

Detoxing Chemicals and Pollutants for Optimal Health

Contributed by Forrist Lytehaause
Thursday, 30 March 2006
Last Updated Thursday, 30 March 2006

Detoxing Chemicals and Pollutants for Optimal Health
by Jeff Morris

Are your patients toxic? The answer increasingly appears to be yes-and your job, in order to maintain optimal health and reduce the incidence of the diseases of aging, is to detoxify them. That conclusion is one being reached by more and more anti-aging practitioners, and achieves particular resonance with Rashid O. Buttar, D.O. of Cornelius, NC, and Robert A. Nash, M.D. of Virginia Beach, VA.

"I can now very comfortably and definitively state to you," says Dr. Buttar, "that, in my opinion, based on the evidence, every single chronic insidious disease process is related to one word: toxicity. You cannot address the issues of aging unless you address detoxification." Dr. Buttar, board certified and a diplomat in preventive medicine and clinical metal toxicology, and Vice-Chairman of the American Board of Clinical Metal Toxicology, contends that he only recently arrived at this conclusion. "Five years ago I wouldn't have said this, even a year ago I wouldn't have said it. But the more success we've had, the clearer it has become: All chronic disease is toxicity. You get rid of the toxicity and you put out the fire. You may need to rebuild afterward, but you must put the fire out. Conventional medicine is just covering your eyes so you don't see the fire."

Dr. Nash, who is board certified in neurology, pain medicine, and chelation therapy and is Chairman of the American Board of Clinical Metal Toxicology, concurs, though perhaps not 100 percent. "Most of the diseases of aging-vascular, most cancers, arthritis and others-have been shown to be associated with toxic metals and persistent organic pollutants. Vascular diseases, stroke, heart attack, plus most of the cancers and macular degeneration, have been directly linked to lead. That's just lead," notes Dr. Nash.

And "just lead" is but a minor fraction of the toxic soup in which we have all come to stew. As Walter J. Crinnion, N.D., chairman of the department of environmental medicine at Southwest College of Naturopathic Medicine, Phoenix, wrote six years ago, "Chemical compounds ubiquitous in our food, air, and water are now found in every person. The bioaccumulation of these compounds in some individuals can lead to a variety of metabolic and systemic dysfunctions, and in some cases outright disease states." (Altern Med Rev 2000, 5(1): 52-63) Dr. Crinnion wrote that some individuals appear to be less able to clear the daily chemical exposure from the body than others, leading to a total load of toxins that exceeds the ability of the body to adapt; at that point, damage to certain organ systems can occur. "The systems most affected by these xenobiotic compounds include the immune, neurological, and endocrine systems." Immunotoxicity, according to Dr. Crinnion, may be the major factor in the increasing rates of asthma, allergies, cancers, and chronic viral infections. But the effects are widespread: "Neurological toxicity can affect cognition, mood, and cause chronic neurological illnesses. Endocrine toxicity can affect reproduction, menses, libido, metabolism, stress-handling ability, glucose regulation, and other important functions."

A 2003 U.S. study by the Centers for Disease Control revealed the presence of 116 chemicals-some of them banned for more than two decades because of toxicity-in people of all ages. In July 2005, the CDC released the third National Report on Human Exposure to Environmental Chemicals, which the organization stated was "the most extensive assessment ever made of the exposure of the U.S. population to chemicals in our environment." CDC claims that its Environmental Health Laboratory at the National Center for Environmental Health (NCEH), using "advanced laboratory science and innovative techniques," has been in the forefront of efforts to assess people's exposure to environmental chemicals. "CDC's highly trained laboratory scientists have built on more than three decades of experience in measuring chemicals directly in people's blood or urine, a process known as biomonitoring." While presenting first-time exposure information for 38 of the 148 chemicals included, the CDC makes clear that "the measurement of an environmental chemical in a person's blood or urine does not by itself mean that the chemical causes disease ... separate studies of varying exposure levels and health effects are needed to determine which blood or urine levels result in disease." However, according to Dr. Buttar, "the number one concern among scientists at CDC, which they cannot say publicly, is mercury; number two is arsenic."

The CDC report also makes an important distinction: that the level of chemicals found within the body is a result of the cumulative impact of many different types of exposure. "Concentrations of environmental chemicals in blood or urine are not the same as those in air, water, food, soil, or dust. For example, a chemical concentration of 10 μg/L in water does not produce a level of 10 μg/L in blood or urine. Blood or urine levels may reflect exposure from one or more sources, including air, water, food, soil, and dust. Levels of a chemical in blood and urine are determined by how much of the chemical has entered the body through all routes of exposure, including ingestion, inhalation, or dermal absorption,

and how the chemical is distributed in body tissues, transformed into metabolites, and eliminated from the body." Not only does this reinforce the concept that environmental pollutants are ubiquitous in our environment, it also makes the findings more useful from a health standpoint: "Biomonitoring measurements are the most health-relevant assessments of exposure because they measure the amount of the chemical that actually gets into people from all environmental sources combined. With a few exceptions, it is the concentration of the chemical in people that provides the best exposure information to evaluate the potential for adverse health effects," notes the CDC.

The implications of multiple-source exposure are disturbing. Britain's Environmental Toxins Foundation (ETF) states that "more and more research [is] pointing towards mounting evidence of structural and genetic damage, potentially caused to the human morphology, through the huge influx of chemical agents found in the air, soil and water today... As more and more people are made aware of the implications from the accumulation of varying levels of different chemicals in our bodies, the need to monitor and curb the influx of these agents permeating into our daily lives, becomes seemingly obvious. An influx of agents absorbed, ingested and inhaled from the food we eat, the water we drink and from the air we breath... this very crucial issue of: chronic sub-lethal poisoning to our bodies from the: inhalation, ingestion and absorption of heavy metals, inorganic and organic chemical compounds which are increasingly prevalent in our modern environment."

In a paper published in *Alternative Therapies*, July/August 2005, "Metals in Medicine," Dr. Nash sums up recent developments in his specialty, metal toxicity: "During the past five years, the understanding of vascular disease has changed. Vulnerable plaque has replaced stenotic lesion as the main cause of vascular problems. Questions about the long-term benefits of coronary artery bypass grafting (CABG) surgery have been raised. Metals have been implicated in many of the diseases of aging as well as in neurodevelopmental diseases and autism spectrum disorders. The American Board of Chelation Therapy (ABCT) has formally changed its name to the American Board of Clinical Metal Toxicology (ABCMT) because of the new scientific association of toxicant metals with multiple diseases." Dr. Nash also explains that with the advent of the industrial revolution, the presence of many metals, such as lead and mercury, in the environment has increased. "Tobacco, which tends to bio-concentrate cadmium, is a major producer of metal. Arsenic has been used in the past in agriculture. Forest fires release metals, especially mercury, from stable seleno-mercurial compounds that are extraordinary stable in the tree during its life. Volcanoes also spew out copious amounts of mercury. One study done with ice core drilling from a glacier in northwest Wyoming collated every major volcanic eruption with a heavy level of mercury. Nature acts as our best filter, with plant life and trees trapping many toxins, including toxicant metals. Between nature and man, we have polluted the planet. Man's pollution is by far the most toxic. We are now paying a price for our environmental neglect. That price appears to be the increasing diseases of aging, such as vascular disease, congestive heart failure, and cancers."

Evidence of the role of environmental toxins in disease continues to pile up. A report detailing new links between environmental toxicants and breast cancer, "State of the Evidence 2004: What Is the Connection Between the Environment and Breast Cancer?" concluded that exposure to synthetic chemicals and radiation has contributed more than previously thought to the rising incidence of breast cancer. The report was jointly released October 7, 2004 by the Breast Cancer Fund, a non-profit environmental health organization, and Breast Cancer Action, a non-profit national education and advocacy organization. It contained new evidence from 21 research studies published since February 2003 adding to existing evidence linking toxicants in the environment to breast cancer, and was peer-reviewed by six leading scientists, including a noted scientist from the International Agency for Research on Cancer, a division of the World Health Organization. According to the report, in the past 50 years, a woman's lifetime risk of breast cancer more than tripled in the United States, to one in seven today. This trend parallels a staggering increase of chemicals in the environment: the report says that "compelling scientific evidence" points to some of the 85,000 synthetic chemicals in use today as contributing to breast cancer by altering hormone function or gene expression. Fewer than one in 10 cases of breast cancer occurs in women born with a genetic predisposition for the disease. As many as 50 percent of breast cancer cases remain unexplained by personal characteristics and other traditionally accepted risk factors; epidemiologists and other scientists increasingly believe many cases are linked to environmental factors. "This [is] the clearest evidence yet that the rise in breast cancer incidence is linked to exposure to radiation and toxic chemicals," said Nancy Evans, a health science consultant for the Breast Cancer Fund and the editor of the report. "Medical X-rays, pesticides, household cleaning products, personal care products and some pharmaceuticals-these are just a few of the multiple and chronic exposures contributing to this epidemic."

Other studies continue in an attempt to determine whether endometriosis, a source of chronic pelvic pain in women, may be caused by environmental agents, including exposure to man-made chemicals such as dioxin and PCBs. As far back as 1992, research showed that endometriosis in monkeys could be caused by exposure to dioxin.

Lynn Tondat Carter, Ph.D., whose doctorate is in physiological psychology and is Professor of Psychology at the University of Massachusetts, writes in *The Celestine Journal* that toxins that directly affect the nervous system, called neurotoxins, also affect our immune functions, since the nervous system is intricately connected to the immune system: "Thus, our very ability to think and feel normally can be drastically affected by exposure to toxins. It does not take a giant leap of logic to realize that we could soon be in such a state of toxic poisoning that we would be unable to “problem-solve' our way out." Continues Dr. Carter:

In 1989 alone, EPA estimates, in its Toxic Release Inventory National Report, that 1.9 billion pounds of chemicals were dumped into our nation's water systems. In that same year, 2.4 billion pounds of chemicals were released into the atmosphere; with the total chemical attack on the environment estimated at 5.7 billion pounds. This is only in one year. According to a recent report by the National Research Council, 70,000 of the chemicals in commercial use today have not even been tested for neurotoxic effects.

Known neurotoxins that we are most commonly exposed to are lead, mercury, cadmium and pesticides. Most of these toxins are colorless and odorless, making sensory detection impossible. While sudden poisoning can result in immediate reactions that are traceable to the source, the symptoms of poisoning from today's pollution may come on more slowly due to a gradual build-up.

Here is just a partial list of common sub-clinical symptoms of toxicity: fatigue, lethargy, depression, headaches, allergies, chronic infection, frequent colds, nervousness, sudden anger, sensitivity to perfume/odors, memory loss and joint pains. Because so many of these symptoms could stem from a multitude of other causes, often toxicity is not readily suspected. With continued exposure, neurotoxins may trigger the expression of a disease for which one has a genetic predisposition. In general, it is thought that toxins pose the most dangerous risk for our children.

Dr. Buttar points to a July 2005 paper, released by the Environmental Working Group (www.ewg.org), that confirms the worst fear: that the average person does not need to spend years being exposed to environmental pollutants to be affected-nor does the average child. In "Body Burden-The Pollution in Newborns," EWG reports, "Not long ago scientists thought that the placenta shielded cord blood-and the developing baby-from most chemicals and pollutants in the environment. But now we know that at this critical time when organs, vessels, membranes and systems are knit together from single cells to finished form in a span of weeks, the umbilical cord carries not only the building blocks of life, but also a steady stream of industrial chemicals, pollutants and pesticides that cross the placenta as readily as residues from cigarettes and alcohol..." Specifically, says the EWG:

In a study spearheaded by the Environmental Working Group in collaboration with Commonwealth, researchers at two major laboratories found an average of 200 industrial chemicals and pollutants in umbilical cord blood from 10 babies born in August and September of 2004 in U.S. hospitals. Tests revealed a total of 287 chemicals in the group. The umbilical cord blood of these 10 children, collected by Red Cross after the cord was cut, harbored pesticides, consumer product ingredients, and wastes from burning coal, gasoline, and garbage.

Of the 287 chemicals we detected in umbilical cord blood, we know that 180 cause cancer in humans or animals, 217 are toxic to the brain and nervous system, and 208 cause birth defects or abnormal development in animal tests. The dangers of pre- or post-natal exposure to this complex mixture of carcinogens, developmental toxins and neurotoxins have never been studied.

EWG goes on to explain why the presence of these substances in umbilical cord blood has such profound and long-lasting implications:

Chemical exposures in the womb or during infancy can be dramatically more harmful than exposures later in life. Substantial scientific evidence demonstrates that children face amplified risks from their body burden of pollution; the findings are particularly strong for many of the chemicals found in this study, including mercury, PCBs and dioxins. Children's vulnerability derives from both rapid development and incomplete defense systems:

- A developing child's chemical exposures are greater pound-for-pound than those of adults.
- An immature, porous blood-brain barrier allows greater chemical exposures to the developing brain.
- Children have lower levels of some chemical-binding proteins, allowing more of a chemical to reach "target organs."
- A baby's organs and systems are rapidly developing, and thus are often more vulnerable to damage from chemical exposure.
- Systems that detoxify and excrete industrial chemicals are not fully developed.
- The longer future life span of a child compared to an adult allows more time for adverse effects to arise.

Most disturbing about these findings to Dr. Buttar is that in every case, mercury was found. The presence of mercury is attributed to pollution from coal-fired power plants, mercury-containing products, and certain industrial processes. It accumulates in seafood. And, though you might think the mercury problem has been abated, Dr. Nash cites a November 17, 2004 Wall Street Journal article by Matt Pottinger, Steve Stecklow and John J. Fialka describing the high levels of mercury that are now being spread, particularly by massive industrial development in China. As the article states, "Mercury and other pollutants from China's more than 2,000 coal-fired power plants soar high into the atmosphere and around the globe on what has become a transcontinental conveyor belt of bad air. North America and Europe add their own dirty loads to the belt. But Asia, pulsating with the economic rebirth of China and India, is the largest contributor." It further explains:

Scientists long assumed mercury settled into the ground or water soon after it spewed forth as a gas from smokestacks. But using satellites, airplanes and supercomputers, scientists are now tracking air pollution with unprecedented precision,

discovering plumes of soot, ozone, sulfates and mercury that drift eastward across oceans and continents....The U.S. Environmental Protection Agency recently reported that a third of the country's lakes and nearly a quarter of its rivers are now so polluted with mercury that children and pregnant women are advised to limit or avoid eating fish caught there. Warnings about mercury, a highly toxic metal used in things ranging from dental fillings to watch batteries, have been issued by 45 states and cover four of the five Great Lakes. Some scientists now say 30% or more of the mercury settling into U.S. ground soil and waterways comes from other countries - in particular, China....Mining, waste incineration and coal combustion emit the metal in the form of an invisible gas. After it rains down and seeps into wetlands, rivers and lakes, microbes convert it into methylmercury, a compound that works its way up the food chain into fish and eventually people.

The EWG report states, "Methylmercury exposure in the womb causes measurable declines in brain function in children exposed to levels corresponding to 58 parts per billion in maternal blood (NAS 2000b). Researchers in the Netherlands found a doubling in the risk of heart attacks and death from coronary heart disease at methylmercury hair levels of 2 mg/kg, which corresponds to about one fifth the assumed safe maternal blood level (Salonen et al. 1995). Increased diastolic and systolic blood pressure and decreased heart rate variability in developmentally exposed children have also been observed at doses below what the EPA considers a safe maternal blood level (NAS 2000b, Sorensen et al. 1999)." The Wall Street Journal reinforces this:

The dangers of significant methylmercury exposure to the nervous system are well documented, particularly in fetuses and children. Permanent harm to children can range from subtle deficits in memory and attention span to mental retardation. In January [2004], EPA scientists released research indicating that 630,000 U.S. babies born during a 12-month period in 1999-2000 had potentially unsafe levels of mercury in their blood - about twice as many babies as previously estimated.

Among the possible implications of mercury and other toxins cited by EWG:

Major nervous system disorders. Several recent studies have determined that the reported incidence of autism is increasing, and is now almost 10 times higher than in the mid-1980's (Byrd 2002, Chakrabarti and Fombonne 2001). The number of children being diagnosed and treated for attention deficit disorder (ADD) and attention deficit hyperactivity disorder (ADHD) has also increased dramatically in the past decade (Robison et al. 1999, Robison et al. 2002, Zito et al. 2000). The causes are largely unexplained, but environmental factors, including chemical exposures, are considered a likely contributor. Environmental factors have also been increasingly linked with Parkinson's disease (Checkoway and Nelson 1999, Engel et al. 2001).

In "Metals in Medicine," Dr. Nash goes into more detail:

Mercury is known to affect the brain and has been associated with the causation or exacerbation of degenerative diseases such as amyotrophic lateral sclerosis, Alzheimer's disease, multiple sclerosis, and Parkinson's disease... mercury is associated with autism, the degenerative diseases of the brain mentioned above, neurodevelopmental diseases, vascular diseases, nephrotoxicity, and cancer. [Clarkson TW, Magos L, Myers GJ. The toxicology of mercury-current exposures and clinical manifestations. *New Engl J Med.* 2003; 349(18):1731-1737] points out that "the fetal brain is more susceptible than the adult brain to mercury induced damage." Specifically, methylmercury "inhibits the division and migration of neuronal cells" and "disrupts the cytoarchitecture of the developing brain." Recent studies have correlated the explosive increase of autism with thimerosal, an additive to many vaccines that contains 50% ethyl mercury.

This issue of a connection between thimerosal and autism has been of particular concern to both Dr. Buttar and Dr. Nash. As we reported in the June 14, 2005 issue of the e-Journal, Dr. Buttar testified in 2004 before a congressional subcommittee hearing sponsored by Rep. Dan Burton (R-IN) about the connection between heavy metals-particularly mercury-and autism. Dr. Buttar discussed the chelation therapy he had offered his own son, who had a profound developmental delay and is now an example of how autism can be fully and permanently reversed in some children. Dr. Nash was one of a number of experts who joined with Rep. Burton's House Government Reform Subcommittee on Human Rights and Wellness to refute the findings published in the Institute of Medicine (IOM) Immunization Safety Review Committee's Vaccines and Autism report of May 18, 2004. In that report, the eighth and final in a series designed to examine the safety of vaccines that contain thimerosal, the IOM Committee concluded, "The body of epidemiological evidence favors the rejection of a causal relationship between thimerosal-containing vaccines and autism," even though the Committee had in a 2001 report called such a causal relationship, "biologically plausible." The Committee based its final conclusions on their review of approximately 10 previously conducted epidemiological studies. Of those roughly 10 studies, 5 reported probable links between thimerosal-containing vaccines and autism, yet those 5 were summarily dismissed because the Committee determined the manner in which they were conducted was flawed. At that time, Rep. Burton stated, "I believe the [IOM] findings are heavily biased, and unrepresentative of all the available scientific and medical research. I think it is highly irresponsible for the IOM Immunization Safety Review Committee to purport definitive findings to the American public, which are based on selective scientific studies that are greatly flawed to begin with."

The NIH describes chelation is a chemical process in which a substance is used to bind molecules, such as metals or

minerals, and hold them tightly so that they can be removed from a system, such as the body. In medicine, says the NIH, chelation has been scientifically proven to rid the body of excess or toxic metals. For example, a person who has lead poisoning may be given chelation therapy in order to bind and remove excess lead from the body before it can cause damage. Chelation therapy has been a keystone of Dr. Buttar's treatment program, with which he has reported great success in improving the prospects for autistic children. His Advanced Concepts in Medicine clinic specializes in treating cancer, heart disease and other chronic conditions in patients refractory to conventional treatments, with a special emphasis on the interrelationship between metal toxicity and insidious disease processes. With his newfound conviction that every chronic disease is related to toxicity, Dr. Buttar's treatment philosophy is likely to take on even greater significance. As he puts it, "These aren't my theories, these things have been out there. What we have done is taken that hypothesis and figured out how to remove those toxins. The problem is the simplicity of it makes most people say it can't be-it's more complicated." Dr. Buttar does not limit toxicity to only metal and chemical pollutants, however. He categorizes toxins into five groups, of which the first three, he says, are measurable, with the last two being "more esoteric":

1. Metals - The CDC list of metal pollutants includes

Antimony
Barium
Beryllium
Cadmium
Cesium
Cobalt
Lead
Mercury
Molybdenum
Platinum
Tungsten
Thallium
Uranium

2. Organic pollutants - benzenes, hydrocarbons, etc.

3. Opportunistics - bacteria, virus, yeast; these need an opportunity to set up house, and find it in immune systems damaged from toxicity groups 1 and 2.

4. Energy - electromagnetics cause a disruption in our resonance; microwaves are the most dangerous.

5. Spiritual, psychological, emotional - someone who is not "whole," lacking something. Explains Dr. Buttar, "We've gotten cancer patients to the point that everything is fine, but their 'time is up'; patients who on autopsy show no evidence of cancer, but still died."

Dr. Nash noted in "Metals in Medicine" that the effects of toxicant metals on human health have been reported in peer-reviewed literature with increasing frequency; they are present in many diseases of aging, especially vascular diseases. And though historical experience of toxicologists who treated individuals poisoned by acutely toxicant metals is waning-very few of these cases have been reported during the past 30 years in the U.S.-researchers with a special interest in clinical metal toxicology have noticed a clinical correlation between metal detoxification by chelation therapy and clinical improvement of vascular diseases.

In 2002, the National Center for Complementary and Alternative Medicine (NCCAM) and the National Heart, Lung, and Blood Institute (NHLBI), both components of the National Institutes of Health (NIH), announced the Trial to Assess Chelation Therapy (TACT). TACT is the first large-scale, multicenter study to determine the safety and efficacy of EDTA chelation therapy for individuals with coronary artery disease (CAD), the most common form of heart disease. The principal investigator for the trial is Gervasio A. Lamas, M.D., director of cardiovascular research and academic affairs at Mount Sinai Medical Center-Miami Heart Institute, Miami Beach, a board-certified cardiologist and an associate professor of medicine at University of Miami School of Medicine. Dr. Nash is serving on the NIH Data and Safety Management Board of the study-"I am one of seven on the panel to oversee this study, for safety reasons," he says. Investigators enrolled the first participants in September 2003. The study will take approximately five years to complete.

Dr. Nash says he can only speak with authority on metal detoxification, but in his view, the "big 4" metal toxins are lead, mercury, arsenic, and cadmium. "All four are easily detected by provoked urine testing," says Dr. Nash. "We're finding in excess of 95 percent of the population over 50 has large amounts of toxic metals in the body when provoked urine testing is performed." The treatment he recommends is to detoxify the body of these metals. Dr. Nash hopes the group of professionals to which he belongs, called clinical metal toxicologists, can provide better disease management by using a new standard of preventive care.

Look at the cost of treatment. Most of the cost-up to 60 percent of Medicare-goes to heroic efforts during the last six months of life. Most of us feel that money should be spent on true diagnosis as well as better disease management. We feel that we need to detoxify as best we can, and provide patients with adequate micro and macro dietary intake to provide building blocks to build up their own immune systems.

Of particular concern to those treating the diseases of aging is the possible connection between mercury and Alzheimer's disease. Dr. Nash notes,

Some of the [mercurous] vapors [from dental amalgams] reach the brain via the ethmoid sinuses. Is it coincidental that Alzheimer's disease has shown degenerative tracts often following the olfactory connections?...There is increasing evidence of mercury associated with Alzheimer's disease. Dr. Boyd Haley, Chairman of the Department of Biochemistry, University of Kentucky, has published multiple papers on his research since the late 1980s. He has successfully reproduced the changes seen in Alzheimer's disease in the brain homogenate of normal brains with the addition of mercury, in the form of both mercury chloride and thimerosal.

Some people hypothesize that mercury may contribute to autism on one end of the lifespan and Alzheimer's on the other end, Dr. Nash told us. "I'm not convinced that mercury is the sole cause, but other factors may be involved. It could be a genetic thing. It appears there is a third of the people who are genetically prone to not getting rid of the metals, who may be most susceptible for Alzheimer's disease." In his article, Dr. Nash goes on to conclude,

The work of Haley, Aposhian, Godfrey, and others makes a strong case that mercury may cause or at the very least exacerbate Alzheimer's disease. Studies looking at toxic metals, especially mercury, as a possible cause for Alzheimer's disease need to be conducted. The clinical metal toxicologists have clinical experience that early metal detoxification will often stabilize and even reverse early Alzheimer's disease. More research is needed.

As with other integrative practitioners, Dr. Nash sees the necessity for a fundamental change in the way medicine approaches disease.

We need to find out what is causative of diseases of aging. This will take time, but we have not had an adequate prevention of diseases. Most patients who see doctors do not have diseases, they have symptoms. Doctors know symptoms don't kill folks, but they placate patients with medications to ease symptoms. The mechanism is straightforward; in the clinical setting you can shift the physician's mindset from only treating the symptoms of disease, to understand that these diseases have correlates that we have never recognized.

Dr. Nash believes that recognition of causative factors of disease is a trend that is spreading worldwide. In "Metals in Medicine" he concludes,

Toxicant metals are increasingly being associated with multiple disease states...The Centers for Medicare and Medicaid Services (CMS) have authorized payment for in-office, intravenous metals detoxification in the District of Columbia, Delaware, Maryland, Texas, and Virginia, as well as the Indian Health Service. This is a great opportunity to collect meaningful data directly from patients. It is known that dialysis can be delayed at least two or three years by repeated in-office, intravenous metals detoxification; it is hoped that all prospective dialysis patients would be tested for toxicant metals and treated appropriately. If detoxification of toxicant metals can become the standard in time, our health may improve markedly. Could toxicant metals be a diagnosable and treatable risk factor in many of the diseases affecting this nation? The clinical metal toxicologists are the experts in low-dose, chronic accumulation of toxicant metals and the symptomatic reversal observed with treatment. Many clinical metal toxicologists are participating in the NIH's TACT study. More research is needed in the basic science mechanisms of toxicant metals and common diseases. Additional clinical research, besides the TACT study, is also needed."

"I believe toxicant metals and their detection and detoxification will be one of the exciting new fields in medicine. I have great hope for the future of medicine," adds Dr. Nash.