported that parents' top concern about dental materials related to esthetics.⁹ Dental practices in poorer and more rural areas still are more likely to use mercury fillings versus other types of fillings.⁹

When the demand for amalgam eventually drops to such an extent that manufacturers can no longer produce it for a profit, then and only then will we see, finally, the end of mercury fillings. To hasten amalgam's demise, the IAOMT membership currently is leading an initiative to challenge mercury usage in dentistry not only to alleviate human health risks but for the sake of the environment.¹⁰ Other organizations such as Consumers for Dental Choice¹¹ and the World Alliance for Mercury-Free Dentistry¹² also have called attention to the wide variety of reasons to eliminate mercury from dentistry. All of these movements are gaining ground around the world, as evidenced by the European Parliament's partial ban of amalgam as of 2018 following ratification of the Minamata Convention on Mercury.¹³

DUAL JOURNEYS

My journey toward holistic dentistry has been one of both personal and professional challenges. On the personal level, I learned the hard way about the impact that toxins such as mercury are having on our children—and on the most vulnerable members of our society. On a professional level, I have learned that until our beliefs are challenged by these types of personal experiences, we often cannot see the truth. Fortunately, the word about mercury amalgam is getting out, and more and more dentists are

waking up to its dangers and embracing less toxic alternatives. ☯

Carl McMillan, DMD, began with a traditional practice in general dentistry but made the decision to practice holistic dentistry after realizing that the traditional model did not match his beliefs and values. Twenty years into his holistic dentistry practice, he now serves patients from all over the U.S. in two locations in Cary and Cornelius, North Carolina. His belief that total body wellness starts in the mouth is the foundation of his practice. Dr. McMillan is a member and director of the International Academy of Oral Medicine and Toxicology (IAOMT). For more information, visit his website (<http://www.smilesraleigh.com/>).

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ERRATA

In the Raw Milk Update on page 98 of the Winter 2017 issue, one foot note is missing from the section called PENNSYLVANIA: FDA ANTIBIOTIC TEST REQUIREMENT THREATENS TO CUT RAW MILK SUPPLY

Missing Footnote:

2. PDA Commissioner Russell Redding, Letter to Pennsylvania Milk Permitholders, 4 October 2017.

Reading Between the Lines

By Merinda Teller

Mercury's Poisonous Persistence in the Medical Armamentarium

Mercury, science and medicine have a long, intertwined history, dating back to ancient times.¹ Historians believe that Arab physicians were using mercury compounds as long ago as the sixth century BC.² The first Emperor of unified China, Qin Shi Huang (born 259 BC), reportedly consumed cinnabar (the vermilion-colored mercury ore) in the vain belief that it would serve as an elixir of immortality.³

Later, in the sixth and seventh centuries AD, Ayurvedic practitioners in India went to elaborate lengths to prepare a “red sulfide of mercury,” purifying the element and combining it with herbs to treat a variety of ailments.⁴ This ongoing branch of Ayurvedic “medical alchemy” (known as *Rasa Shastra*)⁵ is guided by the belief that “nothing is good for everybody and everything is good for somebody.”⁶ Other reported applications of mercury in early India and China included its use as an aphrodisiac and contraceptive.⁷

Although ancient civilizations appear to have been fascinated with mercury as a medicinal, alchemical, ceremonial and coloring agent, awareness of mercury's toxicity also arose early on. Thus, the Romans used prisoners, slaves and other “undesirables” to mine mercury,⁸ not caring that the miners “would soon die a crazed and anguished death.”⁹ Animal experiments on mercury toxicity began in the ninth century, and Avicenna, in the eleventh century, suggested that it would be wise to limit mercury to topical uses.¹ Cautions about mercury toxicity also cropped up in fairy tales. In the nineteenth-century Irish folk tale *The Pudding Bewitched*, a fairy-man puts “half a pound of quicksilver” into a pudding, prompting a “dancing mania” in everyone who eats the pudding.¹⁰

CHARLATANS AND QUACKS

Throughout the ages, there have always

been some discerning individuals who have viewed the medicinal use of mercury as the hallmark of unscrupulous healers. Christian descriptions of Jesus “the Good Physician” contrast with discussions of the bad physicians of his time who “traded on complex, intellectually prestigious, costly and dangerous treatments to amass great wealth for themselves.”¹¹

Jesus's approximate contemporary, Pliny the Elder, chastised greedy physicians for profiting from ineffective mercury-containing “ointment cures.”¹¹ Unfortunately, as one mercury historian points out, the use of such a powerful substance often dazzled patients, and “when poisoning symptoms appeared, they could always be blamed on worsening of the original disease.”¹²

In the 1700s, self-promoting itinerant surgeon John Taylor, described as a “charlatan” by some of his contemporaries and a flamboyant “poster child for 18th century quackery” by modern observers, performed eye surgeries on both Johann Sebastian Bach (1685-1750) and George Frideric Handel (1685-1759).¹³ Both musicians died from ostensible strokes some time after undergoing their eye operations. Historians have pointed out that Taylor used copious amounts of mercury as an antiseptic during the operations and administered postoperative laxatives that likely also contained mercury.¹³ Mercury since has been shown to have serious vascular effects and to play a role in stroke.¹⁵

In the nineteenth century, German physician Adolf Kussmaul traced the word “quack” to the Dutch word *quacksalver* used to describe individuals hawking topical mercury (“quicksilver”) products.¹² Meanwhile, on the American continent, the use in the 1800s of mercury “as a universal medicine for almost any disease made large parts of the [U.S.] population turn their backs on established medicine.”¹²

There have always been some discerning individuals who have viewed the medicinal use of mercury as the hallmark of unscrupulous healers.

When the syphilitics exhibited classic signs of mercury poisoning, this was “misinterpreted as a positive therapeutic sign of response to treatment.”

SIXTEENTH-CENTURY ROOTS OF MODERN TOXICOLOGY

As the ongoing controversy over the mercury-containing vaccine preservative thimerosal illustrates, modern toxicology hinges on the notion that well-documented toxins such as mercury can be safe in small or “trace” amounts.¹⁶ The origins of this perspective date back to the German-Swiss physician and alchemist who chose to go by the name of Paracelsus (1493-1541). Paracelsus pioneered the use of chemicals in medicine and set the stage for the field of toxicology.^{17,18} His influential idea that “lower doses—below a threshold—could cause otherwise poisonous substances to become harmless” went on to become encapsulated in the simplistic slogan “the dose makes the poison.”¹⁸ Thus, in Paracelsus’s view, inorganic mercury compounds could be therapeutic if administered in “proper” doses.¹⁸ According to some medical historians, mercury also held a special significance for Paracelsians as an element with “magical and astrological qualities.”¹⁹

In the present day, toxicologists try to determine, for a given substance, the highest tested dose or concentration of a substance at which there is no observed adverse effect.¹⁸ This is called the NOAEL (no-observed-adverse-effect level). However, it is not uncommon for studies to document adverse effects at exposure levels far beneath the NOAEL.²⁰ Political and other factors also can bias the selection of a NOAEL.²¹

Back in the sixteenth century, Paracelsus recognized that factors such as the timing of exposure to a substance also “make the poison,” but he was unaware of many toxicological subtleties that have become more apparent in modern times. These include the possibility of “pervasive adverse effects on [fetal] development at dose levels that [spare] the mother” as well as the phenomenon of hyper-susceptibility and the simple fact that, where toxins are concerned, uncertainty is “ever-present.”¹⁸ Issues such as timing and age of exposure, individual susceptibility and nonlinear dose responses are highly relevant to discussions of mercury toxicity.²²

THE SCOURGE OF SYPHILIS

From the earliest days of its use in medicine,

mercury featured prominently in the treatment of venereal diseases as well as other topical nuisances.¹ For example, when modern scientists carried out microscopic analysis of hair samples (head and pubic) from the preserved mummy of the short-lived Ferdinand II of Aragon (1467-1496), eldest son of Alfonso II of Naples, they found an extremely high mercury content as well as insect fragments that made it possible to deduce that the king had received mercury treatments for a dual infestation of lice.²³

Syphilis appeared on the European stage at around the same time, and it rapidly attained epidemic proportions (possibly arriving from the New World with Columbus when he returned to Spain).²⁴ Given mercury’s already accepted uses, it seemed “quite natural” to introduce mercury for syphilis treatment in the form of “pills, suppositories, inhalations, fumigations, ointments, sachets and injections.”²⁵ In fact, Paracelsus was one of the earliest proponents of mercury therapy for syphilis.¹⁹

Dan Olmsted’s and Mark Blaxill’s eminently readable book, *The Age of Autism: Mercury, Medicine, and a Man-Made Epidemic*,²⁴ traces some of the fascinating history of what doctors at the time called the “French disease,” observing that in its early years in Europe, syphilis was particularly virulent. They also note that the mercury treatments put into use immediately began wreaking havoc. In some instances, when the syphilitics who were subjected to these interventions exhibited classic signs of mercury poisoning (such as excessive salivation), this was “misinterpreted as a positive therapeutic sign of response to treatment by the elimination of harmful humours.”^{19,25} In other situations, less credulous citizens noticed that “the cure frequently proved worse than the disease”; in fact, after administering mercury to hundreds of patients in 1495, the Italian Giacomo Carpi “had to leave town in a hurry” because he was at risk of being murdered by angry townspeople.²⁴ “Antimercurialists” of the era also began producing written accounts of mercury poisoning, describing symptoms such as “stomatitis, dental loss, gastroenteritis, salivation, ‘Hatters Shakes,’ oliguria and pneumonitis.”¹⁹

The debate about mercury’s therapeutic value became even more pronounced in the eigh-

teenth century, with keen observers continuing to point out the lack of efficacy and “painful and fatal complications” of mercury-based syphilis remedies.²⁵ However, when Hapsburg empress Maria Theresia (1717-1780) brought physician Gerard van Swieten to prominence to address the rampant syphilis affecting Vienna’s military, van Swieten (and later, his son) developed and promoted a liquid form of mercuric chloride that rapidly became the standard of care for syphilis treatment throughout Europe.²⁴ Olmsted and Blaxill speculate that this concoction, which came to be known as “Van Swieten’s liquor,” may have been widely overprescribed due to people’s fears of syphilis, and this overuse probably resulted in substantial, unrecognized mercury poisoning.

Mercury stubbornly remained the “first-line” treatment for syphilis through the nineteenth century.²⁵ One of the most intriguing chapters in *The Age of Autism* delves into a little-discussed aspect of Sigmund Freud’s work with female patients diagnosed with “hysteria” and other forms of “obsessional neurosis.” Freud himself noted that “in more than half of the severe cases of hysteria...the patient’s father suffered from syphilis.” Olmsted and Blaxill describe Freud’s patient Dora, who began displaying mental and physical symptoms of “hysteria” (which dovetailed with symptoms of mercury poisoning) at the exact same age that she nursed her father through syphilis treatments that probably contained mercury. According to the two authors, “once you begin looking, clues to possible mercury toxicity are everywhere in Freud’s cases.” Olmsted and Blaxill suggest that the leading thinkers of the time, including Freud, “overlooked or ignored” obvious signs of mercury poisoning because they could not conceive of the possibility that female caregivers might suffer indirect toxic effects through administration of mercury treatments to relatives with syphilis.

Although new therapies for syphilis began emerging in the 1880s, including bismuth, synthetic arsenicals and, ultimately, penicillin, mercury remained in sporadic use as a syphilis treatment until the 1950s.¹⁹ Over the same time period, leading researchers in Oslo (Norway) and Tuskegee (Alabama) conducted a different

type of unethical experiment by withholding treatment from syphilis patients to observe the disease’s natural history—but that is another story.^{26,27}

THE SKIN AS GATEWAY

As already mentioned, mercury has a centuries-old history of topical uses. In the first half of the twentieth century, an epidemic of “pink disease” (infantile acrodynia) swept across North America, Central Europe and Australia.²⁸ Symptoms were wide-ranging and often fatal (10 to 33 percent of cases),²⁸ and autopsies showed widespread destruction of the brain.¹² It was not until the late 1940s that researchers traced the alarming condition primarily to teething powders that contained calomel (mercurous chloride).²⁸ This discovery should have taken place far sooner, especially given that research in the 1930s confirmed that the oral mucosa readily absorb mercury.¹² Even with this discovery, acrodynia cases continued to account for almost 4 percent of all children’s hospital visits in one British city as late as 1953.¹²

Beginning in the late 1940s, scientists and clinicians suspected that multiple sclerosis might be an “adult form of acrodynia,” and by the 1960s, neurologists began to believe that mercury-containing amalgam fillings could be the source of the exposure.¹² Two of the most influential medical trade organizations in the U.S.—the American Medical Association and the American Dental Association—reportedly were born to serve as de facto lobbying entities on behalf of mercury, defending calomel (and later thimerosal) as well as amalgam. (Other articles in this issue of *Wise Traditions* discuss thimerosal and dental amalgam.)

Although the outcry over acrodynia prompted the removal of calomel from teething powders in the mid-1950s, many other medical and cosmetic products, both then and now, also contained or continue to include mercury, sometimes in defiance of regulatory standards. In the current era, skin-lightening creams are in vogue worldwide and are a widespread source of hidden exposure to mercury.²⁹ Unfortunately, many of the users of these products are women of reproductive age or pregnant women who unknowingly are exposing their children (born

The American Medical Association and the American Dental Association reportedly were born to serve as de facto lobbying entities on behalf of mercury.


Over and over again throughout documented medical history, healers of all stripes have turned a blind eye to mercury's dangers.

and unborn) to toxic levels of topical mercury and mercury vapor.³⁰

IMMORAL AND CRIMINAL

Over and over again throughout documented medical history, healers of all stripes have turned a blind eye to mercury's dangers. David Kirby (author of *Evidence of Harm*)³¹ describes “the ignorance and arrogance of medical professionals, who have insisted over the years that mercurials in medicine could treat or prevent the onset of horrible, disfiguring diseases, while utterly ignoring or dismissing the evidence that their ‘medicine’ was often doing more harm than the diseases it was designed to fight.”³² Kirby adds that “this blind belief in a known poison was misguided, immoral, and in some cases, patently criminal.” Journalist Jon Rappoport describes it as a “tactic of tyrants” to say, “Take this poison—it is life-affirming and life-giving.”³² (In response, he suggests shining a light on “liars and fakers.”)

It is a shame that medical practitioners apparently have such short memories where mercury is concerned, and that mercury poisoning has to be “repeatedly rediscovered” with each new generation.¹² Fortunately, there has always been a more ethical and critical-thinking minority willing to speak out against the “immoral” and “criminal” pro-mercury contingent. For example, tens of thousands of Americans have signed petitions requesting that Congress subpoena Dr. William Thompson, the whistleblower who has described extensive scientific fraud at the Centers for Disease Control and Prevention (CDC). The agency's corrupt actions include claiming that there are no studies linking thimerosal to autism or other developmental disorders, when in fact CDC possesses data showing just the opposite.³³

The Minimata Convention on Mercury, adopted by over one hundred and forty countries in 2013, represents one positive step toward eliminating man-made sources of mercury poisoning.³⁴ Those who understand that mercury has no place in the medical toolkit must continue to reject—as loudly as possible—the Mad Hatter science that has enabled mercury's ongoing partnership with medicine. 

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“By nature fond of company and full of enjoyment of life, I withdrew in misery into myself, avoided public relations, people and social contacts, lost the love for art and nature.”

THE MISERY OF MERCURY POISONING

In an essay on “A hundred and fifty years of misuse of mercury and dental amalgam—still a lesson to learn,” Mats Hanson discusses the case of Alfred Stock (1876-1946), a well-known German professor of inorganic chemistry who conducted experiments with mercury and other substances.¹²

After becoming seriously mercury-poisoned, Stock wrote roughly fifty papers about mercury and tried to warn scientists and dentists about mercury's risks. Stock described his experience with mercury poisoning as utterly miserable—physically, intellectually and emotionally:

Intellectual exhaustion and depression, lack of energy and ability for work, especially intellectual work, increased need for sleep. . . most severe for a person with intellectual work was the loss of memory. . . . Especially the ability to calculate, to do mathematical thinking, also to play chess, was severely affected. The depressed ability to remember and the difficulties in calculating seem to be a special sign of insidious mercury vapor poisoning. The intellectual capacity was also in other ways depressed although not as severely as memory.

In addition there was psychic depression, a painful inner unrest, with time also causing disturbed sleep. By nature fond of company and full of enjoyment of life, I withdrew in misery into myself, avoided public relations, people and social contacts, lost the love for art and nature. Humor rusted in. Difficulties which I earlier had managed with ease (and today again can manage with ease) appeared insurmountable.

The scientific work required considerable efforts. I forced myself into my laboratory but could not produce anything of value despite all efforts. My thoughts were heavy and pedantic. I had to give up participating in matters which were not of immediate importance. The lectures, previously something I liked, became tormenting. The preparation of a lecture, the writing of a paper, even a simple letter, required immense efforts in handling the contents and language. Not seldom it happened that I wrote words wrongly or forgot letters. To be aware of these shortcomings, not to know their cause, to know no way of getting rid of them, to expect further deterioration—that was not nice!

The Wise Traditions Pantry

ADAPTING FAMILY FAVORITES FOR DELICIOUS, NUTRIENT-DENSE MEALS

By Maureen Diaz

One difficult obstacle to overcome when adapting a family's diet to be in line with Weston A. Price principles is figuring out how to prepare foods that the entire family will actually eat and enjoy. It's not only the children we need to impress, but often also the dad and sometimes even the mom! Does your family include hard-to-please, skeptical eaters? If so, I hope you can pick up a few new ideas here and be inspired!

Revamping and revitalizing family recipes can be as simple as replacing refined, denatured ingredients with whole foods in their natural state. For instance, this might mean using unrefined sea salt such as Celtic Sea Salt instead of the bleached white "table salt" that most consumers are used to; or substituting Sucanat or coconut sugars for white sugar (you can even run these through a food processor to create "confectioner's sugar"); or replacing vegetable oils and shortening with lard, butter and real olive or high-oleic sunflower oils. In most cases, it is possible to successfully switch these items one for one.

QUINTESSENTIAL KIDS' MEALS

In the 1950s, America saw a growing demand within the food industry to produce easy-to-make, cheap and convenient packaged meals. The trend continued in the 1970s when General Mills answered the call by releasing Hamburger and Tuna Helpers. Years before, Kraft already had beaten General Mills to the punch, releasing its "macaroni pasta and processed cheese product" in 1937 and garnering the loyalty of generations. I grew up on these food industry creations (eating Kraft Mac-N-Cheese with hot dogs), and I'll bet some of you did as well. The thought of these items now turns my stomach, but at the time they were what we knew and loved.

While none of these products were by any means nutritious, the increase in large-scale industrial farming, the ever-higher input of carcinogenic chemicals and the advent of genetically modified organisms masquerading as "food" mean that today's conventional products may be especially harmful to the health of our families. All commercially grown grain products are now raised on fields heavily sprayed with glyphosate, which is also being used to "ripen" grains, resulting in a highly toxic end product. Add to that the contamination of dairy products—due to the industrial practice of feeding herds with a high intake of these very same glyphosate-sprayed grains and giving cows recombinant bovine growth hormone (rBGH)—and, together with the widespread irradiation of many foods, we have a toxic "soup" on our dinner tables, one that is completely lacking in actual nutrients.

Responding to consumer pressure, Kraft has given up using artificial colors in its Macaroni and (fake) Cheese dinner in favor of natural colo-

rants such as paprika, annatto and turmeric. Oscar Mayer, in May 2017, announced its decision to abandon nitrates, nitrites and preservatives in its hot dogs, replacing them with "cultured celery juice" (a wild card as far as nitrate content is concerned) and "natural flavorings." However, that is still not saying much, given the hot dogs' "mechanically separated" beef, turkey and chicken, along with dextrose, corn syrup and a whopping five hundred and thirty milligrams of sodium from refined salt per hot dog.

A much better option for real foodies is to choose hot dogs or sausages from your local farmer or a grass-fed and nitrate-free choice from a source such as US Wellness, Tendergrass, Organic Prairie or another of the growing list of suppliers now available. (Check the latest WAPF shopping guide for more suggestions.)

BREAKFAST AND LUNCH

Bisquick, the famous Betty Crocker baking mix first introduced in 1931, is a staple in many American households. Its fame comes from the ease with which moms everywhere can make anything from breakfast biscuits to shortcake. If you want to avoid a product that not only is sorely lacking in nutrition but is full of glyphosate-laden GM flour and rancid canola oil, consider creating your own baking mix. It is as simple as mixing four basic ingredients (or more, if a sweeter version is desired). With a homemade mix on hand, you can make all the standards, plus birthday cake, dumplings and whatever else you might wish to bake up!

For lunch, homemade tomato soup is relatively easy to prepare and far surpasses the taste of anything coming from a can. Instead of the usual grilled cheese sandwiches made with storebought bread and American "cheese," use homemade or other good quality sourdough or artisan bread and real cheese—these make for the best lunch ever! Add a little salad on the

side, topped with a dollop of sauerkraut and homemade dressing, and you can't miss.

THE COLLEGE STUDENT'S STAPLE

I remember being young (and rather foolish), on a very tight budget and hungry back in the early 1980s. There before me in the grocery store aisle were row upon row of cheap, flavored ramen noodles—the answer to the stomach's need to be filled! Or was it?

For a short time I enjoyed indulging in package after package of those strange, easy and somewhat filling “meals.” My mother was no great cook, and I already was quite familiar with those little cubes called “bouillon” that provided so much flavor to the meals she made. Ramen noodles seemed similar and were not a big deal to me initially, because I had no idea there was such a thing as real bone broth. One day, however, I read the ramen package and knew with certainty that I could not continue to eat them. Even though I hadn't a clue about real nutrition at that time, I knew very well that if I couldn't pronounce an ingredient, it probably didn't belong in my body. And besides, there were those migraine headaches I was getting from MSG in its many forms (see sidebar below). In short, I was beginning to understand (as I hope my readers do as well).

These days, a wide variety of soups, including a more traditional, healthy and delicious version of ramen noodles, grace our table frequently. I make them using that wonderful, health-giving food we all have learned to know and love—*real* meat stock and bone broth. For the noodle component, I may use “glass” noodles (made from a type of sweet potato starch or mung beans), soaked rice or occasionally brown-rice-and-millet dried ramen noodles, available at Costco and Asian markets. When it is just my husband and myself, we prefer a simple but lovely “ramen” of spiralized zucchini

or summer squash.

Regardless of the noodles used, one only need add some diced vegetables, minced cooked pork or seafood, herbs, garlic, shoyu or tamari and a drizzle of sesame oil to have a nutritious, easy-to-make and satisfying meal that is also inexpensive. In our home, this is a favorite with our kids, who prepare it very often on busy days when mom isn't available to make their lunch.

Like ramen, everyone loves spaghetti with meatballs in tomato sauce, right? Making a homemade sauce is not a big problem for most people—homemade sauce is easy, tastes better and can be made with homegrown or other organic tomatoes. On the other hand, considering the aforementioned problems with conventional grains, the more important choice may be to use sourdough bread crumbs or ground pork rinds in your meatballs instead of purchased bread crumbs or panko. In addition, organic and grass-fed ground beef will provide not only wonderful flavor but better nutrition.

A spiralizer can make fast work of zucchini or summer squash, turning them into delicious “pasta” to carry all that goodness into your mouth. (Grocery stores now carry these freshly prepared vegetable “noodles” in the produce section.) Or, for excellent flavor and added nutrients, try making lasagna with thinly sliced, steamed zucchini instead of traditional lasagna noodles. Topping the lasagna off with real aged Italian Parmigiano-Reggiano cheese, freshly grated, will lift the flavor to the sublime!

REAL ICE CREAM

Most people have come to expect cake from a box (at best) or the typical, overly sweet birthday cake purchased from the local grocery store bakery, smothered in brightly colored icing made with shortening, sugar and neurotoxic food coloring. People top that off with ice cream containing the same fake colors and flavors, along with high fructose corn syrup and even antifreeze (propylene glycol), which is a standard ingredient in nearly all commercial ice creams. Although some might say, “If the U.S. Food and Drug Administration says it's safe for us to ingest, who are we to question it?” But this is not okay! So what is a concerned parent to do?

Our family has made many cakes with sourdough, sprouted grains or alternative non-grain flours. Last year for one child's birthday I even took a sourdough bundt cake to a church gathering where almost no one is interested in “health food.” My expectation was that most people would pass by such a creation and that my family would eat the cake and have leftovers for home. In fact, nearly everyone at the gathering had a piece and devoured it. Several people even begged for the recipe!

WHAT IS IT?

Enriched flour (wheat flour, niacin, reduced iron, thiamine mononitrate, riboflavin, folic acid), palm oil, salt, contains less than 2% of: autolyzed yeast extract, calcium silicate, citric acid, disodium guanylate, disodium inosinate, dried leek flake, garlic powder, hydrolyzed corn protein, hydrolyzed soy protein, maltodextrin, monosodium glutamate, natural and artificial flavor, onion powder, potassium carbonate, powdered chicken, rendered chicken fat, sodium alginate, sodium carbonate, sodium tripolyphosphate, soybean, spice and color, sugar, TBHQ (preservative), wheat.

Answer: Store-bought ramen noodles.

Not everyone has an ice cream maker, but it is quite easy to make a perfectly acceptable homemade ice cream without one. A simple mixture of cream, honey or maple syrup, vanilla and egg yolk make a fine, French-vanilla-flavored treat. The addition of a little cream cheese helps ensure a smooth texture even when frozen in a glass container. Occasional stirring while freezing “whips” air into the final product, making it more like what comes out of a carton at the grocery store. With other options such as added organic fruit or nuts, one can create a wide variety of flavors sure to please even the fussiest of party-goers.

For more ideas, see my article, “Drink That Milk! Eat Those Peas!” in the Spring 2009 edition of this journal. I would love to receive your requests and suggestions and to hear how your own recipe transformations are going. Send questions, recipes, tips and photographs to my email (mamasfollies@gmail.com) or leave them in the comments section on the Weston A. Price Foundation website. Bon appétit! 

MAUREEN’S MAC N’ CHEESE

- 1 pound brown rice elbows, cooked or cooked soaked brown rice
- 16 ounces shredded grass-fed cheeses (any combination you prefer)
- 1 quart whole milk from grass-fed cows
- 1/4 cup arrowroot powder
- 1/2 cup butter
- 2 teaspoons dry mustard
- 2 teaspoons sea salt

In a large bowl, toss the hot pasta or rice with melted butter. Combine milk with the dry ingredients and pour over the pasta/rice. Stir in the shredded cheese. Put in a large baking dish that has been brushed with butter. Bake at 350° for 45 minutes. This dish goes well with nitrate-free hot dogs from pastured pork or beef.

“NUTRIQUICK” BAKING MIX

- 4 cups sprouted flour(s) or grain-free flour mixture
- 2 tablespoons aluminum-free baking powder
- 1 teaspoon salt
- 2 tablespoons each butter (or ghee) and lard
- 1/4-1/2 cup sucanat, coconut sugar or monk fruit (optional)

Mix dry ingredients in a bowl or food processor. Cut in soft fats. Store in a sealed container in the refrigerator.

To use, add one egg and one tablespoon fat per cup of mix, plus 3/4 cup of milk or coconut milk for muffins or cake (as well as one teaspoon vanilla). Add a little more milk for pancakes.

To make biscuits, chill the fats and cut into mix with a pastry cutter. Add 3/4 cup milk per cup of mix, stir and drop onto a baking sheet by the spoonful. Pop into a hot 425° oven for 15-20 minutes. Adding herbs or spices along with grated cheese can provide many delicious variations.

SOURDOUGH BIRTHDAY CAKE

- 1 cup sourdough starter and 3 cups whole grain flour
- 1 cup honey, 2 1/2 -3 cups milk or coconut milk, 2 tablespoons each melted lard and butter, 1 tablespoon vanilla extract and 1 teaspoon salt
- 4 eggs, lightly beaten
- Ground spices (optional): 2 teaspoons each cinnamon and cardamom, 1 teaspoon each nutmeg and cloves, 1/2 teaspoon ginger

Mix starter and flour and let sit at least six hours or overnight, covered with a clean cloth. Alternately with the eggs, add remaining ingredients (including optional spices). Mix well but do not overbeat. Pour into a greased and floured bundt or other cake pan. Bake in a preheated 350° oven for approximately 30 minutes. After cooling, ice with cream cheese frosting (8 ounces soft organic cream cheese, 1 tablespoon honey, 1 teaspoon vanilla) or eat as is. This makes a lovely breakfast cake, too.

Homeopathy Journal

HOMEOPATHIC MERCURY: BRING IT ON!
By Joette Calabrese, HMC, CCH, RSHom (NA)

When my sons were little, we used to joke about how they could show themselves to be tough guys. They'd say in their normal voice, "Mom, may I have a glass of milk?" Then, wanting to put on their tough guy veneers, they'd finish the request in a deep, raucous voice with "...in a DIRTY glass."

Afterward, we'd all crack up. It made us laugh that "tough guys" don't care about cleanliness, germs and other such harms. We believed being a tough guy superhero might be even better, because they could probably wade through all the dangerous and dreaded toxic sludge in the world without worry! Now, I'm no superhero, but I do have a super-weapon at my disposal, perfect for dealing with toxicity: homeopathy.

FROM TOXIC TO HOMEOPATHIC

Some of homeopathy's best medicines are derived from toxins. In fact, the more toxic the original substance, the more valuable the medicine is, once highly diluted and made into a homeopathic medicine. That's because the symptoms and conditions the toxin causes are the very ones that can be cured upon homeopathic dilution.

Homeopathic remedies are produced by a process of dilution and potentization. They are usually diluted (depending on the substance) six, thirty, two hundred or more times to the hundredth power and potentized by repeated succussion along the way. What's great about this method is that it eliminates the toxic properties of the original substance so that only the curative properties remain. This means that a substance that contains elements that can cause illness in its gross form stimulates a healing response in homeopathic form, instead of adding to the body's toxic burden. In fact, the kinds of symptoms you would expect to see from a toxic dose of the gross substance are the very

symptoms the potentized and diluted remedy are most likely to uproot.

HOMEOPATHIC MERCURY

Take mercury, for instance. Conventional medical doctors have used mercury in its gross form for several centuries, and dentists started using mercury fillings in the early 1800s. Mercury also has been used in Ayurvedic medicine. I won't waste time going into the toxicity of the material, as this is well known and documented. Of greater interest to me are mercury's uses when highly diluted and homeopathically prepared.

There are various kinds of mercury used in homeopathy and cited in our homeopathic "materia medicas," the books that list homeopathic substances along with indications for their application. (Parenthetically, we use only the Latin names for our medicines—no cutesy marketing gimmicks and no "Lunesta" or "Lyrica" for us. Just the remedy's given scientific name, period.) In Frans Vermeulen's *Concordant Materia Medica*, he states, regarding mercury, that "Every organ and tissue of the body is more or less affected by this powerful drug; it transforms healthy cells into decrepit, inflamed and necrotic wrecks, decomposes the blood, producing a profound anemia. The malignant medicinal force is converted into useful life-saving and life-reserving service if employed homeopathically, guided by its clear-cut symptoms."

Forms of homeopathic mercury include:

- *Mercurius Aceticus* (Subacetate of Mercury)
- *Mercurius Corrosivus* (Corrosive Sublimate)
- *Mercurius Cyanatus* (Cyanide of Mercury)

Some of homeopathy's best medicines are derived from toxins.

Mercury in its gross form can cause symptoms such as excessive salivation. *Mercurius Solubilis* in its homeopathic form has been shown to uproot them.

- *Mercurius Dulcis* (Calomel)
- *Mercurius Iodatus Flavus* (Proto-iodide of Mercury)
- *Mercurius Iodatus Ruber* (Bin-iodide of Mercury)
- *Mercurius Praecipitatus Ruber* (Mercuric Oxide)
- *Mercurius Sulphuricus* (Sulphate of Mercury)
- *Mercurius Vivus* (Quicksilver)

Each of these forms of homeopathic mercury has properties with similar homeopathic actions, but the remedy that is most noteworthy because of its most common use is *Mercurius Solubilis*. It is *Mercurius Solubilis*, when diluted to the two-hundredth potency, that exhibits an ability to address conditions that involve areas of the mouth, adjacent glands, the gastrointestinal system, infections and certain behaviors.

MERCURIUS SOLUBILIS

Allow me to present a case in which *Mercurius Solubilis* was used. Mattie was fourteen years old and had a history of throat infections. She had a tonsillectomy at age three, but that only rid her of tonsillitis, not bacterial throat infections. At the time, she suffered from these painful ailments approximately twice a year, with accompanying swollen, tender lymph nodes. Her breath often had an offensive odor, and the amount of saliva she produced was so voluminous, it collected along the sides of her mouth, causing her to make a slurping sound before speaking. Her mother insisted she change her pillow case nightly because of her nocturnal hypersalivation. Most troubling for her mother was the fact that Mattie's behavior was strangely out of character before and during such infections.

After repeated use of antibiotics, Mattie's mom concluded that not only were they potentially dangerous but the strep infections were becoming chronic, and the antibiotics were not really effective. This was about the time she joined a homeopathy study group to learn how to treat her family. Her principal focus was Mattie's sore throats.

When choosing a homeopathic medicine, there are three criteria to consider: the diagnosis,

how the condition presents in symptoms and the organ that is affected. Mattie's doctor made it clear hers was a case of recurrent strep throat. That was the diagnosis, and *Mercurius Solubilis* 200C is the most commonly chosen remedy for strep throat.

In Mattie's case, there usually had been little to no pain associated with an outbreak. However, Mattie then began to complain to her mom that her throat felt like it had been scraped by sandpaper. Mattie's mom had been studying homeopathy with a group of other moms and learned that *Belladonna* is used for sore throat with pain, and especially pain that is burning or resembles a scraping sensation. She also learned, however, that *Mercurius Solubilis* is the medicine most specific to sore throats *where there is an abundance of saliva*. How to choose? Considering the saliva problem was of longer standing and was still a high priority for Mattie and her mom, they decided to go with *Mercurius Solubilis*.

UPROOTING PROBLEMS

Now, let me go off on a tangent for a moment. Students and clients often ask me, "What if I'm sensitive to (for example) sulfur-based medicines and supplements?" Or, "If sulfur in its gross form causes problems for me, can I still take the homeopathic remedy *Sulphur*?" My answer is a resounding *yes!* Why? Because the toxic properties of sulfur that the person is sensitive to have been neutralized by the homeopathic dilution and potentization process.

Mercury in its gross form is a poison. Contrary to what allopathic doctors of centuries ago believed, I can't imagine anyone would benefit in the long run from taking mercury internally. By doing so, one might expect to experience neurological problems, tremors, muscle weakness and a host of other serious and dangerous symptoms including...increased salivation. So while mercury in its gross form can cause symptoms such as excessive salivation, *Mercurius Solubilis* in its homeopathic form has been shown to uproot them.

In Mattie's case this was, indeed, what we saw. Within about a week, after following the *Mercurius Solubilis* protocol, Mattie's saliva production returned to normal, her halitosis

resolved, the slurping before speaking ceased and her infection cleared without further return. Years later, she remains free of strep throat.

Note that there was no indication that Mattie had ever been exposed to dangerous levels of mercury throughout her first fourteen years. One needn't have a history of mercury poisoning to use a homeopathic medicine like *Mercurius Solubilis*. Homeopathy uses the Law of Similars, which means it is using the set of symptoms similar to those that occur when exposed to the original substance in its gross form. What matters is the similarity of the symptoms, not necessarily the root cause. In fact, someone suffering from mercury toxicity due to extensive dental work, for example, might warrant a different remedy than *Mercurius Solubilis*, depending on the type of symptoms experienced.

Another illustration of the way that homeopathy operates involves the homeopathic medicine made from poison ivy (another toxin), which is known as *Rhus Tox*. Those suffering a skin rash from poison ivy exposure are more

likely to benefit from the remedy *Anacardium*!

At any rate, homeopaths may not be “tough guys” or “superheroes,” but we do love our toxins. This is because when they are diluted and succussed into their homeopathic formulas, they provide us with some of the most powerful medicines on earth. And that is pretty hard to beat. ☺☺

Joette Calabrese, HMC, CCH, RSHom(NA) is a homeopathic practitioner of twenty-plus years. Getting started with homeopathy just got a whole lot easier—thanks to Joette's new homeopathy study group program at Practical Homeopathy, Inc. All you need is a few curious friends and Joette will supply the rest. No friends who might be interested yet you still want to connect with others who are? Call (561) 537-5900 or visit PracticalHomeopathy.com to get connected and meet with like-minded folks in online classes. Practical Homeopathy is building classes all over the world. Join the movement to take your family's health to a world-class level.

One needn't have a history of mercury poisoning to use a homeopathic medicine like *Mercurius Solubilis*.

A WAPF MENU AT THE REAL FOOD CAFE

A dream come true for former Edmund, Oklahoma, chapter leader Michelle Menzel, the Real Food Café supports local Oklahoma farmers, serving grass-fed beef and lamb, pastured pork, organic chicken, wild-caught fish and organic eggs. They use WAPF-approved fats and oils, including grass-fed butter, bacon fat, tallow, coconut oil and extra virgin olive oil. Bone broth and sourdough bread are also on the menu.

BELOW LEFT: Diners enjoy their organic meal in a beautiful light-filled space.

BELOW RIGHT: Owner Michelle Menzel with daily specials in the background.



Technology as Servant

BUG OFF! NEW TOOLS TO BRING FARMING INTO THE TWENTY-FIRST CENTURY

By John Moody

Technological progress has the potential to herald a move back to a more holistic, organic approach to farming.

For a long time, farming and the technologies that support it have gone almost exclusively in a bad direction. The negative trends have included turning the chemical leftovers of war into tools to raise food; relying on compounds that are ever more persistent and toxic; using larger and more damaging equipment that creates compaction or allows endless, soil-depleting tillage; and overbreeding animals and plants solely for caloric production. The cost of these strategies—to ecosystems, the environment, plants, animals and us—has been immense.

New technologies are not inherently bad, however. For example, the same types of robots that now vacuum many homes may soon allow growers to gain victory over weeds. The same tools that allow us to find an unknown location on our cell phone may allow a farmer to put down just the right amounts of nutrients in a suffering segment of pasture or a produce field. The same drones that are a pest in our neighborhood may be able to spot and help remove pests in an orchard. In short, technological progress has the potential to herald a move back to a more holistic, organic approach to farming, one that is not as dependent on chemical warfare to grow our food.

Let's look at some of the promising technologies currently used or on the horizon that may bring us one step closer to ending chemically-based agriculture as the dominant model in the U.S. and the world.

BUG VACUUMS

As a father of five, I can attest to the fact that vacuums play a key role in household cleanliness. When it comes to pest control, bug vacuums are one of the more fascinating innovations to be introduced into the farming system. As one master gardener reports: "Imagine a 97 HP, tractor-mounted, 8-fan vacuum straddling

16 feet of lettuce in the field of the U.S.'s second largest lettuce grower. With the force of hurricane winds, this \$80,000 vac [sic] cleaner hurls bugs against metal components for an instant kill and exhausts them for soil amendments."¹

Strawberries are one food that shows real promise when married to the vacuum approach. Whereas conventional strawberries are a perennial list-topper for the "dirty dozen" (the Environmental Working Group's list of produce items with the highest loads of pesticide residues),² Driscoll, the nation's largest organic strawberry producer, uses vacuums directly on its strawberry crops. In addition, Driscoll and other organic strawberry growers employ the vacuums on what are known as "trap crops"—secondary crops intended to lure insects away from the primary cash crop.³ For example, the lygus bugs that like to damage strawberry crops will choose alfalfa over strawberries. As a result, "some farmers plant one bed of alfalfa for every 50 rows of [straw]berries. As the lygus bugs crowd into the green growth, a giant tractor-mounted vacuum cleaner comes by and sucks them up."³

Do bug vacuums have any drawbacks? Studies on bug vacuums have shown that they have little impact on pollinators or other beneficial insect populations. This is something that poses a problem for many other organic-approved pest control methods; even if one carefully applies a non-chemical pest control approach at just the right time and with the right methods, it may still result in adverse impacts on beneficial insects. Bug vacuums, used in the right way, achieve excellent pest reduction with minimal off-target impacts.⁴

Bug vacuums developed a bad reputation back in the 1980s and early 1990s,⁵ with only a few crops or farms achieving moderate success with the systems.⁶ This may be why we don't

see more farmers using the systems now. However, the vacuum option is due for a fresh look to address a host of pests. In the past thirty years, engineering and materials have come a long way, making it possible to design lighter, more efficient and more powerful systems. When the California Strawberry Commission reviewed different bug vacuum systems in 2013-2014, they found “a wide variation in bug vacuum construction and operations, with a corresponding variation in efficiency.”⁵ With research and technology improvements, bug vacuums are making a comeback. What was once a promising but perhaps a-bit-too-soon technology may become a prime player in organic pest control in the coming decades, and not just for strawberries but for other crops as well.

HEATING THINGS UP

The problem of bee colony collapse has received a lot of attention in the past few years. Some forward-thinking beekeepers have developed low-tech solutions that help protect their colonies. These work by creating a super-heated entry area that kills off mites and other invaders before they can enter the actual beehives and create havoc within. This same principle—creating areas of increased heat to control pillaging pests—also has incredible potential for a number of crops.

A Chilean farmer, Florencio Lazo, originally invented the heat approach and sold the rights to his work to Agrothermal Systems, which now offers heat systems around the world, marketed under the Thermaculture name.⁷

The systems heat air to high temperatures—one hundred and sixty to two hundred degrees—and use powerful, high-efficiency fans to blow this air through tall plants such as grapes and berries. Thermaculture causes no harm to the plants but kills off large swaths of pests who can’t take the heat. In fact, field studies show that not only do the systems not harm plants, but they can improve the plants’ yield, both in terms of quantity and nutrient quality. For example, a number of studies show improved phenolic and antioxidant levels⁸ and increased BRIX levels.⁹

Using Thermaculture, New Zealand vintner Mike Lane reported reducing pest control costs by two-thirds and being able to control “all pest issues except for powdery mildew, a fungus that required about 50 percent of the usual sulfur treatments when combine[d] with Thermaculture.”¹⁰ Moreover, Thermaculture enhanced yield by 13 percent per bunch and increased average bunch weights by 19 percent, allowing the Pinot Noir winemaker to not only “save money on costs but [achieve] increased production per hectare as well.”¹⁰



Photo credit: Agrothermal Systems

Like the bug vacuums, heat systems, when used properly, pose little to no danger to pollinators and other beneficial insects, because the timing of their use can be keyed to when pests are active but pollinators are not. It helps that most pollinators do not live in and on the plants they pollinate but in nearby habitats that are unaffected by the heat systems. Heat systems also have other potential benefits beyond pest control, such as helping to dissipate excess moisture and protecting crops from a wide range of plant diseases and other problems.

Currently, heat systems are used primarily for cane and trellised orchard crops such as grapes, berries and cherries. Will they be used for other plants? Perhaps yes, although the systems may be cost-prohibitive for small-scale growers. In some areas, they are available for rent. Another strategy is for a group of smaller growers in a given area to band together to purchase a heat system, reducing the cost immensely for each member farm. Moreover, because the heat systems have accrued a fair amount of independent research showing their benefits for orchards, berries and similar crops, they do not represent a blind investment in a “we-hope-this-works” technology.

HEATING WEEDS

Pests don’t like heat and neither do weeds. Thus, another very effective approach is to use heat to control weeds. Many organic growers already use flame weeders, which briefly pass flame over the weeds just enough to kill the above-ground portion of the weed.

Steam weeding is another option and has a number of advantages over flame weeding. An engineer working with the steam system explains that “steam is about [ten] times more efficient at heat transfer than flame...because water causes the heat to fall onto the weeds when heat just naturally wants to rise.”¹¹ This

means that the farmer can go down a row “two or three times faster,” translating into less labor time and less propane use.¹¹ The optimal time to steam weed is when target weeds are one to three inches tall, resulting in the added bonus of leaving a fair amount of biomass on the growing space floor to feed the soil food web.

Not all weeds or growing set-ups respond well to flame or steam weeding, and more research is needed to determine optimal temperatures, application speeds and the like. Nonetheless, these promising options are showing good field results for many farmers.

ROBOTIC WEED WARS

Heat isn't the only new weed control method available to growers.

Other solutions that are making headway in providing non-chemical alternatives include those that employ robots to get the weeding work done.¹² For certain types of crops, the future foretold in the Terminator movies is steadily approaching. A number of companies have developed field prototypes of robots that efficiently and effectively deal with weeds without damaging plants or the soil—no chemicals required. They use a number of methods, with most opting for either a cutting blade to chop tops off of young weeds or a mini-hammer that smashes their main

stem. Other robot systems still rely on herbicides but reduce the amount used by up to 90 percent.¹³

For robot systems that forgo herbicides, the approach represents a double bonus, because the weeds feed the soil as their tops and roots decompose. This is something that is sorely missing in modern agriculture's current model. Robot systems also can work with cover crops, helping control early-season weeds until the weed-suppressing cover crops become fully established. This type of weed control is even superior to a lot of traditional approaches of pulling or tilling weeds, as it leaves the soil undisturbed, while protecting and improving soil health.

Although many robot systems are designed for large-scale, industrial farming, some are specifically for home or smaller-scale growers and gardens. Tertill™, created by the same people who invented the Roomba vacuuming robot, “lives” outside in the garden during the growing season, requiring neither shelter nor power to weed the garden daily.¹⁴ The little Tertill™ machine shows a great deal of promise; as its speed increases, a single unit will be able to take care of more and more square footage.

What Tertill™ is for backyard and small growers, Deepfield Robotics and similar machines hope to be for larger growers. Deepfield's “enormous agricultural robot” uses a one-centimeter-wide stamping tool

that pushes weeds about three centimeters into the soil.¹⁵ According to trade magazine reporting, the robot primarily is “designed to detect (through leaf shape) and destroy small weeds that have just sprouted,” but it can also “hammer” larger weeds “multiple times in a row” with a cycle time of less than one hundred milliseconds.¹⁵ Describing the results of field tests on carrot crops—where carrots were spaced at two centimeters, weeds were growing very close to the carrots and there were twenty weeds per meter, on average—“the robot had no trouble

at all.”¹⁵ With a maximum capability of roughly 1.75 weeds per second at a speed of 3.7 centimeters per second at higher weed densities (forty-three weeds per meter), as well as the possibility of increasing the speed at lower weed densities, what this type of robot can do so far is impressive. As the systems continue to drop in cost and increase in speed, accuracy and efficiency, we may see a dramatic reduction in the need for herbicides in the near future of farming.



Photo credit: Deepfield Robotics

THE OLD AND THE NEW

Imagine a new kind of farm. On this farm, robots weed during the early season until cover crops protect the paths between plants. Some of the cover crops serve as trap crops, attracting pests so that a vacuum can come along occasionally to remove the ones that are particularly populous and problematic. A thermal system is available to protect other crops from both frost and a number of plant pests and diseases. Such is the possible farm of the future, one where new and old work together to grow food. By wedding the low-tech to the high-tech—such as pairing the simple trap crop approach with the powerful bug vacuum—modern farmers can create sustainable, effective and efficient non-chemical solutions.


No technology can conquer or undo the problems posed by monoculture and industrial agriculture alone. Those problems, which in-

clude insecticide-resistant pests, falling yields and human health risks, have been recognized for decades.^{16,17} It is the combination of traditional techniques and technological innovation that is likely to create better and more multifaceted approaches to dealing with a wide range of farm problems.

Modern technologies not only are providing new tools to deal with pests and weeds but also are changing other facets of farming. For example, what used to take a large crew of workers a full day to plant by hand can be done in an hour by new transplanting machines that require assistance from as few as two or three workers—and some even allow one person to plant completely solo. Similarly, what used to take a day to harvest now takes half the time with simple tools like undercutters¹⁸ that allow farmers to free root crops without turning or negatively disturbing the soil structure.

In 2016, our farm completed construction of a high tunnel.¹⁹ High tunnels are a wonderful, low-tech way to extend the growing season in our state to almost year-round. At the same time, a high tunnel is worse than a five-year-old, needing a near-constant babysitter because of our state's mercurial weather. If we are gone for the day and the weather changes—even something as simple as going from cloudy to sunny—the plants inside can freeze or fry, depending on the configuration we left the tunnel in at departure. This can cause the loss of thousands of dollars in plants and produce. Some growers we know have married things like Raspberry Pi computers²⁰ to sensors and other systems that will automatically open and close their tunnel's vents,

sidewalls and doors, either by command from afar or based on the data the sensors provide. Such is the power of technology to help farmers of all shapes and sizes, even if it is just the ability to get away to the lake for the day during the growing season or go catch a movie.

Technological change is coming to food and farming.²¹ For those of us in regenerative agriculture, the question is whether we can embrace and help push the best of these opportunities. The ultimate goal should be to help break our nation's dependence on dangerous, toxic chemicals to grow food, while increasing our food's nutritional value and healing our soils at the same time. 

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RAW MILK CHEESE STUDY: DOES RAW MILK CHEESE PREVENT OSTEOPOROSIS?

WAPF will help sponsor a study at Johns Hopkins University on raw cheese and its effect on osteoporosis. The research will be conducted by longtime WAPF supporter Stephen Belkoff, PhD, MPH, a biomechanical engineer who has been investigating osteoporotic fractures for over 25 years. He became intrigued by the potential health benefits of probiotics and the microbiome when his seasonal allergies abated after he started drinking raw milk.

Milk builds strong bones, but raw dairy may also prevent bone loss (osteoporosis). Researchers at Johns Hopkins discovered that the bacteria in raw dairy (probiotics) cause the immune system to produce potent natural anti-inflammatories. Chronic inflammation causes diseases including osteoporosis. They want to test whether eating aged raw milk cheese reduces inflammation and blood markers of bone breakdown, suggesting that cheese may be a non-pharmacologic, natural treatment for osteoporosis.

You can help! We wish to support this research with a donation of \$100,000. If every member donates just \$10-\$20, we will easily reach our goal. For more information and to donate: westonaprice.org/support-study-raw-milk-cheese/

Wise Traditions Podcast Interviews

INTERVIEW WITH DR. ANDREW CUTLER, PhD, PE



Hilda Labrada Gore is an enthusiastic communicator, health coach and fitness professional. She is the producer and host of the Wise Traditions podcast, which to date has over one million downloads, and also is the DC co-chapter leader for WAPF. She is passionate about wellness on every level, which is why she is known as “holistic Hilda” (holistichilda.com). She is a blogger, speaker and consultant for those who want to launch their own podcasts. She lives in Washington, D.C., with her husband, children and dog and cat.

Note: Podcast Episode 48 originally aired on August 31, 2016. Andy Cutler passed away the following summer, on July 29, 2017.

Hilda Labrada Gore: Dr. Andy Cutler has a PhD in chemistry from Princeton and a bachelor’s degree in physics from the University of California. Andy is a pioneer of a unique form of chelation and author of the book, *Amalgam Illness: Diagnosis and Treatment*. At one time, he struggled with symptoms that no doctor could explain, and when he found the root cause, he made it his mission to turn things around both for his own benefit and for the benefit of countless others. His problem was mercury toxicity. The chelation protocol that Andy went on to develop is safe and successful where many others are not. Andy, I understand you are a chemist, and you discovered that you had mercury poisoning when you were working in a lab. Is that where you got it?

Andy Cutler: No, I didn’t get poisoned in the lab, despite working with a long list of horrible chemicals at various times. I got poisoned from the fillings in my teeth and probably from Mercurochrome [a mercury-based topical antiseptic]. I may, at some point, have had a significant occupational exposure, but that was years before I got extremely sick, and it wasn’t the big contributor.

HG: You got poisoned by the fillings in your teeth? Wait a minute, a lot of people have fillings.

AC: And the “silver” ones really aren’t silver—they are mercury with a little bit of silver holding them together.

HG: It seems to me that a good part of the

population could be at risk. Tell us more about how you got to the bottom of the fillings being the culprit for your illness.

AC: I was spending lots of time going to the doctor and not really getting much help or information. I also was spending considerable time looking up medical information in the library and realizing that I was getting really sick, and doctors didn’t understand how sick I was or why I was sick. Finally, somebody convinced me to see the local “witch doctor”—a term I use affectionately. (I hope any physicians listening don’t take that personally.) I was surprised that they basically said, “You have mercury poisoning from your fillings.” Their words brought flooding back to me memories of asking my dentist about the mercury and the fillings and him saying, “Oh, it’s passive, blah blah blah.” Months later, I was taking a physical chemistry class where I learned better than that, but it had never occurred to me in the intervening twenty years to put the two together. The dentist couldn’t possibly be right, the mercury had to be getting out. Since there’s a long history in chemistry of people managing to get themselves mercury-poisoned, it is a very well understood occupational risk. People know it is very dangerous and have some idea of the symptoms. It became pretty clear to me what was going on.

HG: So all the other doctors whom you consulted with, except for this alternative doctor, didn’t suspect mercury poisoning?

AC: Didn’t suspect it? It’s not true that they didn’t suspect it. It is really interesting. One of the doctors who was pretty good, early on in the process asked about what I do for a living and whether I had worked with mercury. And I thought about it and said no, there hadn’t been

any mercury in the lab for the last couple of years. And then he went on and talked about a whole bunch of other stuff. Later, I was reading the medical books, and they all say that mercury poisoning is an occupational disease, and no one gets it unless they work with mercury. They suggest you can rule the diagnosis out if you ask the patient whether they work with mercury and they say no. And that's what he did. If he would have run a test at that point, he could have saved me ten years of grief. But he didn't. He was a sharp guy and knew exactly what the books said and did it by the book.

HG: I imagine that a large portion of the population is also mercury-toxic and is unaware of it because they don't work with mercury. They think their symptoms are from something else. Can you describe some of the symptoms of mercury toxicity?

AC: Yes, the symptoms have disease names—chronic fatigue, allergies, asthma, multiple sclerosis (MS), Parkinson's disease, lupus, diabetes and depression, which is a very common symptom. If you read the medical literature, you find out that the books are much better than what actual doctors do nowadays. The older books are written by doctors who saw a lot of mercury-poisoned patients and realized it. Now, they see a lot of mercury patients, but they miss it all the time because they don't realize what they are seeing. They read the old books and recite stuff and make it sound kind of silly. But if you read the old books, they talk about how the first symptoms are psychological things that are really hard to catch. You think they are depressed, but really it is mercury. You get social withdrawal and other symptoms that they don't complain about because it doesn't bother them, and that is mercury. And then later they become emotionally volatile, agitated or depressed. They get tired, their blood pressure goes up. The list goes on and on. It can look like ALS [amyotrophic lateral sclerosis], it can look like Parkinson's disease. In the Parkinson's disease section of the medical texts, they won't tell you to check for mercury. You might find one that says that mercury poisoning can be confused with Parkinson's disease, but the books will say to check for rare conditions that could be confused with Parkinson's disease. So doctors check for all this rare stuff, which, being rare, almost nobody has. They may go through their whole career and not find one of these

rare diseases, but they don't check for mercury, which most of their Parkinson's patients have. Instead of doing something that would make all of them better, they give them drugs to let them last longer while they slowly suffer and die. They are doing their job, and patients think they are doing their job.

HG: And people think, "Oh, I have ALS, or I have MS. This is my prognosis and there is nothing to do." And yet, you are suggesting that mercury is the underlying problem and it can be addressed?

AC: Yes, the problem is that everybody has their head turned toward this expectation that they know what's wrong and know what is going to happen, and that doesn't motivate them to do the rational thing. So people think, "I have this disease, I am going to die and there is no hope." But the rational thing would be to step back from medicine, from the white coat and say, "Maybe I have something else. I really ought to check for something else because a lot of the other stuff can be cured." But instead, once the doctor says that they have MS or their child is autistic, or whatever, they hear it and that's it, that's the way it is.

HG: Yes, there is an acceptance. Let's say I'm a person who wants to investigate what the root cause of my illness is and see whether it is indeed mercury toxicity. How would I go about finding that out?

AC: Well, that's kind of the rub, because most doctors will assure you that it can't be. So you

THE WISE TRADITIONS PODCAST CELEBRATES ANOTHER MILESTONE (OR TWO)!

The Wise Traditions podcast hit the nice round number of *one million* downloads this January, right around the two-year mark of the show's launch! We are thrilled that more and more listeners are checking out the podcast.

The second milestone we hit just recently is that the Wise Traditions podcast is ranked as number thirty among all podcasts in the "alternative health" category in Apple Podcasts! This is huge! In fact, the Wise Traditions podcast is ranked ahead of the People's Pharmacy podcast! There are hundreds if not thousands of alternative health shows. Apple only lists the top two hundred and we are number thirty! Not one but two great reasons to start listening.

Join the thousands who are benefiting from the Wise Traditions podcast! You can listen to these episodes directly from our website, westonaprice.org. We hope you will use these episodes to impart information to friends and loved ones. Just send them the information by cutting and pasting a link to the show from the podcast page of our website.

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Doctors
check for all
this rare stuff,
which, being
rare, almost
nobody has,
but they
don't check
for mercury.

either have to start reading medical books—which will say mercury toxicity is rare and you don't have it, but at least if you are reading an old book, it will describe it accurately—or you have to read alternative medicine sources or go on the Internet. And while the Internet contains some very accurate material in areas where the professional fields don't know what they are doing, that is a very small fraction of the content. It contains an awful lot of dribble, too. It is very hard even for a sophisticated reader with a technical background to tell which is which. I'll suggest you go find the “Andy Cutler Chelation Think Tank” on Facebook [the name of the group recently changed to “Andy Cutler Chelation: Safe Mercury and Heavy Metal Detox”] or the Frequent Dose Chelation groups on Yahoo. Buy a hair test interpretation book and a hair test, go through the symptom description in the book and look at the hair test to see what's going on. You can get hundreds of answers if you just start freewheeling on that approach.

Another really important thing to do—which is the same thing you should do that would motivate you to not believe the regular doctor if he says you have MS—is look at the outcomes. What happened to the people who say they chelated this way? Well, the patients who did it, who chelated my way, either with their doctor or on their own, they say, “I got better.” They have long-term, ongoing stories to demonstrate they are really better. People talk about how their child got better, their kid lost their diagnoses, he is no longer autistic, he's healthy or he's in college, whatever. That's the

kind of thing that should convince you to look into this. On the other hand, if you find a doctor who has this wonderful webpage about how he's going to cure you, but you can't find anybody on the Internet who's been through that and was cured, or you can't find anybody five years ago who is still saying they are cured, don't go there. This is PR. Lots of supposed medical literature is advertising.

The proof is in the pudding. If you think you have mercury poisoning, you should have the signs and symptoms of mercury poisoning. You should be able to get your laboratory results from your doctor and find stuff in the lab tests that the doctor ignored because he didn't know what it meant, so he didn't think it was clinically significant.

HG: How old were you when you were chelating, and what were the results for you?

AC: I began chelating at about age forty-one, and the results were really a profound improvement. I probably didn't even get all done chelating, but I saw dramatic improvements. My asthma went away, my allergies dramatically reduced, the number of foods I could eat went up from four to about half the foods in the world with no problem. My energy went up from not really being able to do anything but sit in the house to doing business, running around, going dancing and stuff like that. My ability to concentrate went from so bad—where I remember many times sitting there staring at the bottle of pills wondering whether I had taken one five

HERE'S WHAT LISTENERS ARE SAYING

The true path to real health: “Thank you for this wonderful podcast! It helped me rediscover my roots and my health. I grew up in an old world country, Lithuania, and after discovering the Weston A. Price Foundation, I realized how wise my grandparents were, how well they knew how to take care of their health well into the old age. I love listening to this podcast every week in my car on the way to pick up my raw milk share. There is so much valuable information on everything ‘real health-related’ and it is so inspirational. At the end of every podcast, I get re-inspired to live the healthiest life possible and go out there and help as many people as I can.” ~Old Country Wellness on Apple Podcasts

Excellent! “I look forward to each new episode. I also appreciate that the Wise Traditions podcasts are not ‘fad diet-based’ but ‘traditional wisdom-based.’” ~ SarahDoll435 on Apple Podcasts

Pursuit of better health: “Anyone in pursuit of better health should tune in!” ~OxiPhos on Apple Podcasts

Please don't keep the podcasts to yourself. Share the show with friends and family! And thanks for listening!

minutes ago like I was supposed to and not being able to remember. I had to do things like count them and figure it out and keep a checklist. Then I'd look at the checklist not checked off and I couldn't remember whether I was there to check it off because I had just taken the pill, or I hadn't taken the pill yet. But then I got to the point of being able to concentrate well, write books, do business, play chess, stuff like that.

One of the aspects that is kind of interesting is that ordinarily, normal healthy people should feel their best in their twenties. At about thirty-five, they start to realize they are getting a little older, they can't quite do the dramatic things they could as a twenty-year-old. A lot of people are really toxic most of their lives because of slow, ongoing exposures. After I chelated, at forty-two, I felt the best I had in my life. I was toxic enough in my twenties and thirties to have not felt that good. I'm sure I didn't feel as good as somebody should have at twenty or thirty. I believe that for a lot of people who have been chronically intoxicated and have been getting this stuff for years and years, once they chelate, they can feel as good as they ever have in their lives.

HG: I want to hear some of your stories, Andy. Obviously you are a success story. Can you tell us about some of your clients who have used your chelation protocol and seen success?

AC: The most interesting success stories—because they are verifiable and doctors usually

get so upset by them—are the repeated stories of women with MS. A lot of diseases go with a particular personality type. For some reason, many people with MS are sure they are going to beat their disease and often seek alternative care. Most people with other diseases don't. I have seen a repeated story of women whose fillings are removed and replaced with non-mercury fillings and who chelate for years on end. They start out with all kinds of disabilities and with an MRI showing all these lesions in their brain. After a few years [of chelation], they aren't on disability anymore. They can work, they can do things. The doctor takes an MRI—no lesions on their brain. And you wouldn't think that would be curable. Sometimes the doctor is interested and wants to hear more about mercury. Sometimes the doctor gets mad at them for faking it. I don't know how you can fake an MRI, or how you can think they can make these lesions disappear.

HG: It's laughable, really. How could the lay person be faking something like that? But you know, it must just be their own disbelief, right?

AC: The downfall of modern medicine is that immature people are going into it. That's one of the reasons they get trained so much and beat up so much to try to do it right, which is counterproductive. But it also puts them into denial. Most of them aren't emotionally mature enough to admit they are imperfect people and mess up while remaining sane. If you're a neurologist,

Ordinarily, normal healthy people should feel their best in their twenties. After I chelated, at forty-two, I felt the best I had in my life.

QUOTES FROM RECENT PODCASTS

#121 LOW-CARB HIGH-FAT DIET ON TRIAL with Professor Tim Noakes

"If you cut out sugar it's like if you stop smoking or remove alcohol. . . you feel terrible for a period. [But] once you get over that first week or two and start to adapt, it's amazing."

#118 THE STORY BEHIND "KALE V. COW" with Diana Rodgers

"The idea of the film is to basically de-vilify animal products, specifically beef. Red meat is one of the most nutrient-dense foods possible and one of our best chances at mitigating climate change. Every time a new study comes out talking about how bad meat is, I like to point out the fact that most of these studies are looking at epidemiology. Correlation doesn't prove any cause at all. Cancers take a long time to develop, and it's ridiculous to pinpoint meat as the sole cause of that."

#116 CHEMICALS THAT WREAK HAVOC WITH YOUR HEALTH with Dr. Anthony Jay

"There are all these artificial estrogens that I've become more and more aware of, and people aren't talking about them. Breast cancer is up 250 percent since 1980. . . the solution is recognizing these [estrogenic] chemicals and avoiding them. The estrogenic paradox: these chemicals store in your fat, and they signal your body to store more fat."

There are some very basic chelation rules that you have to follow. Many chelation protocols don't follow those rules and thus make people who use them very sick.

you see very messed up people who suffer, and a lot of them die. You can't do a whole lot to help them if you are doing mainstream neurology. Well, they don't want to think they are messing up and letting their MS patients die by not telling them to do mercury detox.

HG: Speaking of other doctors, I know there are other chelation protocols out there. I guess we should begin by defining what chelation is. Will you define chelation and then contrast your protocol with others?

AC: Chelation is the process by which you take out some toxic metal ion that is in your body poisoning you. You use some agent that has two or more binding sites in each molecule to grab onto that toxic metal and help it be excreted. Most things aren't true chelating agents because they don't have two binding sites. A lot of things are chelating agents in a test tube because there is only water and the metal ion, but they are not chelating agents in people, where you have all kinds of other things in your blood plasma.

Chelation is the process where you take a chelating agent to get the metal to come out. There are some very basic rules that you have to follow, which are in all medical textbooks, and like I said, textbooks are a whole lot better than the medical practices. There are many random chelation protocols that don't follow those rules and thus make people who use them very sick. Some examples of bad ideas are: DMSA every other day or DMSA every eight hours, DMPS injections, chlorella, cilantro or alpha lipoic acid two or three times a day. Alpha lipoic acid is an antioxidant, but it is also a chelator. It doesn't matter what the doctor says about antioxidants, the chemical doesn't listen to the doctor, it chelates because it is a chelator.

"Chelation" is a general word, like "antibiotic" or "analgesic," it is not a specific thing, but people tend to use it in this very specific sense. It has a lot of controversy in medicine for reasons completely unrelated to heavy metals. When you chelate somebody, there are two important things. One is that they not continue to be exposed to the toxin. The chelator will help the toxin come into the person, which is a common error.

If you chelate someone with mercury fillings, the chelator gets in the saliva, chelators in the fluid, in their tooth pulp, and it sucks an enormous amount of mercury out of their fillings. If you manage to get all that mercury from the filling into the person, they will die. There are many lethal doses in any filling. The filling is relatively passive, so that's why you can have a filling in your mouth and not fall over dead the next day. But if you take a chelating agent that has a high affinity for really grabbing onto the metal, it will suck the mercury right out of that filling and into you, which can be really dangerous. Fillings have to be replaced, which usually involves lots of unpleasant, expensive dental work, which is why people don't want to do it, or don't want to hear it or want to have a lot of certainty in the diagnosis before they go forward.

HG: I see. Because you can't chelate unless you have your fillings taken out first?

AC: You can't *safely* chelate. You can always chelate because you can always take the pills. But it is a bad idea unless the fillings are out. As with any drug, there are some basic rules, like how often do you take it? More or less, every half-life. So for DMSA, that's every four hours, for DMPS every eight hours, for alpha lipoic acid—which is what I recommend—every three or four hours, because it is a little bit shorter-lived than everything else. As for the dosage, you find out what the person can tolerate. The dosage people tolerate is highly individual, so you start at some dosage and you move it up or down until you find it is okay. And then they just do that, take a break, do that, take a break, for a long time. Eventually, the mercury comes out. If they have other metals, they use another chelator and eventually those metals come out. It is very common for people also to have tons of lead in them.

HG: I understand your protocol well because I have a friend who's been going through it, but I'm thinking of just how helpful this can be for other people. I'm hoping our listeners are catching on to some of these terms that may be foreign to them. I know many of our podcast

listeners are into alternative health, so can you explain why you don't recommend chelation with chlorella or cilantro, when many people are thinking, "Oh, that's natural, I would want to do that"?

AC: The problem is that those are really bad ideas and will make people worse. Many people get in trouble with that. A lot of people also get in trouble with alpha lipoic acid because they don't even know that it is a chelator. They take it as an antioxidant and then it chelates. If you take it right—every three to four hours in small doses—it makes you better. If you take it wrong, it makes you worse. This is because, as with lead, most of it is in your bones, and it isn't poisoning you. Most of the mercury in your body is in your thigh muscle, your kneecap, your toenail, your pancreas and other places where it doesn't really matter because those aren't sensitive tissues, they don't get poisoned easily. But if you take a chelator improperly, it helps get the mercury stirred around and it ends up concentrated into the sensitive tissues like your brain, your thyroid gland and your adrenal glands. It makes you much sicker even though you saw a lot of mercury come out. So you have to assess the progress not by a test but by whether the people are getting better.

If you want to get better, there are some basic rules you have to follow like dose timing. In that sense, I don't have a specific protocol. A lot of doctors are specific and say, "Do exactly this." I say, "Take your DMSA every four hours or more often. Take your DMPS every eight hours or more often. Don't inject it, take it by mouth or use it transdermally." These are the

rules and anything within those bounds is my protocol, and people adjust it to fit their lifestyle.

It is, intellectually, a simple thing. And it's not terribly physically challenging, and there is not the drama of having to go to the doctor, paying a lot and using needles. It is not complicated, but it is very tedious, you do it for a long time. A lot of people need drama, they aren't into the tedium. But as with lots of things, what really gets you moving forward is the tedious, just-keep-doing-it approach.

HG: I interviewed someone on this show who has used this protocol for her own children and then advised others to do the same. She said the results have been phenomenal. As you said, children with autism or asthma have seen such relief. But you have to pay attention to each individual child and tailor it according to how they respond, correct?

AC: Yes, and in a technical sense, if you take the attitude that pain is good, you can tell everyone to do the same thing, and many of them will be really miserable for a couple of years, but nobody for whom it is really miserable is going to keep doing it. They're not that insane, even if they are as mad as a hatter from the mercury. You adjust it so it is tolerable, and then it is going to take a while, so you figure out what else they need to take to be comfortable in the meantime. If you chelate for a couple of years, you'll get some relief along the way, but you'll still have some of your icky symptoms. You will want to take something to relieve the symptoms. That is absolutely the intellectually interesting and challenging part of cases. It is really easy for

If you take a chelator improperly, it helps get the mercury stirred around and it ends up concentrated into the sensitive tissues like your brain, your thyroid gland and your adrenal glands.

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the alternative doctors to get confused. Chelation is easy, so they don't pay attention to how important it is to do it right. They pay attention to the much more interesting and much more lucrative sprinkles of magic pixie dust that it takes to make this person feel better now, while they chelate. In a practical sense, that is important and humanitarian—so they can keep a job and so they don't get divorced—but in an ultimate sense, you have to chelate them properly or the outcome isn't going to be good.

HG: You do recommend in your protocol that people take supplements to shore them up while they're going through the process.

AC: Yes, a lot of the mechanism of toxicity of mercury and lead or other heavy metals is that they are oxidation catalysts. Specifically, mercury is used as an oxidation catalyst in organic chemistry to oxidize fatty acids. So you take vitamin C and vitamin E as antioxidants to help protect your body against that. When you chelate, since you are moving the metals around and they are a little more toxic on their way out, your body tries to trap them or "passivate" them. To get them out, you need a little extra protection, and the antioxidants will make you feel a lot better. Mercury, in particular, interferes with your body's ability to move minerals around to where they need to be. Generally, people with mercury have low zinc and low magnesium. I automatically suggest all of them take these, and it's almost always going to be helpful. The regular doctors don't typically pay much attention to magnesium, but if you don't have it you can be spacey and weak, have low energy, generally feel miserable, get muscle cramps and your blood pressure can go up. Magnesium is a very cheap and benign thing that makes people feel a lot better. If a person has mercury, they need a lot more than the normal person.

HG: You mentioned alpha lipoic acid. It can be benign if a person isn't mercury-toxic. It is an antioxidant, correct? So if you are completely well with none of these heavy metals, you'll be fine and it's beneficial. But those with heavy metals would have a reaction. Isn't there a test you can do to see whether you react? Might it mean that there is something in your system?

AC: Yes, I don't do this if you have fillings in place, but what you would do is take alpha lipoic acid every three or four hours for a three-day period. Start in the morning on Day One and end at that time on Day Three. If you take twenty-five or fifty milligrams, you'll probably feel something if you have some heavy metals in you. If you don't feel anything at all, try one hundred milligrams the following weekend. If you still don't feel anything at all, I'd suggest trying two hundred milligrams, but realistically speaking, everybody who is toxic will definitely know by the last day or the day after. The day after is the one when you're the worst—cranky, tired, depressed and have a lot of side effects. If you don't have clinically significant amounts of heavy metals in you, you can do that at two hundred or three hundred milligrams every three hours and nothing happens, no effect. Lots of toxic people feel like they got taken out and beaten by a biker if they take even five milligrams that way. They are

feeling the effects of the toxin as it moves out.

HG: And that's when they'd need to start doing the tedious process of chelation. But it sounds like your protocol is a safe and effective way to go. And I like what you said about researching online and being aware of people who are just promoting something but don't have strong testimonies or stories to back it up.

AC: You want to look for two things. First, do they give you the basic science, and does it really make sense? Or do they kind of just wave their arms? And second, does what is said by the people who have been through it match what the person advocating it says? It is much easier to make up great tales that sound wonderful and scientific than it is to really solve a problem. If the problem's really solved, there won't be a big list of cured people raving about it—because they got cured and got on with their lives. It is actually kind of hard to find them, but if you look online, you'll eventually see that there is a person getting a lot better on it. You'll find people who said that ten years ago, and you can find them now and they'll say that life's great and they are doing all the things they couldn't do before.

HG: To wrap up, I have a question: what is one thing the listener could do to improve their health?

AC: Take vitamin C with meals and at bedtime. I could give you a million other answers, one of which is to eat the Wise Traditions diet. But the cheap and easy one is to take vitamin C with meals and at bedtime. ☯☯

Note: For more information on Andy Cutler's resources and chelation protocol, go to www.noamalgam.com, or go to www.westonaprice.org, where the notes for podcast episode 48 provide further links and information.

All Thumbs Book Reviews

Mercury Poisoning—The Undiagnosed Epidemic: Sources of Mercury and How to Detox

**By David Hammond
CreateSpace Independent
Publishing Platform**

As a young man in the 1970s, David Hammond labored in an Australian steel factory. There he developed a mysterious illness involving fatigue, diarrhea, sinusitis, insomnia, thirst, irritability and loss of interest in socializing. Even after he left the job, his symptoms continued to come and go, but the many doctors he consulted had no answers. In 2010, Hammond learned that the scrap metal used to produce molten steel at the time of his industry involvement contained mercury and that he undoubtedly had inhaled mercury vapor on the job. The mercury deposited in his body and brain following this thirty-year-old workplace exposure could explain his ongoing illness.

Guided by books by Andrew Cutler and a related Internet forum, Hammond got tested for mercury and undertook low, frequent-dose oral chelation. Both are complicated, controversial and fraught with potential missteps. However, Hammond's treatise—published a mere three years after he learned of his likely occupational exposure to mercury—walks carefully through this minefield, presenting “science and case histories showing the role of mercury in diseases...and how to eliminate mercury from [the] body.” In fact, *Mercury Poisoning* may be the simplest and most accurate guide to mercury toxicity available, offering a go-to resource for practitioners and patients who seek to understand complex illnesses that may have a mercury component.

Hammond describes mercury's power to cause acute and chronic toxicity that manifests in an astonishing variety of symptoms. He also discusses mercury's many commercial uses (either currently or until recently) and how these have led to widespread exposures from dental

amalgam, vaccines and numerous products (e.g., skin creams, contact lens solutions, latex paints and pesticides). Some exposures may be hidden, including broken fluorescent light bulbs, industrial emissions and casual spills. Hammond cites many case studies of odd illnesses eventually attributable to these types of exposures.

In the twenty short but compelling chapters that form the bulk of the book, Hammond reviews the science documenting mercury's role in chronic illnesses (such as Alzheimer's disease, autism, attention-deficit/hyperactivity disorder, allergies and chronic fatigue), doing a heroic job of finding and describing many of the most fascinating studies. For example, a 1999 study of a type of heart failure that sometimes kills young athletes revealed that the thirteen patients had, on average, levels of mercury in their hearts that were twenty-two thousand times higher than those in the control group. Although the quality of research on mercury varies somewhat, its very existence is remarkable, considering how difficult this broad-spectrum, chronic toxicant is to study in humans—and how little attention mercury gets from mainstream medicine.

Some of the book's most poignant sections relate to mercury's subtle but reproducible effects on emotion and personality. Hammond mentions his own increasing introversion and quotes German chemist Alfred Stock (1876-1946), who wrote of his mercury-related withdrawal from social activity. The Internet is crowded with dental amalgam sufferers who describe feelings of alienation, irritability and social withdrawal. (Note: See discussion of mercury-induced changes in brain connectivity by Kern and others in this issue.)

A particularly useful chapter explains why one cannot simply interpret hair test results at face value. When levels of toxic elements (toxic metals) are low but levels of essential elements (essential minerals) appear “deranged” (either abnormally high or low), this is a hallmark of mercury toxicity. This disruption of mineral transport, along with mercury's ability to block



Hammond describes mercury's power to cause acute and chronic toxicity that manifests in an astonishing variety of symptoms.

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excretion pathways, means that levels of toxic elements in hair will not reflect the actual body burden.

Hammond recommends the chelation protocol known as low frequent-dose oral chelation (or rational chelation, or the Cutler protocol), which involves taking specific chelators every few hours around the clock to keep blood levels stable. (Note: See interview with the late Andrew Cutler and article on the Cutler protocol in this issue). Incidentally, alternative health practitioners often use the word “chelation” inaccurately, which is unfortunate since chelation is not a risk-free undertaking and requires extreme care. Chelators increase mercury excretion and thus lower body burden, but they also inevitably cause redistribution of toxic mercury to the brain. The low frequent-dose oral chelation protocol is a way to minimize this inevitable damage.

For those who choose not to chelate, the book offers other valuable chapters on dealing with mercury toxicity, although Hammond unfortunately fails to discuss dietary issues. Cutler, on the other hand, clearly acknowledged that people with mercury toxicity need nutrient-dense, easy-to-digest foods. Hammond covers sulfur intolerance but does not discuss mercury-related food intolerances to gluten, casein, soy, yeast, phenols, grains, oxalates, histamines or others. He does describe key nutrients that mercury depletes—vitamins A, C, E and the

B family; minerals including zinc, selenium and magnesium; and the omega-3 fats—and he recommends cod liver oil per Weston A. Price Foundation guidelines.

As they work their way through the book, readers may well ask themselves, “How can this be?” Indeed, a separate book could be written on the political, technical and sociological barriers to recognizing the still-mostly-hidden epidemic of mercury toxicity. Hammond explains that when researchers rely on blood and urine mercury levels (which only capture recent exposures and not body burden or toxicity), it is like trying to determine how much money someone has in the bank by examining his wallet. In the clinical domain, most physicians are unfamiliar with the variety of symptoms that mercury can cause, the potentially long latencies or the difficulties of testing for mercury body burden, much less treating it. As a result, the medical system is able to diagnose only the most severe cases of mercury poisoning, while less blatant illnesses remain mysterious.

The book leaves some questions unanswered. For example, the young Hammond also had a mouthful of amalgams—did this increase his susceptibility to his occupational exposure? Did his birth mother have amalgams that produced in utero exposure? Would a nutrient-dense diet have conferred some resistance? Can one regain one’s health at any age, or does a longstanding body burden of mercury cause some level of permanent damage? Nonetheless, Hammond packs his book with carefully stated and efficiently delivered information.

As this article goes to press, Amazon reviewers give Hammond’s book five stars, but only thirty-six people have rated it. This mirrors the mercury issue in general—few people are aware, but those who are usually consider it to be extremely important. Anyone who appreciated Eric Gladen’s film *Trace Amounts* will enjoy this book; both Gladen and Hammond used their mercury-related illness as a motivator to extract and organize reams of high quality information into a top-notch, user-friendly product.

Review by Kristin G. Homme, PE(ret.), MPP, MPH

FAT HEAD KIDS: STUFF ABOUT DIET AND HEALTH I WISH I KNEW WHEN I WAS YOUR AGE by Tom Naughton

Many of you have seen Tom Naughton’s hilarious documentary *Fat Head*; now you can get a thousand laughs from *Fat Head Kids*, written with teenagers in mind (but just as interesting for adults) and delightfully illustrated by his wife Chareva Naughton. In it you will ride on the amazing space ship The Nautilus (your body), piloted by Mr. Spot, the ship’s science officer (your brain) with help from medical officer Dr. Fishbone and chief engineer Marty Metabolism. Dr. Fishbone explains that if you give your ship less fuel, especially less fat, Marty Metabolism just slows down the ship’s metabolism.

As in his documentary, Naughton takes aim at the dietary guidelines, which today encourage us to eat processed food—food incapable of fueling your ship. Back in the 1940s, the U.S. Government recommended “protective foods,” namely eggs, butter, meat and whole milk, and just two servings of starchy food each day. The food industry soon took care of this sensible advice, and today we live on the Planet of the Preposterous Pyramid, eating industrial fats and oils that do a lousy job of keeping our space ship healthy and strong. They cause the build-up of visceral fat in the liver, and this fat produces chemicals that convert testosterone into estrogen—something every teenage boy should know. There’s lots more for them to learn in this delightful book. Thumbs UP.

Review by Sally Fallon Morell

All Thumbs Book Reviews

Mercury-Free: The Wisdom Behind the Global Consumer Movement to Ban Silver Dental Fillings

**By Dr. James E. Hardy
Gabriel Rose Press**

The World Health Organization recognizes mercury as one of the top ten most hazardous substances to which humans are unnecessarily exposed. Amalgam fillings are composed of approximately 50 percent elemental mercury by weight. In 1996, James E. Hardy, DMD provided consumers with a well-referenced, easily accessible and excellently written book that not only describes how and why amalgam fillings exist and poison people and our planet, but also discusses how to join the fight to prevent (some) dentists from placing toxic volatile mercury into our mouths and what to do if we already have amalgam fillings. Dr. Hardy wrote the book to “clear the air” and provide the reader “with a guide to help...make informed, intelligent and appropriate choices about dentistry.”

Sadly, over twenty years later, the book is not outdated because it is still common dental practice to use mercury fillings. Moreover, as Hardy points out, even if your current dentist is using non-mercury-containing materials to fill cavities, you and your loved ones still may not be safe because you may be walking around with a mouthful of toxic fillings that were placed many years ago, with volatile mercury vapors seeping into your brain and body on a daily basis.

Dr. Hardy first questioned the use of mercury in dental preparations as a freshman in dental school, which did not go over well with his professors. (Hardy learned to keep his mouth shut and do his own research.)

Chapter 3 describes the history of how amalgam came into use and why it is still used today. Dr. Hardy bravely and clearly describes the role of the American Dental Association (ADA) in promulgating the supposed safety of a material the Association once banned because

of its extreme toxicity. This chapter is crucial to understanding how such a horrific fallacy could continue into the twenty-first century.

Chapter 4 (“Master of Disguise”) describes the insidious nature of mercury and its mechanisms of action in targeting selected organs such as the brain, kidneys and liver. Dr. Hardy also provides a brief but informative synopsis of the links between amalgam and a multitude of diseases, and introduces his theory on autoimmune disease and its ties with mercury (and other) toxicities. A significant amount of new evidence has accumulated that supports his theory.

Chapter Five describes how unnatural levels of mercury are polluting the environment and poisoning us in ways of which we may be unaware. I learned that I have been contributing to mercury pollution by improperly disposing of mercury-containing products. Chances are that you are, too. Further, and also unknowingly, I have exposed myself to mercury in many of its toxic forms. Chances are, you have, too. Fortunately, Chapter 6 explains what you can do if you choose to become mercury-free.

The additional science that has emerged since 1996 supports Hardy’s position that human beings should not be exposed to this toxic metal. The new evidence should have caused the ADA and the Food and Drug Administration (FDA) to reverse their outdated claims that amalgam fillings are safe. The days of viewing amalgam as the best solution for saving teeth are over! Fortunately, we have the power to take care of ourselves and our loved ones. I recommend this book for readers interested in jumpstarting their knowledge of amalgam and its effects. Even those who are already well versed in this area will appreciate a book that offers a refreshing, thoughtful and candid perspective from a dentist who chose not to remain quiet but instead had the courage to step out of the tenets of mainstream dentistry and reveal its flaws.

Review by Teresa Franklin, PhD



Sadly, over twenty years later, the book is not outdated because it is still common dental practice to use mercury fillings.

All Thumbs Book Reviews



The Dental Diet: The Surprising Link between Your Teeth, Real Food, and Life-Changing Natural Health
By Dr. Steven Lin
Hay House, Inc.

Teeth are a strange thing in the modern world. We drill them, fill them and sometimes remove them. Dr. Steven Lin has a great deal to say about what amounts to a form of standardized, culturally accepted insanity when it comes to our teeth.

Lin outlines his general views by putting wisdom teeth extraction in a different perspective (on page 32): “Imagine that 10 million Americans really did have to have their defective pinkie toes—or earlobes—amputated every year. At some point, we’d start asking ourselves if there was anything we could do to prevent our toes and ears from needing amputation in the first place. But when it comes to our wisdom teeth, we’ve simply never even had this conversation...and while it’s true that we can live basically healthy lives without our wisdom teeth themselves, these molars in the back of our mouth are a warning sign that something is going very wrong with our faces and bodies.”

Lin is a dentist who understands that the teeth tell a story, a story that includes all the organs of the body. He points out that we need to pay attention not just to our wisdom teeth but also to how our teeth relate to and reflect our health overall. In other words, our mouths are a window and mirror into our general health. Moreover, one of the main culprits in dental problems—a deficiency of the fat-soluble vitamins A, D and K—is also a leading culprit in other health issues. Noting that “bacterial imbalances that begin in our mouth during tooth decay echo throughout our entire digestive system and body,” Lin hopes to convince readers that real food is the only and right solution.

I loved many parts of this book, and particularly Lin’s mixing of historical observa-

tions (from the likes of Dr. Weston A. Price and others) with his own personal experience as a practicing dentist, supplemented by wide swaths of research. Like Dr. Price before him, Lin knows that these three elements—dietary wisdom and history, dental practice and modern research—point to one unavoidable truth: “The health of our jaw, facial structure and airways starts with what we eat.” Lin quotes Weston Price a number of times, which serves as a reminder that all dentists who are good and real walk in Dr. Price’s footsteps, whether they realize it or not, and benefit from Price’s work.

In Chapter Five, where Lin discusses vitamins, he gives both Sally Fallon Morell and Chris Masterjohn the credit they deserve for keeping Weston Price’s work alive and continuing the hunt for the elusive “Activator X” (vitamin K) that is so crucial not just to dental health but all health. In Chapter Six, titled “It’s not Genetic,” our dear friend Francis Pottenger and his cats even show up. It is here that Lin also goes to some length to discuss how malocclusions (teeth not fitting) are not some random lottery for which some of us get good tickets and others get bad ones. Rather, these problems are the result of our diet.

Lin says quite a lot about diet, all of it good. For example, he points out the superiority of grass-fed animals and the importance of fermented foods (multiple times), provides basics on how to properly prepare grains and emphasizes the need to build a diet around nutrient-dense, vitamin-rich foods. Lin also notes the superior benefits of traditional stocks and broths when compared to their modern mass-produced counterparts. Likewise, he includes ample warnings against refined foods of all sorts: white flours and sugars, processed vegetable oils, processed dairy foods and industrially farmed and raised foods.

In Chapter Eight, as Lin continues to discuss food, he deals with fat and cholesterol phobia (a phenomenon that Dr. Price never encountered

One of the main culprits in dental problems—a deficiency of the fat-soluble vitamins A, D and K—is also a leading culprit in other health issues.

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in traditional societies) and explains how this phobia is helping to create rather than prevent disease. Full-fat cheeses, eggs, organ meats and fatty cuts of meat are crucial to dental health and proper dental development, whereas a lowfat, high-sugar diet will lead not just to dental problems, but also to degenerative diseases like diabetes.

In Chapter Nine, Lin tells readers what he wants them to do to improve their health. He includes exercises for healthy chewing, healthy breathing and healthy eating. The numerous suggested exercises to improve breathing and thus benefit overall health and body structure are a nice addition and something that authors of other similar works rarely mention.

Lin again directly touches on the need for vitamins A, D and K. In addition, he provides lots of solid dietary advice and practical tips that stem from his basic underlying premise of jettisoning refined foods and learning to properly source and prepare traditional foods. Lin also offers an alternative food pyramid that puts the USDA version to shame,

while giving people a visual depiction of what a healthful diet can look like in the modern world. The final section of the book includes solid instructions on how to prepare a host of traditional foods (including stocks, sauerkraut, kefir and kombucha), along with other recipes and practical information.

The Dental Diet is an easy, accessible read, one that we hope will make headway in continuing to attract new people to the work of Weston Price and raise awareness about the importance of properly grown and prepared real foods, not just for dental health, but for all health. Two thumbs UP.

Review by John Moody

GOD-GIVEN FOOD: A BIBLE STUDY AND BEYOND by Celia Maria

Anyone who has participated in a church supper or snacks after a church service will recognize the need for this book. As Maria explains, among church-goers you will find two very different attitudes about food: one is that every kind of food is acceptable to eat, as long as a blessing is said over it—this is the attitude that loads the after-church snack table with sugary processed food and sees no problem in allowing children to stuff themselves with donuts, cookies and cupcakes; the other holds that we should eat the “original diet plan” given in Genesis of only plant foods.

Moved by all the illness she has observed among church-goers, Maria provides a third way for her fellow Christians to eat—one inspired by the work of the Weston A. Price Foundation. She begins with an excellent discussion of veganism, the diet appropriate for the Garden of Eden, but not for mankind after the fall. She provides diagrams of the digestive systems of various types of animals and of the human being. Our digestive systems are most like that of the pig—an omnivore. Later in the book she quotes more scripture to show that Christians can eat animal foods—starting with God’s command to Noah to eat meat.

Knowing that she will meet resistance, Maria treads carefully, showing that healthy food actually tastes good and does not have to be weird. She provides a great chart for “replacements”: whole eggs for breakfast instead of cold cereal, homemade soaked oatmeal instead of instant oatmeal, fruit instead of donuts. She provides an ingredient list for each processed food—horrendous ingredients in chicken nuggets, fast food burgers, commercial bread, processed cheese, canned broth and soup, frozen fries, artificial maple syrup, storebought dressings and pickles—as a way of convincing families to opt for healthy replacements—baked chicken with spices, grass-fed burgers, traditional breads, real cheese, homemade soups and broths, real maple syrup, homemade dressing and lacto-fermented foods. She addresses the excuses most people have—I don’t like to cook, I don’t have time to prepare healthy meals, I can’t afford to eat healthy—and provides scriptural arguments for taking joy in the activity of cooking, making time to cook and spending money wisely.

Maria’s book includes discussion of all the burning questions in the field of nutrition: animal fats and cholesterol; grains; fermented foods, dairy foods, broth and soups; and salt. And kudos for finding this wonderful passage from Job (Maria knows her Bible!): “*Can flavorless food be eaten without salt? Or is there any taste in the white of an egg? My soul refuses to touch them. They are as loathsome food to me*” (Job 6:6-7). My sentiments exactly!

Each chapter ends with summary bullet points, relevant passages from scripture and questions for the reader. Finally Maria provides us with a great collection of basic recipes. For those wondering how to bring the message of healthy food to a church congregation yet to understand that putting processed foods into the body temple is like taking a sledge hammer to the church furnishings, this book is an excellent way to begin. Thumbs up!

Review by Sally Fallon Morell

All Thumbs Book Reviews



***What's Making Our Children Sick?
How Industrial Food Is Causing an
Epidemic of Chronic Illness, and What
Parents (and Doctors) Can Do About It***
By Michelle Perro and Vincanne Adams
Chelsea Green Publishing

Cancer. Digestive disorders. Autoimmune disorders. Allergies and asthma. What once was rare or reserved for the elderly now afflicts the young in startling numbers. Indeed, the only reason I am writing this review is because, as a so-called “healthy” twenty-four-year-old, I suffered from dental decay, terrible allergies and eventually duodenal ulcers that drove me to change my diet to save my body.

Michelle Perro, MD and Vincanne Adams, PhD attempt to explore and explain what is causing our children to face such significantly increased rates of disease. Their thesis is that our food supply—the very thing meant to nourish and sustain us—now sows the seeds of our sickness. Genetically modified (GM) foods, glyphosate and other pesticides lead to compromised gut health and set the stage for the rapid, early onset of disease, sometimes even before birth. The book is a densely written, two-hundred-plus pages that combine discussion, stories from the doctor’s practice, history and science.

There is one important thing to note. In this book, the authors use the word “pesticide” according to the Environmental Protection Agency (EPA) definition, which includes herbicides, fungicides, insecticides and other chemicals that all fall under the umbrella term “pesticide.” In other circles, many people use the more common division of pesticides (bugs and other critters), herbicides (grasses and plants) and fungicides as separate divisions or categories, but in the government classification system, everything gets lumped under “pesticides.” The authors also use the word “toxicants” to refer to all the various, potentially damaging chemicals we encounter from the environment and our food.

The book’s main focus is on our food supply, but the two authors do not ignore environmental and other considerations. Rather, the role of environmental and other factors in increasing the toxic burden of the modern world and compromising our immune, genetic and microbial defenses helps explain why some people become far sicker far sooner than others.

Discussing the EPA, Perro and Adams state (page 45), “The EPA’s task has been to monitor the nearly 100,000 chemicals produced in or imported into the United States. Of these 100,000 chemicals, the EPA has only taken action to reduce the risk of over 3,600 chemicals, and it has banned or limited the production or use of only 5. It has not actually regulated a single chemical in the United States since the mid-1980s.... The EPA does not conduct rigorous research on the effects of chemicals.”

What's Making Our Children Sick? is also careful to explain that just because modern foods and chemicals make us sick does not mean that we all will get sick in the same way, at the same speed or for the same reasons. Genetic, environmental and other factors all play a role in why we become ill. Thus, “not all people will get sick from eating unhealthy foods at the same rate”—but “this does not mean...we should assume that those foods are therefore healthy.”

A great deal of the book (Chapter Six, in particular) discusses the microbiome. The authors report that “some researchers now suggest microbes might themselves be a source of the mucus layer and its associated metabolites.” In other words, that essential protective layer that coats our entire digestive tract—microbes do that! Indeed, that isn’t all that microbes do; certain species can produce folate and other nutrients right where our body can easily absorb them. This means that gut dysbiosis may explain certain nutrient deficiencies even better than dietary factors. Perro and Adams also point to a growing body of research showing that many substances that are not considered

The authors state that “The EPA has not actually regulated a single chemical in the United States since the mid-1980s.”

All Thumbs Book Reviews

or called “antibiotics” act like them when introduced into our bodies. Many things can alter our microbiome, which should lead us to eat and live prudently, lest we damage our first line of defense against all sorts of health problems and diseases.

GMOs are a constant theme throughout the book. There are stories of people who have experienced immense health improvements after they stopped consuming GMOs. Perro and Adams also discuss the history of Monsanto and other agrochemical companies, and the science that shows just how risky it is to flood not only our food supply but all flora and fauna with these freakish chemicals. They rightly note that glyphosate, the main chemical currently used in GM agriculture, first was patented as an antibiotic. From there, it has become the number-one chemical used in food production in America.

The discussion of glyphosate is as depressing as one would expect. As I wrote this review, what popped up in my news feed? All five major brands of orange juice have tested positive for glyphosate. And glyphosate isn’t just in our food. It is also all over our urban landscapes: our city parks, our green spaces, our sidewalks and our lawns. It is in our water, in our bodies and in our babies. While working through the glyphosate chapter, I thought about how many studies show that male animals generally have far worse responses to glyphosate than female animals. Could this be why autism spectrum disorders are far more prevalent among males than females? Studies already show that boys with autism and similar disorders are far more likely to have compromised digestive systems, along with genetic vulnerabilities. Is glyphosate what pulls it all together?

Although the book was a hard read for this dad of five, it is filled with stories of hope. The book describes person after person and family after family who have escaped from the modern pharmaceutical mouse-wheel

by moving to real foods that are properly raised and grown and free from the pesticides and toxicants that now define the modern American diet. This is what happened to our family years ago, and it is one of the reasons I became a member and then a chapter leader for the Weston A. Price Foundation (WAPF). In fact, the book ends by stating what Weston A. Price showed us—that how we grow our food and how we grow our health are intimately interconnected.

My one quibble with the book is the final chapter and its title, “A call to action: warrior moms.” Until men in our culture and nation value the health of their families as much as moms do, the fight to restore our food system to some semblance of sanity is going to remain an extremely difficult uphill battle. It is no surprise that studies and personal experience show that women already tend to care far more about these issues than men do. Women do not need to be stirred to action in this area, but the other roughly 50 percent of the nation does. We need to learn how to appeal to and persuade both men and women. Only if both recognize the great importance of these issues will we truly succeed in saving not just our food supply and farmers, but our future. Two thumbs UP.

Review by John Moody

BOOK REVIEWS IN **Wise Traditions**

The Weston A. Price Foundation receives two or three books *per week*, all of course seeking a Thumbs Up review. What are the criteria we use for choosing a book to review, and for giving a Thumbs Up?

- First and foremost, we are looking for books that add to the WAPF message. Dietary advice should incorporate the WAPF guidelines while adding new insights, new discoveries and/or new therapies.
- We are especially interested in books on the fat-soluble vitamins, traditional food preparation methods and healing protocols based on the WAPF dietary principles.
- We look for consistency. If you talk about toxins in vaccines in one part of your book, but say you are not against vaccines in another part of your book, or praise fat in your text but include recipes featuring lean meat, we are unlikely to review it.
- We do not like to give Thumbs Down reviews. If we do not agree with the major tenets expounded in a book sent to us, we will just not review it. However, we feel that we have an obligation to point out the problems in influential or bestselling books that peddle misinformation, and for these we will give a negative review. We also will give a negative review to any book that misrepresents the findings of Weston A. Price.
- If you want us to review your book, please do not send it as an email attachment. Have the courtesy to send us a hard copy book or a printout of your ebook or manuscript in a coil binding.

All Thumbs Book Reviews



Pure Charcuterie: The Craft and Poetry of Curing Meats at Home
By Meredith Leigh
New Society Publishers

There are many books on making bread and similar items at home. The topic of vegetable fermentation and preservation now fills countless volumes. Cheese, too, has experienced a renaissance, with dozens of titles dedicated to the home or small-scale cheesemaker.

But what about meat? Lots of tomes explore raising, butchering and preparing it, but what about preserving and perfecting it through traditional charcuterie techniques? Meredith Leigh's book addresses the latter niche with marvelous inspiration and accessibility. Importantly, Leigh makes it clear that "Good charcuterie starts with good meat and fat," which "come from an animal that had a good life, a good death, a good butcher and a good cook."

Pure Charcuterie is written for the average person, even down to young adults who want to recapture skills that served the generations before them so well. The book opens by covering basics on sourcing, safety, equipment and supplies. I was delighted to see Leigh touch on the safety and value of sodium nitrate in traditionally cured meats, a subject that I think warrants more discussion among health-conscious consumers. Indeed, perhaps more than any other reason, meat has lagged behind among those who seek to recoup traditional skills because of greater fears (compared to grains and vegetables) about home preparation.

The book's section on sources is solid, telling us that "The surest way to find [good] meat and fat is through a direct relationship with farming and farmers." The supply section also is a reminder that the second biggest reason charcuterie making has tended not to return to the home is because it requires a fair bit of equipment. The good news is that, given the high cost of quality cured and prepared meats, this

investment will pay for itself many times over.

Leigh covers different types of charcuterie, devoting each subsequent chapter to a major area—sausages, suspensions and larger cuts such as bacon and hams. She then moves on to more complex meat-curing techniques that use time, temperature and fermentation to render something both culinarily exquisite and safely edible, relying on collaboration between the human and microbiological worlds. These sections include information about how to create basic set-ups for fermenting and smoking meats—an added bonus in an already good book.

Kids would enjoy some of the techniques outlined in the book, such as creating penicillium from organic oranges allowed to mold at home. For real foods people, this may be the final frontier, as one moves from merely harvesting microorganisms to making sourdough and kombucha to embracing even the wilder side of the unseen world to prepare meals. Leigh makes such endeavors seem inviting again—a natural and good part of food preparation—even if modern people have for too long been sundered from such processes.

Leigh intends for readers to work through *Pure Charcuterie* sequentially. In this way, someone with no experience can slowly build up their skills to handle ever more complex meat-curing approaches. Each chapter includes a handful of recipes to help readers master the basics of each technique without overwhelming them with too many options. In a few places, I would have enjoyed seeing a few more recipes, especially the sausage section, but perhaps that just shows that I have a soft spot for sausages.

The recipes are well laid out and the accompanying images are lovely. Don't read this book if you are hungry! If you are looking for a gift for someone who is interested in dabbling in home curing of meats, Leigh's book will serve you well. It is easy to follow, enjoyable to read and lovely to look at. Two thumbs UP.

Review by John Moody

More complex meat-curing techniques use time, temperature and fermentation to render something both culinarily exquisite and safely edible.

All Thumbs Book Reviews

The Dorito Effect: The Surprising New Truth about Food and Flavor

By Mark Schatzker

Simon & Schuster Paperbacks

Since the 1960s, Americans have spent a lot of time and money on weight loss. Between 1989 and 2012, we spent around one trillion dollars. So...how are we doing? Well, obesity is up fifty percent. Extreme obesity has doubled. It's going about as well as the wars on cancer, drugs and poverty. We are not just losing the battle, we're getting our increasingly bulbous butts kicked.

One particularly vexing issue is that people are not only making bad food choices, many are gorging themselves even when they are not hungry. There may have been isolated cases of this in history but never on the scale we see now. People have always liked to eat, but they stopped when they were full. Now, many don't. What happened? Why can't we eat just one potato chip, Dorito or Twinkie? Why do we slam down a half-gallon of Häagen-Dazs in twenty minutes?

Various nutritional villains have played musical chairs over the years. Saturated fat, polyunsaturated fat and sugar have all been popular scapegoats. Each has taken the lead at different times until more science comes along to restart the musical chair chorus. This book takes a close look at a couple of factors that have been lurking just outside of popular scrutiny.

First, food production has been taken over by corporations that care more about making money than anything else. How do you make more money producing chickens, tomatoes, apples and grapes? Make bigger chickens, tomatoes, apples and grapes. Producers have succeeded at that in a big way. The chicken of the twenty-first century is a bloated behemoth compared to the chicken of one hundred years ago. The same is true for many other foods.

While size has expanded impressively, taste and nutrition have not. Nutrition and taste are closely related, so it is not surprising that both

have actually declined in many foods. Julia Child lived through that period of nutrition and taste decline and commented that really good chicken shouldn't need all kinds of spices, seasonings and sauces. Good chicken should stand on its own, but modern chicken tastes like teddy bear stuffing. I have noticed that smaller fruits do taste better than bigger versions. For a long time I thought it was just some personal delusion, but this book confirms my impression.

Second, with a food supply now pumped up with tasteless water and carbs, the food industry had to fix the flavor problem. Technology, of course, is the answer. That's the American way. This book explains the huge effort, genius and technology behind artificial flavors. They can actually make the bland slop grown on factory farms taste good. This may be a great technical achievement, but it has created new problems.

Eating and digestion involve a complex sequence of interactions and feedback loops that depend on specific food ingredients to work correctly. When those ingredients are not there, it shouldn't be a huge shock that things go wrong. How do we fix that? The answer is more technology. Synthetic vitamins, fake fat. Yum! The book makes an interesting counterintuitive observation about people who have all they could ever want to eat. It turns out that endless indulgence in your favorite food does not lead to happiness but to misery.

I have this crazy idea (and Schatzker seems to agree) that going back to real food might be a better answer. Personally, I find Doritos to be the most revolting, disgusting and nasty food-like substance on this planet. Obviously a lot of people disagree. Be that as it may, the book's title is catchy and amusing. Schatzker's skilled writing holds a reader's attention even when he is explaining a long and complex history. I don't recommend the book for detailed nutritional advice, but it covers the topic of counterfeit food extremely well and I give it a thumbs UP. ☺☺

Review by Tim Boyd



This book explains the huge effort, genius and technology behind artificial flavors. They can actually make the bland slop grown on factory farms taste good.

Tim's DVD Reviews

Sick to Death

Maggie Hadleigh-West

Executive Producers:

Maggie Hadleigh-West and Kent Holtorf

This video documents the long, drawn-out attempts of Maggie to find some relief from her low thyroid symptoms. Most doctors rely mainly on blood tests even though they are notoriously unreliable. The usual result is that no problem is found when there really is a problem. Once the doctors were finally convinced there was a problem, the diagnosis bounced around from thyroid disease to Graves disease to Hashimoto's disease to Lyme. That pretty much sums up where Western medicine is today. There are no solutions except drugs and great difficulty even deciding what the problem is.

One of the treatments Maggie was subjected to was drinking radioactive iodine to burn out her thyroid. Apparently, removal of trouble-making organs is the way to go these days. (I'm glad I don't get headaches very often.) This did nothing to improve her health. Nothing else Western medicine had to offer helped either. Maggie underwent a sleep study. With all the wires, tubes and tape they wrap their sleep subject in, I can't believe there is any possibility of normal sleep happening. Maggie saw an alternative doctor until the medical board shut him down for not following government-dictated protocols. She eventually resorted to traveling to Brussels to find treatment that didn't involve destroying any more organs.

This documentary takes a look at the bigger picture, and that is what I found most interesting. Author and filmmaker G. Edward Griffin appears several times to explain the economics and politics behind what is going on. There is no doubt he has done a lot of study on the subject. He briefly outlines how the Rockefellers joined up with the German chemical company IG Farben to steer the medical industry toward a drug-based industry. It was entirely about profit, not

cure. Griffin finds it interesting that insurance boards are well populated with people from the pharmaceutical industry. Dr. Jerome Kassirer, MD, former editor-in-chief of the *New England Journal of Medicine*, recounts how many studies published in the journal were funded and sometimes run by big pharma. Griffin's conclusion is that this country is in trouble. We have lost sight of the principles that made this country great.

This film has some mature content that viewers might want to be aware of. It does a good job of explaining how the medical system works at the highest levels, so I give it a thumbs UP.

Injecting Aluminum

Cinema Libre Studio

Produced by Entre2prises and E3M

The medical-pharmaceutical industry has assured us that vaccines and their various contents have been tested and are safe. Researchers in Europe got curious after seeing a new disease called macrophagic myofasciitis (MMF) occur in people exposed to aluminum. They looked into the aluminum safety studies and found that these studies were done only on rabbits. Just rabbits.

"But lots of rabbits over a long period of time, right?" Uh, just short-term and just one study. "But a lot of rabbits, right? Right?" Well, that depends on your definition of "lots." If more than one is "lots," then, yes, "lots." "How many then? Around a thousand? One hundred? Ten?" Two. "You mean two thousand? Two hundred?" No, just two. Two rabbits.

World Health Organization guidelines for safe levels of aluminum are based on studies like that. Conflicts of interest among safety agencies and medical authorities are well documented, and this video discusses them in some detail.

Christopher Exley is one of the world's leading experts on aluminum (or "aluminium" as the British like to call it). He is often called

Apparently, removal of trouble-making organs is the way to go these days.

Tim's DVD Reviews

“Mr. Aluminum.” He explains that the industry gets away with this because aluminum is rather subtle. It typically does not produce dramatic and immediate effects except in vaccines. This video was probably produced before he published his latest study results showing that autistic brains contain significantly more aluminum than non-autistic brains. I'm sure Dr. Offit and other vaccine advocates will be quick to assure us that this is purely coincidence. It is no coincidence that my thumb is UP for another video that raises concerns about vaccines that were only proven safe for a short period of time for two rabbits.

Head Games

Produced by Steve James and Bruce Sheridan

It turns out that repeatedly banging your head can have serious long-term effects. That's not just an urban legend. So who would go around banging their head all the time? The answer is football players, boxers, hockey players, soccer players and people like that.

Former World Wrestling Entertainment (WWE) wrestler Christopher Nowinski, Harvard graduate, has made a career of studying how often concussions happen in sports and what the long-term consequences are. Particularly in football, the numbers paint a grim picture. While the percentage of players diagnosed with a concussion may be down in the single digits, when you ask the right questions you find out that is just the tip of the iceberg. Surveying football players about specific symptoms they have experienced, Nowinski found that at least 50 percent have had a concussion. Robert Cantu, MD and co-founder of Concussion Legacy Foundation, puts the number at 100 percent based on his experience and the nature of the game.

As often happens, the story of concussions in the National Football League (NFL) was slow to come out for the usual reasons—money and

liability. In the short term, symptoms may not seem significant. In the long term, NFL players are nineteen times more likely to suffer symptoms like Alzheimer's, dementia and suicide. The number of well-known players suffering these symptoms has grown quickly enough to swamp any attempt by the League to deny the problem.

This isn't just happening in professional sports. Nowinski notes that concussions are happening in children's sports, and many players already have a problem before they even enter professional sports. It is not just men, either. Female soccer and basketball players are more likely than their male counterparts to have a concussion. It would be very interesting to hear a discussion on the possibility that concussions have become more common due to malnutrition and other declining health factors, but that is not covered in the video.

There are a range of possible solutions. Comedian Stephen Colbert suggests you stop while you still don't have to wear a diaper. The NFL has made some rule changes, which probably help but don't completely solve the problem. The game would have to be significantly changed to eliminate all risk. Upgrades to helmets and padding are another option that might have some limited benefit. Outlawing football is not discussed in the video and is unlikely, given its popularity. It is probably also not feasible if we are still pretending to be a free country. Many have chosen to play these full-contact sports knowing the risk, and that is a matter of individual choice—but it is important that everyone makes a fully informed choice. This video gets a thumbs UP for helping people do that. ☺☺

Concussions are happening in children's sports, and many players already have a problem before they even enter professional sports.

JOURNAL AVAILABLE AS A DIGITAL TALKING BOOK FOR THE VISUALLY IMPAIRED

Some of our journals have been converted into an audio format for the visually impaired. Special software is required for this such as Dolphin Easy Reader. Go to the JOURNALS tab on our home page. Audio format is available for Fall 2011 through Winter 2015. Please tell others! Many thanks to Amy Adams of ePubUSA.com for this service!

Vaccination Update

ALUMINUM IN VACCINES: WHAT EVERYONE NEEDS TO KNOW

By Kendall Nelson, Director, *The Greater Good*

Perhaps you were fortunate enough to attend the 2016 Weston A. Price Foundation conference in Alabama where my colleague Laura Hayes gave a presentation. Hayes is an anti-vaccine activist whose twenty-four-year-old son was severely injured by his “routine” childhood vaccinations during his infancy, toddlerhood and early childhood. Hayes began her presentation, “Vaccines: What Is There to Be ‘Pro’ About?” by defining the hallmark of ethical medicine: prior, completely voluntary and fully informed consent. She explained how vaccine mandates, with or without exemptions, violate this hallmark of ethical medicine, which is included in numerous international codes of ethics, all signed by the U.S.

Hayes also spoke about the complete absence of appropriate and properly performed vaccine safety studies. Despite this absence, the U.S. Food and Drug Association (FDA) has wrongly approved scores of vaccines over the course of many decades now, and the Centers for Disease Control and Prevention (CDC) has also wrongly approved them. To make matters worse, all fifty state legislatures have mandated vaccines for school-aged students (although some states offer philosophical or religious exemptions), and often also for daycare participants, based on inept and corrupt approvals and recommendations of the FDA and CDC’s Advisory Committee on Immunization Practices (ACIP), and at the unethical bidding of pharmaceutical and medical industry lobbyists.

An example of wrongful vaccine approvals and recommendations by agencies entrusted with public health is the use of aluminum in vaccines. It is used in the majority of today’s vaccines. Hayes explained that the FDA approves the use of aluminum-based adjuvants in vaccines, which are added to increase the body’s immune response to the vaccine, despite the fact that the agency has never clinically tested

or approved aluminum, and despite the fact that aluminum is a known and undisputed toxin, neurotoxin and teratogen (an agent or factor that causes malformation of an embryo). As Hayes aptly stated, “Defying common sense and violating basic safety and ethics standards, the FDA approves vaccines that contain never-proven-safe and known-to-be dangerous ingredients.”

SAFETY STUDIES

If you were to ask the FDA or the CDC which studies they use to determine the safety and recommendation of injectable aluminum, they would refer you to the only study done by an FDA scientist. “Updated Aluminum Pharmacokinetics Following Infant Exposures Through Diet and Vaccination,” by Dr. Robert J. Mitkus was published October 2011 in the journal *Vaccine*. While the title may sound impressive, this study was heavily flawed. Mitkus tested infused intravenously (rather than injected) aluminum citrate (rather than aluminum hydroxide) into adults (rather than infants). As J.B. Handley, co-founder of Generation Rescue, wrote, “Dr. Mitkus’ study is somewhere between a professional disgrace and a fraudulent disaster. In no other drug on the planet (except for vaccines) would safety standards ever be determined without using the actual product (aluminum hydroxide) administered the proper way (intramuscular injection) into the proper patient population (infants).”

This should give us all pause. How is it possible that aluminum has been used in vaccines for more than seventy years, yet the FDA has never conducted a single legitimate toxicity study proving the safety of injectable aluminum in human beings? To be fair, the FDA does receive studies from outside sources. However, those sources are pharmaceutical companies who manufacture and profit from the sale of vaccines, and permitting them to provide the

In 2001, the CDC began recommending pregnant women receive the aluminum-containing pertussis vaccine (Tdap), despite the fact that studies show that aluminum crosses the placenta and accumulates in fetal tissue.

FDA with their own scientific findings is allowing the fox to guard the hen house.

In 2014, the global vaccine market was worth over thirty-two billion dollars. According to Technavio, one of the leading technology research companies in the world, the vaccine market will be worth sixty-one billion dollars a year by 2020. With over two hundred seventy new “therapeutic” and “preventable” vaccines in the pipeline, companies are in a race to get their vaccines approved.

In addition to the FDA not doing its own studies, this governmental regulatory agency recklessly allows pharmaceutical companies to use another vaccine, an aluminum adjuvant or a combination of both as their “placebo.” This is beyond sloppy science. As a result, there is no credible vaccine safety or efficacy science used by the FDA or CDC when they make their vaccine recommendations.

Furthermore, for years pharmaceutical companies and public health authorities have been well aware of the dangers associated with vaccine adjuvants and preservatives. However, they have chosen to withhold, hide and deny this information, gravely and inexcusably endangering the public. Lucija Tomljenovic, PhD, a pioneer in vaccine safety research at the University of British Columbia, has published extensively on aluminum adjuvants and vaccine adverse reactions.^{1,2} In 2011, Tomljenovic provided evidence suggesting that health authorities and vaccine manufacturers made (as summarized by the reporter) “continuous efforts to withhold critical data on severe adverse reactions and contraindication to vaccinations to both parents and health practitioners in order to reach overall vaccination rates, which they deemed were necessary for ‘herd immunity.’”³ (Herd immunity is a theory that has never been scientifically tested, and the numbers believed needed to be vaccinated to achieve herd protection are a guesstimate, rather than based on science.)

THE THIMEROSAL EXAMPLE

A great example of this type of deception is the story of mercury (thimerosal) in vaccines. As parents became more hesitant and vocal during the late 1990s, the CDC began a highly publicized campaign announcing that they were “phasing out” mercury from U.S. childhood vaccines. By

2001, they declared that the manufacturing of thimerosal-containing vaccines had ceased. In reality, some of these vaccines were changed to “low-mercury.” Because childhood vaccines were deemed “essentially” mercury-free at this point, health officials were quick to assert that autism was not linked to mercury as autism rates continued to increase. What they didn’t tell the public was that during the so-called phase-out period, the CDC began recommending mercury-containing influenza vaccines to pregnant women. They also added four doses of the pneumococcal vaccine (PCV), which has a high aluminum content, to the childhood immunization schedule in 2000, and two doses of the aluminum-containing hepatitis A vaccine in 2005 (Table 1). These increases led to a 25 percent increased uptake of aluminum for babies by 2005. Additionally, in 2001, the CDC began recommending pregnant women receive the aluminum-containing pertussis vaccine (Tdap), despite the fact that studies show that aluminum crosses the placenta and accumulates in fetal tissue.

Perhaps the most shocking recommendation is the influenza vaccine, as the vast majority of these vaccines contain 25 micrograms (mcg) of thimerosal per dose. Unsuspecting parents who take their children to be vaccinated according to schedule will most likely submit their children to nineteen doses of mercury-containing influenza vaccines between six months and eighteen years of age. In other words, today’s children receive nearly as much mercury as prior to 2001 and they receive 25 percent more aluminum. Although the FDA and CDC vehemently deny a correlation, could this be why one in two children in the U.S. is chronically ill, one in six suffers from a neurodevelopmental disorder and one in thirty-six is autistic?

ALUMINUM AND MERCURY: SYNERGISTIC TOXICITY

Because of work done by Dr. Boyd Haley, former professor of medicinal chemistry and chairman of the chemistry department at the University of Kentucky, we know that the combination of mercury and aluminum causes synergistic toxicity. In 2005, Dr. Haley published a study in which he investigated combining

TABLE 1.
Aluminum exposures in early childhood from recommended vaccines

VACCINE	ALUMINUM CONTENT	VACCINE SCHEDULE
Hep B	250mcg x 3 doses	Birth, 2, 6 months
DTaP	625mcg x 4 doses	2, 4, 6, 15 months
PCV	125mcg x 4 doses	2, 4, 6, 12 months
Hib	225mcg x 3 doses	2, 4, 12 months
Hep A	250mcg x 2 doses	12, 18 months

SOURCE: The vaccine manufacturers’ product inserts and the CDC’s 2016 childhood vaccination schedule. © NZM.

Note: Aluminum is not present in influenza, polio, or live viral vaccines, such as measles, mumps, rubella, varicella (chicken pox), shingles and rotavirus.

aluminum hydroxide and thimerosal. “Mercury Toxicity: Genetic Susceptibility and Synergistic Effects” describes Dr. Haley’s findings: Cultured neurons showed a 10 percent cell death six hours after they were exposed to mercury and aluminum separately, as compared to a whopping 60 percent death rate when exposed in combination. This clearly demonstrated the synergistic toxicity of aluminum and mercury.

THE PRO-ALUMINUM ARGUMENT

Adding insult to injury, prior to the dangerously misleading 2011 Mitkus study, the FDA admitted they allowed the use of aluminum adjuvants in vaccines simply because they “assumed” they were safe. The most prominent pro-vaccine, pro-aluminum safety argument you will hear involves the amount of toxic materials in vaccines. According to its website, the FDA claims the amount of aluminum present in vaccines is low, therefore not harmful. They defend the use of aluminum in vaccines, stating that it is one of the most common metals found in nature and we get much more aluminum exposure from our air, food and water than we do from vaccines. Therefore, the amount of aluminum in vaccines is not dangerous. This reasoning however, is far from scientific, because the aluminum found naturally in the earth’s crust is tightly bound to other elements, making it inert and not bioavailable. The different routes of entry are not interchangeable for assessing toxic impacts. Inhaling and ingesting aluminum are not the same as injecting it. Aluminum injected via vaccination bypasses the protective barriers of the gastrointestinal tract and mucous membranes, entering directly into the muscle where it can enter the bloodstream and lymph, thus redistributing and accumulating in the bones, lungs and brain. It is absurd to assume that injected aluminum is safe because it is introduced in lesser quantity than say, ingested aluminum, 99.7 percent of which is not absorbed by the body.

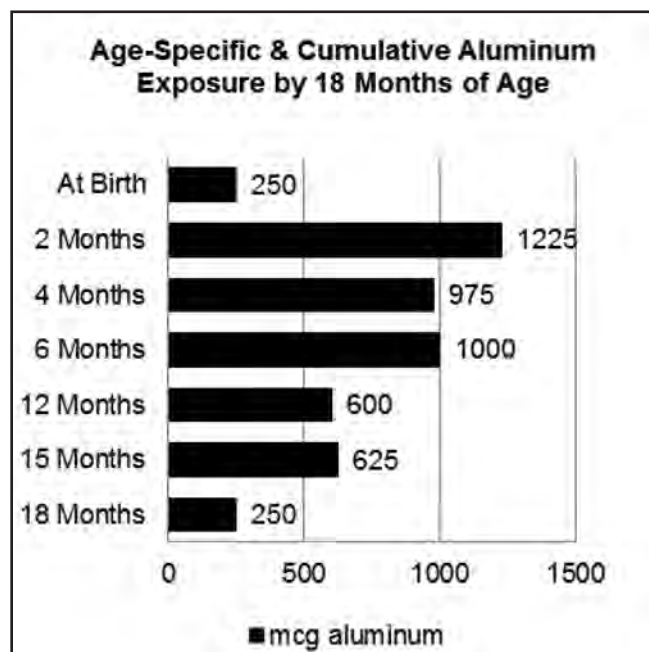
THE VACCINE SCHEDULE

The lack of FDA safety standards is particularly disturbing if you consider that the majority of early childhood vaccines, which are given at birth and mandated for school in

every state, contain aluminum adjuvants. If parents follow the current, out-of-control CDC-recommended vaccine schedule, their children will receive seventy doses of sixteen different vaccines by age eighteen, while injecting a potential 4,925 mcg of accumulated aluminum by age eighteen months alone (Table 2). Because the FDA has only studied IV solutions and injectable medications containing aluminum (not vaccines), they cannot possibly be a reliable source to determine safe levels of aluminum in vaccines. This said, the FDA does set limits on aluminum content in parenteral drug products (again, not vaccines) and requires labels on package inserts that state: “WARNING: This product contains aluminum that may be toxic. Aluminum may reach toxic levels with prolonged parenteral administration if kidney function is impaired. Premature neonates are particularly at risk because their kidneys are immature, and they require large amounts of calcium and phosphate solutions, which contain aluminum.” The FDA also states, “Research indicates that patients with impaired kidney function, including premature neonates, who receive injections greater than 4 to 5 mcg per kilogram of body weight per day, accumulate at levels associated with central nervous system and bone toxicity.”

The FDA, however, does not require labels on vaccines warning about the dangers of aluminum toxicity. Do the math, and you’ll find that a twelve-pound baby at two months of age could potentially receive 1,225 mcg of aluminum at their well-baby visit if the commonly used, highest-aluminum brands of vaccines are administered along with the hepatitis B vaccine. As Neil Z. Miller demonstrates in his paper titled: “Aluminum in Childhood Vaccines Is Unsafe,” published November 4,

TABLE 2



Babies are injected with 1,225 mcg of aluminum instantaneously at 2 months of age and 4,925 mcg of accumulative aluminum by 18 months of age. Source: The vaccine manufacturers’ product inserts and the CDC’s 2016 childhood vaccination schedule. © NZM.

2016 in the *Journal of American Physicians and Surgeons*, using the FDA's own figures, 11-14 mcg of injected aluminum would be toxic to a six-pound baby with impaired kidney function, yet infants are routinely given 250 mcg of aluminum within twelve hours of birth via the hepatitis B vaccine.

Miller also makes the point that “babies are not the only age group exposed to high levels of aluminum in vaccines.” For example, the HPV vaccine (indicated for the prevention of cervical and anal cancers and genital warts associated with some strains of human papillomavirus) is recommended for use in both males and females, nine through twenty-six years of age. According to package inserts, each 0.5-mL dose of Gardasil 9 (HPV vaccine) contains approximately 500 mcg of aluminum and two to three doses are recommended over a six- to twelve-month period based on age.

It's important to know that Gardasil was fast-tracked through the FDA. Safety trials did not include a true placebo as “control groups” were also injected with aluminum and pharmaceutical researchers masked a cascade of adverse reactions. To date, there have been over fifty-five thousand adverse reactions reported to the Vaccine Adverse Event Reporting System (VAERS), including four hundred six deaths.

THE SCIENCE

When my producing partners and I set out to reveal the truth about aluminum in our documentary about vaccines, *The Greater Good*, we visited world-renowned aluminum expert Dr. Christopher Shaw at the University of British Columbia. As the first to test the biological impact of aluminum adjuvants in 2007, Dr. Shaw and fellow researchers took the same aluminum hydroxide used in vaccines and injected it into the muscles of mice to see what would happen when they tried to mimic the vaccine schedule. What they found was rapid behavioral symptoms, including not only behavioral deficits of motor function, but cognitive deficits as well. Later when they sacrificed the animals and looked into their brains and spinal cords, they found massive damage to motor neurons. As Dr. Shaw explained, they “may be creating conditions for Parkinson's and Alzheimer's disease, maybe not immediately, but ten, twenty, thirty years down the road.” When we as filmmakers asked the FDA for a response to Dr. Shaw's study, they said they did “not believe this particular paper brings to light the need for additional research that is not already underway.” My question to the FDA today would be, “where is that research now that a decade has gone by?”

Joining the ranks with Dr. Shaw, many additional independent scientists have made groundbreaking discoveries regarding aluminum adjuvants and potential injury. Some of the most prominent in the field include Dr. Shaw's colleague, Dr. Lucija Tomljenovic, PhD, of the University of British Columbia; Dr. Christopher Exley of Keele University; Drs. Romain Gherardi and Guillemette Crépeaux of Université Paris-Est Créteil; and Dr. Yehuda Shoenfeld of Tel Aviv University.

Because of their work, we now know that aluminum adjuvants may result in autoimmunity, long-term brain inflammation and associated neurological complications. We also know that aluminum exposures are connected to autoimmune diseases such as lupus, rheumatoid arthritis,

multiple sclerosis, Gulf War syndrome, type 1 diabetes, macrophagic myofasciitis and chronic fatigue syndrome, as well as a spectrum of neurological disorders such as Alzheimer's, ALS and autism spectrum disorders (ASDs).

GOOD WORKS BY CMSRI

Perhaps the best library of peer-reviewed, published studies on aluminum can be found at Children's Medical Safety Research Institute (CMSRI) at cmsri.org. In fact, CMSRI, founded by Claire Dvoskin, not only has a comprehensive website featuring the most important studies, they are dedicated to funding independent research in hopes of providing answers to our growing, worldwide epidemic of chronic disease and disability. Recently, two very important aluminum studies were made possible by CMSRI. Funding from Dvoskin's organization provided Dr. Christopher Exley, researcher and professor at Keele University, and his co-workers the means to examine the effects of aluminum in deceased Alzheimer's and autism patients.

One of these studies used fluorescence microscopy, which revealed extremely high levels of aluminum in the brains of twelve familial Alzheimer's disease (AD) victims. “Aluminum in Brain Tissue in Familial Alzheimer's Disease,” published December 9, 2016 in the *Journal of Trace Elements in Medicine and Biology*, not only confirmed the presence of aluminum in familial AD brain tissue, it also gave rise to two other important conclusions. First, based on their admittedly “striking” results, the authors suggest that genetic predisposition to AD may be accompanied by “a higher propensity to accumulate and retain aluminum in the brain.” Second and equally important, the authors report that high aluminum concentrations are “highly likely” to contribute not only to early onset and aggressive progress of familial AD but to “all forms of AD under certain conditions.” (Alzheimer's disease is expected to affect one in two Americans by 2050.)

The November 2017 issue of the *Journal of Trace Elements in Medicine and Biology* published another study by Dr. Exley and team titled: “Aluminum in Brain Tissue in Autism.” Researchers examined the brains of five deceased individuals who were diagnosed with

ASD and found them to contain among the highest levels of the toxic metal aluminum ever recorded. In fact, they had up to ten times more aluminum in their brains than healthy adults.

Clearly, many recent studies outline concerns over the use of aluminum adjuvants in vaccines. As Handley states, “versus ten years ago, scientists now know that aluminum adjuvant can 1) impair brain development, 2) remain in the brain much longer than thought, 3) is brought into the brain by macrophages that grab the aluminum from the vaccine injection site and recirculate it, 4) may actually be worse when injected in small doses (as happens in vaccination), and 4) there’s remarkably high levels of aluminum in the brains of people diagnosed with autism.” Add Dr. Exley’s findings on aluminum and Alzheimer’s, and the public should be very concerned.

A GLIMMER OF HOPE

It’s worth mentioning here that research points to a way of helping those burdened with a heavy load of aluminum. Several studies have shown the essential nutrient silica may effectively detoxify and help excrete aluminum. “Silicon-Rich Mineral Water as a Non-Invasive Test of the ‘Aluminum Hypothesis’ in Alzheimer’s Disease,” by Dr. Exley was published in the *Journal of Alzheimer’s Disease*, 2013. Taurine and curcumin have also been shown to reduce aluminum neurotoxicity as evidenced in a study titled “Therapeutic Affect of Taurine Against Aluminum-Induced Impairment on Learning, Memory and Brain Neurotransmitters in Rats,” published February 4, 2014 in the journal *Neurological Sciences*. Vitamin E and selenium have also been found to be protective against oxidative stress and injury stimulated by excessive intake of aluminum.

CONCLUSION


Because scientific evidence published in recent years shows that vaccines have great potential for causing brain and immune system injury, the only responsible actions are what Hayes called for in her WAPF presentation—a complete moratorium on vaccines, the repeal the 1986 National Childhood Vaccine Injury Act (which protects vaccine manufacturers from all

product liability lawsuits) and the overturning of the 1905 Jacobson vs. MA decision, which is often cited as justification for vaccine mandates, even though the 1947 Nuremburg Code should have made that decision null and void. Mandates for children are particularly disturbing as studies show children are at far greater risk from aluminum adjuvants because of the combination of rapid growth, an incomplete blood-brain barrier and limited ability to eliminate toxins.

I will go so far as to say, and I know Hayes would agree, it is no longer acceptable for anyone within the medical community who administers vaccines to overlook the serious safety concerns that recent studies raise. While findings of peer-reviewed, published studies receive little coverage in the mainstream media, leading scientists and research institutes worldwide are recognizing the implications and indictments of aluminum and aluminum adjuvants. It is time for health professionals to do the same and to cease giving vaccines until they are proven safe. After all, isn’t “first do no harm” one of the most valued guiding principles of medical care?

As for the FDA, they need to start requiring the same rigorous pre-licensing safety testing for vaccines that they require for other drugs. Likewise, it is not acceptable for the CDC to recommend aluminum-containing vaccines (or any vaccines for that matter, as no vaccines have ever gone through proper safety studies and all have potentially devastating side effects). I believe the actions of these two agencies are nothing less than criminal, and I would be thrilled to see more people stand up like Hayes, who is not afraid to speak the truth, and like Dwoskin, who strives to find unbiased answers through scientific research.

Aluminum may be praised for its vital use in the aerospace industry and for its contributions to the transportation and building industries worldwide; however, it does not have any business being in our vaccines. Additionally, aluminum does not belong in our household products, food (including baby formula), food packaging, cosmetics and skincare products including sunscreen, deodorants and prescription and over-the-counter medicines. Aluminum may be a “natural” substance found in the earth’s crust, air, soil and water, but it does not have any biological function in any living organism, and it presents a danger to all living creatures, including human beings.

As Hayes so poignantly said in her WAPF talk, “Together, we must protect the health of our children, people of all ages, and the future of our country.” We must all be arbitrators of the truth. We must be our own health advocates. We must do our homework and learn the facts about aluminum and all vaccines. After all, our lives and those of our children depend upon it. 

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Legislative Updates

YOUR ACTIVISM WORKS!

By Judith McGeary, Esq.

Thank you to everyone who has taken action on the WAPF alerts about the PRIME Act! This bill would help remove one of the biggest barriers to local meat production, namely the lack of local meat processors that small farmers can use to process meat to sell at farmers markets and local outlets (more details in sidebar). The PRIME Act is now up to 22 co-sponsors—including Representative Colin Peterson, the ranking member (most senior Democrat) on the House Agriculture Committee.

Representative Peterson signed on to the bill after hearing from WAPF members in his district. The WAPF members didn't sign an online petition or send a form email. Instead, they took a few minutes to call and send personal emails. Just a handful of personal contacts like that can be enough to get a legislator's attention and support, as they did here.

The best chance for the PRIME Act to pass is as an amendment to the Farm Bill, which we also discussed in the last issue of *Wise Traditions*. There is a realistic chance of this happening, with a bipartisan list of co-sponsors that includes not only Rep. Peterson but also Rep. King (R-IA), another member of the House Agriculture Committee.

So what is happening with the Farm Bill? The public debates on it have repeatedly been delayed, while work has gone on behind the scenes. At the time this article goes to print, the best information on when the House Agriculture Committee will hold its "mark-up"—committee discussion—on the bill is the very last week of March or first week of April. The Senate Agriculture Committee's timing is entirely unclear. The Committee's version of the Farm Bill is expected to look a lot like the last Farm Bill. One key difference will be for the dairy and cotton industries, which were taken out of large indus-

try programs in the last Farm Bill, based on the expectation that the export markets would keep prices high. With the export markets proving to be an exercise in international price-shopping that have pushed farmers' prices below their cost to produce these goods, conventional dairy and cotton farmers have been desperate to have the programs restored.

But restoring these programs requires significant funds, and one of the delays in holding a hearing on the Farm Bill has been that the money required for this change would normally be taken out of other existing programs. But in February, Congress provided for the dairy and cotton programs within the omnibus budget—effectively increasing the total amount of money for farm programs within the Farm Bill. That unusual procedural move cleared the way for the Committee to move forward on the Farm Bill without having to make the difficult choice of what to cut to make room for dairy and cotton commodity programs.

All of these commodity programs are deeply flawed and a significant part of our dysfunctional agriculture and food system. Understandably, some WAPF members have expressed concern about linking the PRIME Act to the Farm Bill. But we face two realities at this time: (1) with or without our support, the Farm Bill will pass without major changes to its fundamental provisions, and (2) the PRIME Act is highly unlikely to pass except as an amendment to the Farm Bill. We can advocate for the PRIME Act to be added to the Farm Bill without expressing support for the Farm Bill as a whole—and, in doing so, help build more strength for a sustainable, localized food system.

Even if you have called or written before, now is an important time to contact your federal legislators and ask them to support the PRIME

Judith McGeary is the Austin, Texas, chapter leader, an attorney and small farmer, and the executive director of the Farm and Ranch Freedom Alliance. She has a B.S. in biology from Stanford University and a J.D. from the University of Texas at Austin. She and her husband run a small grass-based farm with sheep, cattle, horses, and poultry. For more information, go to farmandranchfreedom.org or call (254) 697-2661.

Act. You can find out who represents you by going to www.house.gov or by calling the Capitol Switchboard at 202-224-3121. Remember, calls are far more effective, and they can take just a couple of minutes! If you send an email, be sure to add a couple of sentences at the beginning to personalize it.

Below is a sample text for calls or to help you craft your personalized email. If you have already called or emailed, then skip the text and simply call (or email) and note that you're following up on your earlier call/email. Let your legislators know that this is an important issue to you, which you're not going to simply forget about!

Sample message for calls or emails:

As a constituent, I urge Representative _____ to co-sponsor H.R. 2657, the PRIME Act, and work to include it in the Farm Bill.

This important bill will make it easier for small farms and ranches to succeed financially and provide consumers with greater access to locally raised meats. The bill simply removes the federal ban on the sale of meat from custom slaughterhouses directly to consumers and venues serving consumers within a state, subject to state law. This returns power to the states to establish a regulatory scheme that makes sense for their citizens.

The PRIME Act is the first step to rebuilding local processing infrastructure, which can revive rural economies and enable communities to become more self-sufficient in meat production.


Please support our local farmers and consumer choice by co-sponsoring H.R. 2657.

Name

City, State

If you are a livestock producer, take a few extra minutes and ask to speak to the staffer who handles agricultural issues. Briefly explain to the staffer any problems you have faced with lack of access to inspected slaughterhouses, and how the PRIME Act would help your business and benefit your customers. These personal stories about impacts to constituents are invaluable for impacting legislators.

ANIMAL ID POSTSCRIPT

In the last article in *Wise Traditions*, I talked about the USDA's new plan to require electronic ID on cattle. At that time, USDA had said that it would publish its proposal in the fall, yet had since stayed quiet. Since then, we have learned that the proponents of electronic ID have changed their strategy. Rather than have the agency openly publish its intentions, it is staying quiet while the agribusiness and technology companies in the National Institute for Animal Agriculture work out all the details of how to implement the requirements. When they have their plan, they will take it to the USDA, who will then try to claim that it's simply doing what "the industry" wants. We don't plan to stay silent while they do this ... stay tuned for action alerts! 

PRIME ACT PRIMER

For those who may have missed earlier articles and alerts, H.R. 2657, the Processing Revival and Intrastate Meat Exemption (PRIME) Act, would tackle the scarcity of small-scale slaughterhouses by allowing the sale of meat by the individual cut from "custom" slaughterhouses. Currently, meat can only be sold by the individual cut if it is from an animal slaughtered and processed at a federal- or state-inspected facility.

Many farmers have a custom slaughterhouse much closer than a federal- or state-inspected facility. But under the current law, if the animal is processed at a custom facility, the meat can only go to the individual or individuals who owned the animal at the time the slaughter took place. This means that the customer(s) must buy the whole animal while it is still alive, effectively purchasing hundreds of pounds of meat without knowing the final weight or price per pound. Not many people can or want to do this!

The PRIME Act would give individual states the freedom to permit intra-state distribution of custom-slaughtered meat to individual consumers and to restaurants, hotels and grocery stores that directly serve consumers. Beef, pork, lamb and goat are covered under the bill.

The PRIME Act does not dictate what states should do. Each state would be able to set the requirements and limitations on the custom slaughterhouses that it considers appropriate.

Custom slaughterhouses are generally small facilities where often only a few animals are slaughtered each day; contrast that with the USDA-inspected plants where up to 300-400 cattle are slaughtered per hour. Small custom slaughterhouses can provide better quality control and safety than the massive plants that process the majority of meat in our country. Thousands of Americans—hunters, homesteaders and farm families—already eat meat processed in custom slaughterhouses. It's time to allow more choice for both farmers and consumers seeking local meat!

BACK ISSUES OF **Wise Traditions** AND OTHER INFORMATIVE LITERATURE

Fall 2006	Is Vitamin D Toxic?; Sunlight and Melanoma; Vegetable Oil Nightmare; Saturated Fat Attack; Picky Eaters.
Winter 2007	Children's Issue: Gut and Psychology Syndrome; Vitamins for Fetal Development, Traditional Remedies.
Fall 2010	Essential Fatty Acids; Magnesium; Healthy Skin; Sacred Foods for Children; Tale of Two Calves.
Winter 2010	Joel Salatin on the Politics of Food; Saving the Polish Countryside; Biological Farming; Glutathione in Raw Milk.
Summer 2011	Sulfur Deficiency; The Importance of Salt; The Senomyx Scandal; Why We Crave; Raw Milk Safety.
Fall 2011	Pork - Live Blood Analysis Study; Pork Recipes; The Accumulated Wisdom of Primitive People; Protein Primer.
Winter 2012	Vitamin A Synergies; The Story of Zinc; Natural Skin Cream; Slovenian Soups and Stews; Soy Infant Formula.
Spring 2013	Nutritional Roots of Violence; Glycine for Mental Stability; Pork Study; Homeopathy for Mental Illness.
Summer 2013	Our Broken Food Supply; The Marketing of Crisco; GMOs in Europe; Insights of a Meat Processor; Natto.
Fall 2013	GMO Dangers; Roundup Dangers: Culinary Traditions in Romania; The Battle for the People's Milk.
Winter 2013	Beyond Cholesterol; Cancer as a Healing Strategy; Grain Traditions in Russia; Push to Pasteurize Breast Milk.
Spring 2014	Dr. Price's Scientific Approach; Weston Price and the Fluoridationists; Cows and Climate; Economics of Raw Milk.
Summer 2014	Nutrition for the Elderly; A New Look at Alzheimer's Disease; In Defense of Wheat; Dangers of Vegetable Oils.
Fall 2014	What Causes Heart Attacks? The Myogenic Theory of Heart Disease; Thrombi in Heart Disease.
Winter 2014	Effects of Smart Phones on the Blood; Dangers of Smart Meters; Protection Against EMR; U.S. Dietary Guidelines.
Spring 2015	Cleansing Myths and Dangers; Toxicity and Chronic Illness; Gentle Detoxification; Great Nutrition Pioneers.
Summer 2015	Vaccination Dangers Issue.
Fall 2015	The Scandal of Infant Formula; Vitamin D in Cod Liver Oil; Cod Liver Oil Controversy; Fermented Fish Foods.
Winter 2015	Water Issue: The Fourth Phase of Water; Sewage in a Glass; Water Stressors; Teaching WAPF to College Students.
Spring 2016	Folic Acid and Glyphosate; Why We Need Saturated Fats; Cod Liver Oil Testing; Flint, Michigan Cautionary Tale.
Summer 2016	Vitamin A; Healthy Fertility; Recovery from the Pill; The Concussion Epidemic; EMR and the ADHD Child.
Fall 2016	Recovery from a Low-Carb Diet; Why We Need Carbs; Salt; Nutritional Yeast; Big Box Stores; Addictions.
Winter 2016	Men's Health; Protein Powders; Fueling the Modern Athlete; Restoring Male Fertility; Glyphosate in Collagen.
Spring 2017	Type 2 Diabetes; Couch Potato or Marathon Runner?; Weight Loss; Costa Rica; Moving Heavy Loads; MSG.
Summer 2017	Cholesterol Sulfate and the Heart; Vitamin D Dilemmas; Five Obstacles to Cure; The Adrenal-Heart Connection
Fall 2017	Why Do We Get Cancer; Support for Pediatric Cancer; The Tijuana Clinics; GCMAF and Raw Milk; Black Salve.
Winter 2018	The HPA Axis; A Primer on the Thyroid; Recovery from Bioidentical Hormones; WAPF in Peru.

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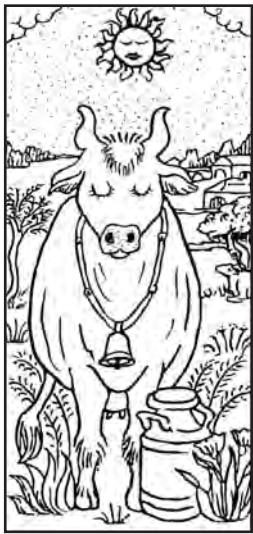
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A Campaign for *Real Milk*

FINDING RAW MILK ON THE ROAD

By Jennifer Grafiada

Those of us who regularly enjoy delicious, cream-topped raw milk at home know that it can be problematic to keep the good stuff in supply when traveling to another state. Because every U.S. state sets its own laws on the selling of raw milk to the public, those who want to continue drinking raw milk during a visit to another state must do some research beforehand.

Fortunately, it is now possible to obtain raw milk in forty-three out of fifty states, largely thanks to the tireless work of the Weston A. Price Foundation (WAPF) and the Farm-to-Consumer Legal Defense Fund (FTCLDF). The seven remaining states may soon join the rest of the country, with new legislation being introduced each year. At RealMilk.com, which is managed by WAPF, consumers can find a summary of current laws and listings of milk providers in every state as well as several other countries. It is advisable to check back frequently for updates.

PLANNING AHEAD

In addition to RealMilk.com, there are other resources for finding local raw milk in advance of a planned vacation. For example, the Farm and Garden section of your local Craigslist (Craigslist.org) is an excellent way to find sources that would not otherwise be advertised. Just type “milk” in the search bar and see what comes up. Another website that lists milk sources is Agrilicious.com. Additionally, the Facebook group for WAPF members is a

great way to find connections and information on local laws. Those planning to travel also can contact the WAPF chapter leader in the destination area. (Chapter leader contact information is listed in the back of the *Wise Traditions* journal and at westonaprice.org/find-local-chapter).

Ideally, one should start researching available options a couple of weeks before the travel date, as it may be necessary to place calls or exchange emails with the milk supplier and arrange a pick-up date or time. It is frequently the case that milk is sold only one day a week at a market or during specific hours at a farm, or the supplier might only come into town on a predetermined day. Travelers who let suppliers know what their travel schedule is may be able to make special arrangements as needed.

Of course, raw milk is not always easy to obtain even in states where it is legal. Some states only legally allow suppliers to provide milk to members of a cowshare or herdshare, in which case the milk supplier may not be able to sell directly to out-of-state visitors. Other states may have restrictions that technically allow milk to be sold only for pets. Make sure to stock up on some milk for little Fido; it's good for him, too! Or it might be necessary to be flexible and drink goat's milk instead of cow's milk during the vacation week (or vice versa, if goat milk is the usual drink of choice).

For those who are traveling to one of the seven states that do not currently allow the sale of raw milk (Delaware, Hawaii, Iowa, Louisi-

A Campaign for *Real Milk* is a project of the Weston A. Price Foundation. To obtain some of our informative *Real Milk* brochures, contact the Foundation at (202) 363-4394. Check out our website, RealMilk.com for additional information and sources of *Real Milk* products.

WAYS TO FIND RAW MILK

- Realmilk.com/real-milk-finder/
- Westonaprice.org/find-local-chapter
- Agrilicious.org
- Craigslist.org
- The Weston A. Price Foundation Members Group on Facebook
- Farmers markets and farm stands

ana, Nevada, New Jersey and Rhode Island), it may still be possible to obtain it if the traveler is willing to arrange a meet-up at a state border or order from a buying club like Miller's Biodiversity Farm (Amishbio-farm.com).

HAVE MILK, WILL TRAVEL

Another option is to bring milk from home. For travelers who are driving, fresh milk should stay viable in a cooler for twenty-four hours. Freezing milk for transportation purposes and then defrosting at the destination also works rather well. Sometimes the defrosted milk will have a different texture, but the taste and nutritional value are still comparable to the fresh version.

Those who are flying with an infant are allowed to bring milk onto the airplane, packed in bottles or in Ziploc freezer bags and stored in a cooler with ice packs. Travelers should be sure to tell the Transportation Security Administration (TSA) agent beforehand if they do not wish the milk to be scanned or irradiated. Otherwise, the milk is likely to be sent through the X-ray machine with the rest of the luggage. Note that there is no need to mention that the milk is raw or offer any other explanation about the liquids in question except that they are for the infant.

TURNING NECESSITY INTO OPPORTUNITY

Finding a raw milk source in a new locale can sometimes lead to fun adventures and new connections. Travelers may find themselves driving on backroads into an area of the state where normally they would not have gone. The farm one visits may end up being a destination in and of itself and may offer other delicious farm-fresh products that give the visitor a chance to taste the local terroir.

Recently, I was visiting my in-laws in Maryland and decided to explore the surrounding rural area. I was pleasantly surprised to find that

the picturesque P.A. Bowen Farmstead, run by WAPF President Sally Fallon Morell, was just minutes from my in-laws' house. We paid a visit to the farm shop to obtain some "Philander's Pet Milk" as well as some of the farm's famous cheeses and pastured beef. It's a lovely historic area, and we found out the Morells even offer farm stays via Airbnb. For those visiting the Washington, D.C. area, the farm is worth a visit.

Finding new milk sources can lead to interesting conversations with like-minded people and connections that could prove beneficial. It's also a good way to help educate friends and family who may have misconceptions about the health value and safety of raw milk. While running the risk of developing a bit of a reputation ("Wait, you drink raw milk and you don't use microwaves? Are you sure we're related?"), there is also the possibility of winding up helping someone with unresolved health issues or so-called "lactose intolerance" by suggesting they give raw milk a try—they might just get hooked on it, too.

WORTH THE EFFORT

Travel can be hard on the microbiome and digestion in general. Making sure to load up on prebiotics (fibrous foods such as bananas) and probiotics (raw milk or cultured dairy products, as well as fermented foods) is a great way to ensure good health while dealing with travel's

NEW INFORMATION RESOURCE FOR WAPF MEMBERS

Pete Kennedy is now working for the Weston A. Price Foundation (WAPF) as a consultant on policy and legal matters. Pete is a past president and original board member of the Farm-to-Consumer Legal Defense Fund (FTCLDF). There is no charge for consultations with him for anyone who is a WAPF member.

Pete can provide information to members about state laws, regulations and policies including food freedom legislation and issues regarding consumer access to raw milk, cottage foods and on-farm meat and poultry processing, all areas in which he has had considerable experience. Pete cannot give individual legal advice or recommend support for or opposition to pending legislation. He is also available for consultation on any effort to change state administrative regulations and policies. Pete will be responsible for drafting information alerts for members on legislation, policy initiatives and other matters on the state level. Raw milk laws will be a focus of his work.

Pete will be consulting with members on legal issues pertaining to the rights of consumers to have access to nutrient-dense foods and the rights of farmers and artisans to produce those foods. He will be available to work at the administrative level with members having an issue with regulators in federal, state or local government agencies.

In the past, Pete has worked on numerous matters involving FDA and USDA, state agriculture and health departments and local health departments on nutrient-dense foods. Work he has done at the federal, state and local administrative levels includes protecting farmers against threatened enforcement actions, handling food seizure, embargo and recall cases and right to farm/zoning issues on the people's right to grow their own food.


He will also be available for consultation with WAPF members on herdshare contracts and buyer's club agreements; he has worked with hundreds of farmers around the country on herdshare contracts.

You can reach Pete by phone at (941) 349-4984 or by email at pete@realmilk.com.

added stresses to the system. However, some individuals may be unsuccessful in finding a raw milk source in advance of their vacation. Those who want to avoid the pasteurized version can consider trying a milk alternative (almond milk or coconut milk are preferable to soy). Drinking kombucha, kefir and other yogurt drinks is another way to maintain beneficial bacteria while traveling. Raw milk cheeses are also often available in specialty stores and they also travel well.

Note that prices may vary drastically from state to state. For example, in southern Oregon where I live, I pay six dollars a gallon for amazingly fresh, cream-topped raw milk (and often have it delivered!). In neighboring California, where one can find raw milk in many stores, visitors may find themselves shelling out sixteen dollars a gallon. The difference can be explained by the fact that I get mine from a lady up the road. There is no middleman and no regulatory interference. In California, raw milk is more readily available to the public, but the milk is FDA-tested and must be shipped, stored and properly packaged.

For those of us who understand the many benefits that raw milk can offer us and our families, or who have infants who rely on the Weston A. Price Foundation infant formula alternative, going out of our way to obtain raw milk when sojourning in another state is well worth the effort. Driving long distances, paying a little extra or dragging the family along on a muddy-shoes, backroads farm tour seems worthwhile after taking a swig of cold, fresh milk from a glass jar. The storebought stuff can't compare, and we know it!

Hopefully, with the continued efforts of the Weston A. Price Foundation and A Campaign for Real Milk, there will soon come a time when raw milk is much easier and simpler to obtain. In Europe, for example, vending machines dispense raw milk at the push of a button! There are over one thousand three hundred raw milk vending machines in Italy alone.¹ In the meantime, while at home or on vacation, doing what we can to spread the message that raw milk is a healthy and not a dangerous food will help bring back the days when raw milk, or rather real milk, was the norm and not the exception. 

Jennifer Grafiada is a nutritional therapy practitioner (NTP), writer and Weston A. Price Foundation chapter leader based in southern Oregon. You can find her at JenniferGrafiada.com.

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OUR GOAL: RAW MILK DISTRIBUTION LEGAL IN ALL FIFTY STATES

A long-term goal of the Weston A. Price Foundation has been the establishment of legal access to raw milk in all fifty states. When the WAPF project, A Campaign for Real Milk, started in 1999, the sale or distribution of raw milk was legal in twenty-seven states; today that number stands at forty-three. The only states that still prohibit any form of raw milk sales or distribution are Delaware, Hawaii, Iowa, Louisiana, Nevada, New Jersey and Rhode Island. Recognizing that the day of legal access to raw milk is getting closer, WAPF has embarked on a drive to help legalize raw milk sales and distribution in the remaining seven states.

A Campaign for Real Milk will be devoting more resources to support legalization efforts; this could be through paying a lobbyist, paying for experts to testify at hearings, paying for expenses of WAPF members working on legislation, consulting on legislation, networking with other groups or organizations or helping with the drafting of raw milk bills. Legal raw milk access can be established through regulation, court decision, legislation or policy. A Campaign for Real Milk will focus on legalization primarily through legislative and policy work.



The main goal of A Campaign for Real Milk will be to legalize raw milk sales or distribution in the remaining seven states, but the campaign will also support efforts to expand raw milk access in the other forty-three states; in some of those states, access is very limited at this time. The campaign also supports work to legalize access to other raw dairy products such as cream, butter, yogurt, kefir and cheese. These products, other than raw cheese aged sixty days, are legally available only in a minority of states. The drive for expanded raw dairy access could include efforts to legalize the commercial sale of raw butter and unaged raw cheese. Most states only allow the sale of raw milk and raw milk products directly from the producer to the consumer at this time.

A Campaign for Real Milk has set a goal of legalizing raw milk access in all fifty states by 2020. WAPF, long the leading raw milk advocacy group in the country, is excited to step up efforts to make this happen.

NEW JERSEY – MORE REASON TO LEGALIZE RAW MILK SALES

The New Jersey Department of Health (NJDH) has been busy recently on the raw milk front. In one investigation NJDH sent cease-and-desist letters to various dropsites at private residences. The dropsites were allegedly distributing raw milk and raw milk products to customers of an out-of-state dairy. In another action, NJDH was investigating a New Jersey-based food buyers co-op obtaining raw milk from multiple out-of-state producers. The department was trying to determine which of the producers was responsible for an illness caused by the consumption of raw milk. The two cases represent an opportunity for the state to evaluate its law prohibiting the sale and distribution of raw milk and acknowledge that the law needs changing.

The cease-and-desist letters threatened the families operating the dropsites with fines for distributing raw milk. This isn't the first time NJDH has taken this kind of action. In 2007, NJDH also sent cease-and-desist letters to individuals having dropsites at their residences. The difference from the investigation eleven years ago is that NJDH sent letters to considerably more dropsites this time around—not surprising since demand for raw milk has been consistently increasing for years. Otherwise law-abiding citizens will do what they have to do in order to obtain raw milk in states like New Jersey where the sale is banned; whether NJDH will admit that or not, it's the reality.

In the case of the food buyers co-op, NJDH was having a difficult time trying to determine which dairy was responsible for making a member of the club ill with brucellosis. There were media reports discussing the NJDH investigation but none reporting that the department had identified the producer responsible for the illness; it is clear that NJDH has having problems with traceability.

If you combine the growing demand for raw milk among New Jersey residents along with the traceability issue NJDH has been having with out-of-state dairies, it would be a good move for the state to consider legalization. An appropriate first move for the state would be to allow by policy the distribution of raw milk through herdshare agreements; under herdshare contracts, raw milk consumers obtain an ownership interest in the dairy animal(s) enabling them to obtain raw milk and hire the farmer to board, care for and milk those animals. Herdshare programs are closed-loop arrangements in which there is a high level of traceability if there is a suspected illness—something NJDH should appreciate after what it has been through.

New Jersey dairy farmers have lost millions of dollars in potential revenues to Pennsylvania raw milk producers (there are less than seventy Grade A dairies left in the state) but that never moved the state government to end the prohibition on raw milk sales and distribution. What could change the state's position though is the difficulty its health department had in conducting an investigation of foodborne illness, combined with the fact that demand for raw milk among New Jersey residents will only continue to further increase. Allowing the distribution of raw milk through an arrangement outside the stream of public commerce would be a good first step for the state.

VIRGINIA – VICTORY OVER HERDSHARE THREAT

Joel Salatin said, "If this is not reminiscent of David and Goliath, I don't know what is," referring to the defeat of two bills posing a major threat to the future of herdshare programs in Virginia. Virginia Farm Bureau, Virginia Agribusiness Council and the Virginia State Dairymen's Association all supported the legislation, but grassroots mobilization against the bills led by the Virginia Independent Consumers and Farmers Association (VICFA) won out with an assist from members of the Weston A. Price Foundation (WAPF) and other food freedom advocates.

Herdshare agreements are private contractual arrangements in which someone purchases an ownership interest in a dairy animal (or herd of dairy animals) and pays a fee to a farmer for boarding, caring for and milking the animal(s). The owner has the property right to obtain raw milk from the animal(s). It's legal to purchase ownership in a dairy animal and it's legal to obtain milk from a dairy animal you co-own. Herdshare programs have been flourishing in Virginia for many years.

Last month, legislators carrying out the agenda of industrial agriculture introduced House Bill 825 and Senate Bill 962 in the Virginia legislature. While the bills officially legalized herdshares [currently there is nothing in the Virginia Code on herdshares], they were an attempt to intimidate both consumers and farmers from either entering into or continuing on with herdshare agreements. Each bill stipulated that violating any of its requirements would be first-degree misdemeanors with criminal penalties of up to one year in jail and twenty-five hundred dollars in fines; every day the violation continued would be a separate offense. Both farmers and consumers could have been found guilty of a crime for not turning over copies of their contracts to government agencies. Both bills stated it was illegal for anyone besides the party to the herdshare contract to receive raw milk; in other words, giving raw milk to family or guests would be a crime according to the wording in the bills.

To scare consumers away from signing contracts, there was a requirement in both bills that the herdshare agreements contain a clause stating that shareholders assumed joint liability if the herd or any milk produced by the herd

was responsible for any injury or illness. HB 825 and SB 962 each required a label on all raw milk containers with a consumer advisory warning about the dangers of consuming raw animal foods. Why would shareholders need a label on their own property? Why should they be forced to trash their own property with an advisory?

Reaction to the bills' filings was swift. Farmers and consumers bombarded legislators with phone calls, emails and in-person visits to the capitol. VICFA kept people apprised of the bills' status and mobilized the local food community to attend the hearings on the bills. Herdshare farmers like Dwayne McIntyre of Goshen Homestead, Jacques and Kim Fuhrmann of Our Fathers Farm, the Wilkes family of Honey Brook Farm, Tim and Joy Alexander of Avery's Branch Farm and Scott Wilson of Full Quiver Farm all made a difference in building opposition to the legislation.

On February 1, the Senate Committee on Agriculture, Conservation and Natural Resources held a hearing on SB 962; around one hundred opponents of the bill packed the hearing room. Senator Mark Obenshain, seeing the writing on the wall with the opposition to the bill, took out a number of SB 962's more onerous provisions but opponents weren't buying the revised version of the bill. Their message throughout the testimony opposing SB 962 was clear: no regulation, period!

VICFA member and herdshare pioneer, Christine Solem, began the opponents' testimony by angrily warning the committee that she would "fight this all the way." Twice, Solem took herdshare lawsuits to the Virginia Supreme Court in the 1980s with the court implicitly recognizing that herdshare agreements were legal.

Mark Wilkes of Honey Brook Farm commented in his testimony that the bill "was a solution in search of a problem." VICFA president Anne Buteau backed up that statement in her testimony by pointing out to the committee that, in the thirty years of herdshares operating in Virginia, government officials investigating the one foodborne illness outbreak attributed to raw milk distributed through a herdshare did not go public with the information because, as they stated, "the nature of the herdshare programs are such that we were confident that we would effectively reach those who were truly at risk for illness."

Herdshares are closed-loop arrangements with a high level of traceability. Virginia government officials have all the authority they need under existing law to conduct an effective investigation if there is a suspicion of foodborne illness.

Senator Richard Black agreed with Wilkes and Buteau, firing up the crowd when he remarked, "I don't know what problem it's addressing. People like a free life in rural areas and don't want government peeking over their back and telling them what to do."

Once the testimony was over, the committee voted eight to seven not to report the bill out of committee. Delegate Barry Knight, the sponsor of HB 825, knowing how difficult it was going to be to pass a more burdensome bill than SB 962 (HB 825, unlike the Senate bill, gave government broad rule-making power) moved to withdraw his bill; on February 5, a House Agriculture subcommittee struck the bill by an eight to zero vote.

VICFA's mission "is to promote and preserve unregulated direct farmer-to-consumer trade that fosters availability of locally grown or home-produced food products." VICFA co-founder Salatin, Solem and other VICFA members such as the late Katherine Russell, helped create a "don't tread on me" culture that is present throughout Virginia when it comes to farmer-to-consumer unregulated commerce, particularly with herdshares. Those in the local food movement there don't ask the government for permission to exercise their rights; they want the government to leave them alone.

VICFA operates on a shoestring budget but members like Buteau, Solem, past president Lois Smith and Suzi Croes will spend the time it takes to protect herdshares—the crown jewel of the local food system in Virginia. They continue to be effective in keeping herdshares away from any regulation; in 2017 VICFA helped kill an attempt by Farm Bureau to ban herdshares. When it comes to establishing and protecting unregulated direct farmer-to-consumer commerce, it is a model organization for those in other states to follow.

STATE RAW MILK BILLS – 2018

There have been raw milk bills before the legislatures in ten different states so far this current session. A bill has made it to the governor's desk in Utah, and there is legislation in at least a couple of other states that has a realistic chance of passing, including Louisiana, which is one of seven states left where any raw milk sales or distribution is illegal. Bills before the legislatures include:

IOWA House File 2055 (HF 2055) would allow the unregulated sale of raw milk and raw milk products on-farm and through delivery. The bill requires a label on the container notifying consumers that the product has not been inspected and is not subject to public health regulations. Bills have also been introduced in the Iowa legislature that would legalize raw pet milk sales (HF 2057) and the distribution of raw milk through herdshares (HF 2056) but HF 2055 is the only raw milk bill the legislature has considered so far. On January 30 a subcommittee of the House Committee on Local Government recommended passage by a two to one vote; the bill is now before the full committee. Iowa is one of the remaining states that prohibits any raw milk distribution.

LOUISIANA companion bills Senate Bill 188 (SB 188) and House Bill 437 (HB 437) have been introduced that would allow the on-farm sale of either cow milk or goat milk of an average of five hundred gallons per month. No permit is required but producers are subject to inspection and must comply with milk testing, herd health and sanitary standards as well as a labeling requirement calling for a warning that the raw milk may contain harmful bacteria. The bills are a reintroduction of Senate Bill 29 (SB 29) that nearly passed in 2016 when it passed out of the Senate and was defeated in the House committee by one vote.

MASSACHUSETTS Senate Bill 442 (S.442) and House Bill 2938 (H.2938) are companion agricultural omnibus bills that include provisions that would officially legalize herdshare agreements and would allow the off-farm delivery of raw milk by licensed dairies. Under the bill, farmers with no more than twelve lactating cows, goats or combination of cows and goats can enter into herdshare agreements with those wanting to obtain raw milk. There must be a written contract that includes a statement that the raw milk is not pasteurized nor subject to inspection by the state Department of Health nor the Massachusetts Department of Agricultural Resources (MDAR). MDAR has power to issue rules on testing but cannot require testing more frequently than once every two months. The bills allow a licensed raw milk farmer to deliver raw milk to a consumer with whom the farmer has a contractual relationship, including through the farmer's agent and through a community-supported agriculture (CSA) delivery system. The bill gives MDAR power to issue regulations governing delivery; the regulations must allow for non-mechanical refrigeration. The bills have passed out of the Joint Committee on Environment, Natural Resources and Agriculture and will likely next be assigned to the Senate Ways and Means Committee.

NEW JERSEY Assembly Bill 502 (A502) is the same bill that has been introduced the prior three legislative sessions. A502 allows for the on-farm sale of raw milk and raw milk products by a licensed dairy. Producers must comply with labeling, signage, herd health and milk testing requirements. The bill also legalizes herdshare agreements and states that no permit is required for the distribution of milk through a herdshare contract. New Jersey is one of the remaining seven states that prohibits any raw milk distribution. A502 has been referred to the Assembly Agriculture and Natural Resources Committee.

TENNESSEE House Bill 2229 (HB 2229) and Senate Bill 2104 (SB 2104) would have allowed the unregulated direct sale from producer to consumers of all foods except meat, on the farm, at farmers markets and other venues. There were labeling and signage requirements but no licensing or inspection under the bills. The bills were both defeated in committee; under current law, the distribution of raw milk and raw milk products is legal through herdshare agreements. Herdshare programs have been thriving in the state.

UTAH Senate Bill 108 (SB 108) has passed through both the Senate and House and are on the desk of Governor Gary Herbert. SB 108 allows the delivery and sale of raw milk through a mechanically-refrigerated mobile unit by licensed dairies. Currently only the on-farm sale of raw milk by license holders is legal unless the producer has a majority ownership interest in a retail store (only one of the state's ten licensed dairies meets this qualification). SB 108 also allows for the unlicensed on-farm sale of up to one hundred twenty gallons per month by unlicensed dairies if the producer is in compliance with labeling, recordkeeping, milk testing and milk cooling requirements. Producers wanting to sell under this exemption must notify the Utah Department of Agriculture and Food (UDAF) that they are doing so. UDAF has power under the bill to order a producer to stop selling raw milk if the producer's dairy is linked to a foodborne illness. The department has the power to levy administrative fines against producers who have been linked to a foodborne illness outbreak.

Healthy Baby Gallery



Baby Naomi Sue was born shortly after the November WAPF conference in her home town of Minneapolis/St. Paul. She was born at home into water with the help of midwives, her dad and her three siblings, after a short two-hour labor and just ten minutes in the tub. She weighed in at eight pounds, fifteen ounces and was 21.5 inches long. She instantly was a great little nurser, and her mom's recovery has been amazing—all the raw milk and eggs really paid off!

Happy baby Claire, born to Eva Spitzer who states how following the Wise Traditions diet principles have worked wonderfully with her

daughter. She followed the diet for pregnant and nursing mothers, slowly adopting the Wise Traditions way of eating over five years before getting pregnant. Claire was born without any complications. She has a wider face and nose than anyone else in the family.

Eva says "She's the happiest baby I've ever met. Everyone comments how smiley she is. Popular baby books have been useless because they focus on soothing an inconsolable baby, and she's not that. She sleeps well and only wakes

to feed. She's easy to nurse. Her eyesight is better than the books say it should be. She started talking at two months old. When she gets a cold, her only symptom is sleeping a bit more. The doctor was shocked when she gained a whole pound between one and two weeks old. When the doctor asks whether I have any health concerns about her, I say no. Thank you Sandrine Perez at Nourishing Our Children and everyone who works to share the Wise Traditions diet. If you're new to the diet and struggling with it, know that it will definitely be worth it. My husband and I have also found better health from the dietary changes."



One-year-old Theo is a very healthy eater and still loves nursing time with mama. He enjoys seafood, grass-fed meats, pastured eggs, raw milk, full-fat yogurt and grass-fed butter (and like many babies and kids, will eat it by the stick). He has been remarkably happy, healthy, strong and alert since day one. His mom, the WAPF chapter leader for Douglas County, Oregon, who followed a WAPF-friendly healthy diet throughout pregnancy and for several years prior, is very grateful for the information the Weston A. Price Foundation puts out. More mothers and mothers-to-be need this life-saving information!

Please send your healthy baby photos and text to journal@westonaprice.org.

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SAN FRANCISCO BAY AREA CHAPTER LEADERS AT THREE STONE HEARTH

Chapter leaders (and others) with Three Stone Hearth worker-owners at the first WAPF chapter mixer of the San Francisco Bay area chapters at Three Stone Hearth, Berkeley, California.

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MEMBERS OF CONNECTICUT'S TOLLAND COUNTY CHAPTER

With chapter leaders Anna and Jared Simpson, the chapter had its first quarterly potluck dinner in October, complete with nutrient-dense food (and food for thought), shared stories about finding WAPF and new friendships.

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WAPF AT CHICAGO MOMMYCON

Sally Fallon Morell
with Chicago chapter leaders
Janine Farzin (with baby Oliver)
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WESTFORD, MASSACHUSETTS, GATHERING

The Westford, Massachusetts, chapter gathered local farmers and consumers together to share farming tips and how to improve soil health for the upcoming growing season.

Millers Biodiversity Farm provided delicious refreshments.



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LOCAL CHAPTER BASIC REQUIREMENTS

1. Create a food resource list of organic or biodynamic produce, milk products from pasture-fed livestock (preferably raw), pasture-fed eggs and livestock and properly produced whole foods in your area.
2. Provide a contact phone number to be listed on the website and in our quarterly magazine.
3. Provide Weston A. Price Foundation materials to inquirers, and make available as appropriate in local health food stores, libraries and service organizations and to health care practitioners.
4. Provide a yearly report of your local chapter activities.
5. Be a member in good standing of the Weston A. Price Foundation.
6. Sign a contract on the use of the Weston A. Price Foundation name and trademark.

OPTIONAL ACTIVITIES

1. Maintain a list of local health care practitioners who support the Foundation's teachings regarding diet and health.
2. Represent the Foundation at local conferences and fairs.
3. Organize social gatherings, such as support groups and pot luck dinners, to present the Weston A. Price Foundation philosophy and materials.
4. Present seminars, workshops and/or cooking classes featuring speakers from the Weston A. Price Foundation, or local speakers who support the Foundation's goals and philosophy.
5. Represent the Weston A. Price Foundation philosophy and goals to local media, governments and lawmakers.
6. Lobby for the elimination of laws that restrict access to locally produced and processed food (such as pasteurization laws) or that limit health freedoms in any way.
7. Publish a simple newsletter containing information and announcements for local chapter members.
8. Work with schools to provide curriculum materials and training for classes in physical education, human development and home economics.
9. Help the Foundation find outlets for the sale of its quarterly magazine.

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The Weston A. Price Foundation currently has 476 local chapters:
380 serve every state in the U.S. (except North Dakota) plus the District of Columbia
and 96 serve 30 other countries.

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SUSTAINABLE AGRICULTURE CONFERENCE

Mary Walkes and Janice Stone (South Dakota chapter leaders) and Matt Stone (not pictured) feature their new banner at the WAPF booth at the Northern Plains Sustainable Agriculture Conference in Aberdeen in January. Many attendees from South and North Dakota and Minnesota signed up for WAPF memberships!



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MOTHER EARTH NEWS FAIR

WAPF booth at the Belton, Texas, Mother Earth News Fair, February 2018. Left to right, chapter leaders Carolyn Biggerstaff, Houston, and Kristen Files, Austin. The fair was a great place for WAPF information.

Kristen said she enjoyed sharing the information and also getting to know other chapter leaders!



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VICTORIA, AUSTRALIA GATHERING

Australian chapter leaders Fenja Schulze, Joy Stone and Lorraine Pratley joined seven other families and individuals from all over the state of Victoria to share recipes and stories and help create a Victoria-specific shopping guide and website.

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CHAPTER RESOURCES

Resources for chapter leaders can be accessed at westonaprice.org/local-chapters/chapter-resources, including our trifold brochures in Word format, chapter handbook and PowerPoint presentations.

LOCAL CHAPTER LIST SERVE

Thank you to Maureen Diaz a chapter leader in Pennsylvania, for administering the local chapter chat group. New chapter leaders can sign up at <http://groups.yahoo.com/group/wapfchapterleaders/>.

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CA

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CO

Meadow Maid Foods, 100% grass-fed, grass-finished beef. On pasture year-round at the family ranch in WY. Production practices detailed on our website. Custom beef, Farmers markets, and food co-op in Fort Collins. meadowmaidfoods.com, (307) 534-2289.

Rafter W Ranch, Colorado. A family-owned ranch in Simla, practicing regenerative agriculture, bringing you nutrient-dense food. Our animals are 100% certified American Grass-fed and are 30-day dry-aged beef along with pasture-raised lamb. Bones, broth, and offal and other choice cuts of beef available. We also offer pasture-raised broiler chickens. Bulk order and/or pieces. Several pick-up locations along the Front Range or at the ranch. (719) 541-1002, www.rafterwrench.net

IN

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Hopeful Farms raises 100% grass-fed beef, pastured chicken and turkey, and pastured pork. Our animals are not fed hormones, antibiotics, GMOs or soy. **Shipping** and farm pickup are available. Visit our website: fryfarmscoop.com or contact us at fryfarmscoop@gmail.com.

MA

Many Hands Organic Farm in Barre, MA. All products certified organic and free range. Lard, pork, chicken and beef stocks, pork, chicken, turkey and 26 weeks of CSA. No till, nutrient dense. www.mhof.net; (978) 355-2853; farm@mhof.net.

MD

100% soy-free chicken, eggs, pork and beef. Chicken livers, chicken feet and heads. Bacon and sausage. Raw pet milk. Raw milk blue and cheddar cheese by cheesemaker Sally Fallon Morell. **Will ship** whole cheese wheels. Southern Maryland, within 1 hour of downtown Annapolis and Washington, DC.

Saturday farm tours. Store open Thursday to Saturday 10-6 or by appointment. P. A. Bowen Farmstead, 15701 Doctor Bowen Road, Brandywine, MD. (301) 579-2727, pabowenfarmstead.com.

Nick's Organic Farm. Grass-fed beef (no grain ever), free range eggs, pastured chicken and turkey. Liver, organ meats, and bones. Organic poultry feed. Pick up in Potomac or Buckeystown. Our livestock are rotated to fresh pastures on our fertile organic soils and receive organic feed, no hormones, antibiotics, or animal parts. We raise our cows 100% grass-fed. We raise our hay, raise and grind our own grain into poultry feed and process our poultry. Quality organic products since 1979. (301) 983-2167, nicksorganicfarm@comcast.net, nicksorganicfarm.com.

MI

Creswick Farms. Dedicated to raising healthy, happy animals—lovingly cared for just as Mother Nature intended—which provide high-energy, nutritious and delicious food sources for health-conscious individuals. No antibiotics, steroids or GMOs ever fed to our animals! (616) 837-9226, CreswickFarms.com.

Pastured Pork, Chicken, Beef and Lamb sold from farm or delivered monthly to your home from Grand Rapids to Cadillac; Muskegon to Mt Pleasant. No GMOs, no soy and no chemicals. Come visit the farm! Provision Family Farms, White Cloud. (231) 689-0457, provisionfamilyfarms@gmail.com, www.provisionfamilyfarms.com/shop-the-farm.html.

MN

Farm On Wheels offers animals raised green grass-fed & certified organic. Nutrient-dense beef, lamb, chicken, eggs, turkey, goose, duck, and pork. No corn or soy. Farmers Market year around in St. Paul, Prior Lake, Northfield. Linda (507) 789-6679, farmonwheels.net, farm_on_wheels@live.com.

MS

Nature's Gourmet Farm raises nutrient dense grass-fed beef, pastured pork, and pastured broilers. Animals are hormone, antibiotic, and GMO free! We service south Mississippi, Alabama and Louisiana. For details and order information visit our website at www.naturesgourmetfarm.com.

NY

Raw milk, cheese, butter, etc. from 100% grass-fed Jersey cows. 100% grass-fed beef and lamb. Pastured pork, chicken and turkey (soy-free options available). Fermented veg-

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Dutch Meadows brings you the finest in high quality grass-fed meats and organic dairy products, raised in harmony with the land. Order online and choose from hundreds of farm products, **WE SHIP.** Convenient pick-up locations in NYC. (717) 442-9208 info@dutchmeadowsfarm.com – www.DutchMeadowsFarm.com MYS-permitted raw milk on Long Island, from grass-fed pastured Jersey cows. Visitors welcome. 5793 Sound Ave, Riverhead, NY 11901. (631) 722-4241.

OH

Soaptown Poultry. Fresh eggs from chickens pastured on high omega-3 forage, supplemented with organic, non-GMO, soy-free feed (including kelp and probiotics). The richest yolks you have ever seen. Raised responsibly in Lordstown, Ohio (halfway between Cleveland and Pittsburgh). (330) 550-9745.

Sugartree Ridge Grassfed. Openings in 100% grassfed herdshare with nine delivery sites in the Cincinnati area. No grain, no silage. Sixteen cows (cross between Jerseys, Guernseys, Brown Swiss and British White) grazed year-round on sixty acres rotating through thirty paddocks (which are allowed to grow for sixty days between grazings and are spread with organic, Albrecht-based mineral supplements). Nutrient-dense milk, family-friendly farming and holistic stewardship. 6851 Fair Ridge Road, Hillsboro, OH 45133. (513) 207-7998.

OR

Grass-based biodynamic raw milk dairy offering Jersey Hi-creamline milk, cream, golden butter, cottage cheese and aged cheeses. Soy-free veal and pork seasonally. On farm sales and membership club. **Can ship.** Sherry and Walt (541) 267-0699.

PA

Dutch Meadows brings you the finest in high quality grass-fed meats and organic dairy products, raised in harmony with the land. Order online and choose from hundreds of farm products, **WE SHIP.** Visit our farm store. 694 Country Lane Paradise, PA. (717) 442-9208 info@dutchmeadowsfarm.com – www.DutchMeadowsFarm.com

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SHIP. Oberholtzer at Hilltop Meadow Farm. (570) 345-3305.

Thousand Hills Grazing (in Central PA) is taking orders for nutrient dense pastured poultry (soy free and non-GMO) and grassfed beef moved daily to fresh pasture. Contact Cassie Seppanen at 717-636-0299 or visit bcseppanen.wixsite.com/thousandhillsgrazing for more information.

Raw milk cheese from our grass-fed Jerseys, made on our family farm with Celtic sea salt. No grain feed. Also grass-fed beef and pastured chickens, turkeys and eggs. All soy-free, no hormones or synthetics. On-farm sales, **will ship cheese.** Wil-Ar Farm, Newville, PA (717) 776-6552.

Wentworth Dairy. Grass-fed raw milk, raw milk cheese, free-range eggs, pastured pork, grass-fed beef. We are located 8 miles from MD state line. Family farm, all natural grass-based, Ayrshire and Jersey cows. Rob & Bonnie Wentworth, 1026 River Road, Quarryville, PA 17566, (717) 548-3896.

VA

Salatin family's Polyface Farm has salad bar beef, pigaerator pork, pastured chickens, turkeys and eggs, and forage-based rabbits. Near Staunton. Some delivery available. Call (540) 885-3590 or (540) 887-8194.

Raw milk, cheese, butter, etc. from 100% grass-fed Jersey cows. 100% grass-fed beef and lamb. Pastured pork, chicken and turkey (soy-free options available). Fermented veggies and more! Have dropships in select areas or **can ship.** Call for details. Pleasant Pastures (717) 768-3437.

WY

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Natural insect control. Bat House kits. Easy assembly. \$30.00. 2, or more, \$25.00 each. Also beautiful, handcrafted, heirloom toys. Train made with 4 different hardwoods. \$40.00. Cherry pull duck or rabbit. \$28.00. All post paid. Many others. Wholesale to gift shops. Keim's Wood Handcrafts, 455 Argersinger Rd Fultonville, NY 12072.

DVDS

DVD "Nourishing Our Children" recently launched a DVD that may be used for one's self-education or to present to an audience. You will learn how to nourish rather than merely feed your family. nourishingourchildren.org/DVD-Wise.html **Free shipping!**

EMPLOYMENT OPPORTUNITIES

A wonderful WAPF-inspired fine dining restaurant is now recruiting talent. Farmageddon filmmaker, Kristin Canty is hiring for her new venture, Woods Hill Table, a traditional foods restaurant in her home town of Concord, MA. To our knowledge, this is the first-ever WAPF inspired fine dining restaurant. From frying in beef tallow, soaking grains, and raw fermented foods to serving kombucha flavor of the day on tap, Kristin is implementing the WAPF dietary guidelines and changing restaurant history. If you'd like to be a part of this exciting culinary project,

her Concord Restaurant Group is looking for a service manager, servers, reservationists, chefs and line cooks. Contact Kristin@woods hilltable.com; 24 Commonwealth Ave, Concord, MA, 01742; woodshilltable.com, jobs@woodshilltable.com, (978) 369-6300.

FARM FAMILY OR INDIVIDUAL needed to help set up and live on pristine 164 acre former raw dairy farm and cheese making facility in SW Washington state. If interested, please send email to Lawren@wellaroo.com with subject line: "dairy farm".

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We are seeking a middle aged couple to move into our log home and care for our small herd of dairy cattle. Knowledge of organic farming, animals and cheese making helpful. Does this look like something you could enjoy? Come give it a try! - Commit to 6 months or longer if both couples find a good fit. Couple mid 60's due to health reasons need a sabbatical from our new and fast growing A2 raw milk micro-dairy in Wyoming. For more information send email w/ resume diamondsretreat@gmail.com; diamondsretreat.com.

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VIROQUA NUTRITION COUNSELING is a traditional foods-based practice in South-west Wisconsin. Laura Poe, RD is a holistic dietitian, culinary instructor and WAPF member. In-person or distance consultations available. Email Laura at laurapoerd@gmail.com for more information or to schedule an appointment. Initial consults are \$100, \$75 for follow-ups.

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WAPF RESEARCH

STUDY ON HEALTHY BABIES: Johanna M. Keefe, MS, RN, GAPs, Advanced Holistic Nurse, & Gena Mavuli, MA, NC are seeking volunteers for a PhD research project in Transformative Studies through CIIS (California Institute for Integral Studies). If you have had a healthy baby using the WAPF dietary guidelines, they would like to hear from you. They would like to interview you by Skype, Facetime, or in person if you are located in New England, northern California or North Carolina—<https://realfoodsuccesstories.wordpress.com/>, growingsuccesstories@gmail.com, (978) 290-0266.

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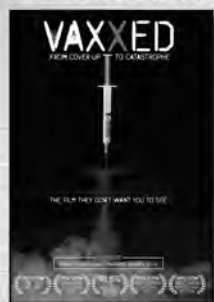
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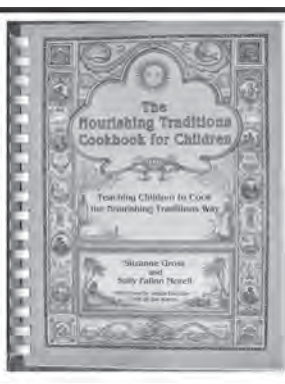
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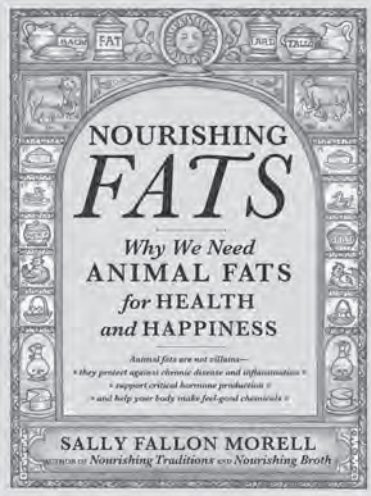


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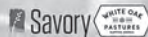
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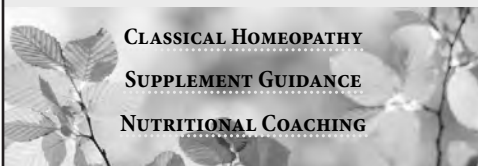


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