New Age Medical

Looking Good & Feeling Good

TOXIC HEAVY METALS
MEDICAL CONSIDERATIONS

STOP!! Think for a minute… What you are going to read in the next 30 seconds is going to change your life..

Ask yourself 4 questions:

1) What medications do you take?
2) Does the medication treat the symptoms (ex: lower blood pressure, remove itchiness, help you sleep, relieve depression)?
3) What are you doing to cure the disease? (ex: eliminate the cause)
4) Ask yourself… What is the cause? (Don't all diseases have a cause?

ALL disease is caused by one of two things:

a) Exposure to something:

1. chemical
2. heavy metal
3. parasite
4. virus
5. bacteria
6. allergen
7. radiology
8. mutated food
9. excess mineral, water, fat or amino acid

that your body could not defend against; because:

i. you have encountered an excessive amount of it or
ii. was exposed to it over a long period of time or
iii. it was a very dangerous substance or
iv. your body is immuno-compromised because
    a. of a genetic defect
    b. poor nutritional status
    c. inordinate emotional stress
    d. lack of sleep
    e. lack of physical exercise
    f. affected by multiple exposures to toxins, parasites, viruses, bacteria or allergens at same time
    g. or a pre-existing illness.

b) Your body or part of your body was injured by some sort of trauma (ex: obesity leading to organ damage).

We believe that the vast majority of disease is caused by environmental pollutants, especially the diseases that that were almost totally nonexistent 50 years ago. The worst offenders are toxic heavy metals. Theoretically, if you remove the cause… might not your body heal itself?

Heavy metals stay in your system decades after exposure!

Unexplained Illnesses?
Do you have ADD, Alzheimer's, anemia, autism, bone pain, muscle aches, weakness, speech problems, osteoporosis, impaired immune system, impaired kidney function, impaired iron absorption, digestive problems, depression, loss of appetite, abdominal pain, nausea, diarrhea, constipation, malaise, fatigue, loss of sex drive, insomnia, metallic taste, mood swings, cancer, migraines, tremors, psychological changes, irritability, headache, short-term memory loss? These symptoms have all been linked to toxic heavy metals.

The most common metals we see in patients are lead, mercury, cadmium and aluminum. These metals are so chemically similar to essential nutrients, that when are bodies are deficient in these nutrients our bodies quickly absorbed them only to get stuck in our system (mercury is chemically similar selenium; lead is chemically similar calcium; cadmium is chemically similar to zinc and aluminum is chemically similar to magnesium).

With the enormous amounts of toxic metal in the environment and the widespread nutrient mineral insufficiencies of the modern western diet, assessing patients for element imbalances and excesses is an increasingly important tool in the diagnosis of chronic illness. A comprehensive elemental analysis may provide important insights into treatment strategies for conditions ranging from depression and behavior disorders to cardiovascular and neurological illnesses. Our clinic has found the assessment extremely useful in cases where no other etiology was readily apparent for an illness or disease, as well as in cases where multiple causes act in synergy.

The vast majority of chemical reactions that govern cellular processes are in turn regulated by enzymatic reactions. Enzyme catalyst most often requires mineral cofactors to operate. Magnesium and zinc, for instance, are cofactors in hundreds of enzymatic reactions. Toxic elements, on the other hand, can interfere with enzymatic reactions and disrupt cellular activities. Thus, element insufficiencies or excesses have a significant impact on health.

Unfortunately, nutrient element deficiencies are pandemic in our society. Numerous government surveys have reported multiple mineral deficiencies in a high percentage of participants. For example, studies show that more than one-third of Americans consume less than 100% of the RDA for calcium. With the enormous amounts of toxic compounds used in industry, noxious elements are also a widespread, if less recognized, threat to health.

Minerals can be stored in various tissues where they may cause damage or metabolic interference in the depot structures (kidney, bone, nerve tissue) without causing particularly elevated blood levels. Toxic elements are often cleared rapidly from the blood, leaving only a relatively brief time window in which blood levels reflect actual body burden. Cadmium, for example, has a biological half-life in humans of greater then 10 years. Therefore, the cumulative deposition of cadmium and other elements can be of significant concern.

Our clinic provides provocative testing which can help determine such instances of toxic element deposition and provide us with clear therapeutic direction and accurate monitoring of treatment response. In this technique, a strong excretory inducer is administered to the patient after a pre-treatment urine sample is obtained. After a chelation agent is infused, a second urine sample is collected and the post-treatment

excretion of elements calculated. This method allows a sampling of the stored deposits of toxic metals which have been sequestered from the blood.

Organs affected by toxic metals

BRAIN: Lead, Mercury, Manganese, Aluminum

THYROID: Cobalt, Iodine, Selenium

HEART: Calcium, Magnesium, Nickel

RESPIRATORY PASSAGES: Arsenic, Cadmium, Nickel, Chromium

LIVER: Selenium, Nickel, Chromium, Arsenic

KIDNEYS: Mercury, Cadmium, Arsenic

FAT: Cadmium

BONE: Cadmium, Lead

NERVES: Cadmium, Lead, Mercury

SKIN: Arsenic

Aluminum
Sources: Antacids, aspirin, auto exhaust, cans, ceramics, construction materials, cookware, cosmetics, dental amalgams, deodorants, medication, nasal spray, pesticides, pollution, cigarettes, toothpaste.
Health Risks: Alzheimer's, muscle aches, weakness, bone pain, speech problems, anemia, osteoporosis, impaired immune system, impaired kidney function, impaired iron absorption, digestive problems, migraines, Fibromyalgia.

Lead
Sources: Ash, car exhaust, batteries, cigarettes, power plants, inks, cosmetics, dust, glass production, hair dyes, air pollution, lead pipes, mascara, metal polish, newsprint, paint, pencils, pesticides, putty, rain water, PVC, produce, refineries, smelters, tin cans, toothpaste, toys.
Health Risks: depression, loss of appetite, abdominal pain, nausea, diarrhea, constipation, and muscle pain, malaise, fatigue, loss of sex drive, insomnia, metallic taste, mood swings, migraines, Fibromyalgia.

Mercury
Sources: Adhesives, antiseptics, thermometers, batteries, baby powder, cosmetics, dental amalgams, diuretics, fabric softeners, felt, floor waxes, fungicides, germicides, industrial waste, insecticides, laxatives, lumber, paper & chlorine manufacturing, medications, vaccines, paints, paper products, pesticides, polluted water, contact lens solution, suppositories, tanning leather, tattoos, wood preservatives.

Health Risks: ADD, Alzheimer's, Autism, cancer, migraines, tremors, psychological changes, insomnia, loss of appetite, irritability, headache and short-term memory loss, Fibromyalgia.

Cadmium
Sources: Cigarettes, fruits and vegetables, shellfish, organ meats, drinking water, air, ice cube trays, pitchers, bowls, jewelry, stained glass, paint,
batteries, fertilizers.

Health Risks: cancer, migraines, tremors, psychological changes, insomnia, loss of appetite, irritability, Fibromyalgia, kidney & liver disease, vomiting, diarrhea, abdominal pain, choking sensation, pneumonitis, pulmonary edema, breathlessness, coughing, anemia. alopecia, arthritis, learning disorders, migraines, growth impairment, emphysema, osteoporosis, loss of taste and smell, poor appetite, and cardiovascular disease.

Heavy metal toxicity occurs far more often than one would ever expect. We are exposed to toxic heavy metals on a day-to-day basis from work, eating foods, drinking water and breathing air. Although we may have been exposed decades ago, most of these metals are still lodged in our systems.

Cancer you get 20 years from now; may have been set in motion today.

Traditional blood tests do NOT measure toxins that have seeped into muscles and months and weeks after exposure. Your family doctor probably knows little or nothing about heavy metal toxicity; it is a very specialized field of expertise not supported by the financial concerns that rely on repeat customers buying medications.

The average or mean blood lead level in American adults is 3.6 ug/dl, and anything below 10 ug/dl, is considered to be "normal". But if you compare American adults with blood lead levels in the upper tercile (top 1/3rd), with levels above 3.6 ug/dl, against those whose levels are in the lower tercile, with levels below 1.9 ug/dl, and follow their course over 12 years, you find that the high normal lead individuals are 25% more likely to develop chronic illnesses than are their lower lead colleagues. That's a lot of disease and death associated with blood lead levels well within the normal range.

Our conclusion is that there is no good range for lead; we want to get lead, and any other toxic metals that are in you, our of you. Kids with a blood lead level of 10 ug/dl, have IQs 7 points lower than kids with levels of 0-1 ug/dl.

The most accurate means of assessing your body burden of a given toxic metal would be to biopsy your brain, heart, kidneys, and liver - obviously not practical. Instead we carry out a "biochemical biopsy" or Provocative Challenge - we administer to you a chelating agent, a drug or nutritional agent that binds to, and then removes via the kidneys, the toxic metal in question from your system, and then measure its concentration in a subsequent six-hour urine sample. The amount of metal that we see in the urine sample, your "metal spill", will be a function of your body burden of this metal, the integrity of your excretory routes, the specific chelating agent that we administer, and its dose.

Provocative urine challenge testing is the least invasive and most easily collected way to measure heavy metal toxicity. After a provoking agent either orally or by IV is administered, the provoking agent pulls metals from tissues and bones and allowing it to be voided through the kidney and into urine. The urine is collected and sent to a laboratory for testing.

Heavy metals are dangerous because they bioaccumulate. That means they stay in your body and gradually accumulate.

For example, when animals eat plants, vegetables, fruit or animals that have been contaminated by heavy metals is not excreted by the animals—it accumulates in their tissues. The older the fish and the more contaminated organisms it has consumed, the greater the amount of metals in its tissues. When another animal eats that animal, the accumulated metals are passed up the food chain, eventually becoming hundreds or thousands of times its original concentration.

Any animal at the top of the food chain (humans, polar bears etc.) faces a serious risk of heavy metals poisoning by eating animals that may have eaten other animals with accumulated toxins.

What that means is that the human body is like a sponge. Over time we become more and more saturated with toxic metals. These just don't go away! The mercury we absorbed from playing with a broken thermometer when we were four years old is deep within us. Is there any wonder that the more than 100 new diseases that surfaced in the past 50 years coincides with the increase in pollutants in our water, air and food supplies? US consumers were not only accidentally polluted with toxins—we were purposely injected with vaccines and our cavities were filled with amalgam fillings both of which were known to have mercury as an ingredient.

Heavy Metals cause disease. This is a fact. These toxic substances have no good purpose in your body and there are no safe levels of these toxic metals.

As the metals float around the blood stream and come to the kidneys only to be refused a place to exit because your kidneys can't eliminate the non organic molecules; they float around until they settle into a crevice of some sort (a narrow opening in a capillary, plaque residue lining veins or arteries or are eventually absorbed into our bones, muscles, organs or brain. Without utilizing some sort of chelating agent, which encircles and encompasses the metal molecules, thus disguising them as organic molecules allowing passage through the kidneys, these molecules will stay in the body indefinitely.

Most of these metals are trapped forever and set in motion a cascade of free radicals that cause devastating effects on the most basic human functions resulting in a whole slue of diseases and hindrances to metabolism, cell formation, reproduction, brain and nervous system function. The disease processes are not completely understood but studies indicate that free radical damage is the primary cause for the degenerative disease process.

Precise levels that are toxic to one person are benign to another. When evaluating toxicity one should consider the patient's overall health and what combination of toxicities that specific patient can handle.

The Cleansing Clinic believes that ANY poison is too much poison. Every few years the CDC, the FDA and the EPA determine that previously safe levels of toxins, chemicals and food additives that were considered safe, now play a role in previously unexplained illnesses. Considering, the cause of the vast majority of illnesses are still unexplainable, it seems prudent to presume that toxins known that have no nutritional benefit and proven to cause diseases, should be eliminated completely from your body.

Heavy metal toxicity can result in damaged or reduced mental and central nervous function, lower energy levels, and damage to blood composition, lungs, kidneys, liver, and other vital organs. Long-term exposure may result in slowly progressing physical, muscular, and neurological degenerative processes that mimic Alzheimer's disease, Parkinson's disease, muscular dystrophy, and multiple sclerosis. Allergies are not uncommon and repeated long-term contact with some metals or their compounds may even cause cancer (International Occupational Safety and Health Information Clinic 1999).

Heavy metal toxicity is a clinically significant condition. If unrecognized or inappropriately treated, toxicity can result in significant illness and reduced quality of life. For persons who suspect that they or someone in their household might have heavy metal toxicity, testing is essential.

Heavy metals become toxic when they are not metabolized by the body and accumulate in the soft tissues. Heavy metals may enter the human body through food, water, air, or absorption through the skin when they come in contact with humans in agriculture and in manufacturing, pharmaceutical, industrial, or residential settings. Industrial exposure accounts for a common route of exposure for adults. Ingestion is the most common route of exposure in children (Roberts 1999).

The association of symptoms indicative of ***acute toxicity*** (aka poisoning) is not difficult to recognize because the symptoms are usually severe, rapid in onset, and associated with a known exposure or

ingestion: cramping, nausea, and vomiting; pain; sweating; headaches; difficulty breathing; impaired cognitive, motor, and language skills; mania; and convulsions.

The symptoms of toxicity resulting from ***chronic exposure*** (impaired cognitive, motor, and language skills; learning difficulties; nervousness and emotional instability; and insomnia, nausea, lethargy, and feeling ill) are also easily recognized; however, they are much more difficult to associate with their cause.

Symptoms of chronic exposure are very similar to symptoms of other health conditions and often develop slowly over months or even years. Sometimes the symptoms of chronic exposure actually abate from time to time, leading the person to postpone seeking treatment, thinking the symptoms are related to something else.

Random testing of construction workers, lab technicians, mechanics, factor workers, welders, painters, electricians, pharmacists and people who grew up near chemical plants are all likely to have low levels of toxic metals. Some many never have any symptoms as the metals accumulation develops slowly over time and their diets contain enough antioxidants to fight off the constant steam of free radicals produced by these metals; but others have rapid onset of hypertension, diabetes, Alzheimer's, Parkinson's, Cancer etc., which have no explainable causes.

Everyone who lives in industrialized areas where there is significant pollution NEEDS to be tested.

HIGH RISK EMPLOYMENT:

- **Copper:** Plumbers, electricians, petroleum industry workers, Fertilizer/Pesticide exposure
- **Cadmium:** Mechanics, tire fitters, welders, plumbers, carpet layers, jewelers, toy industry, plastic industry
- **Mercury:** Dental techs, dentists, petroleum workers, gold miners, medical technologists, sugar cane workers
- **Arsenic:** Gold miners, metallurgists, Landscape workers, carpenters, builders, brickies, bore drillers, concrete workers
- **Lead:** Mechanics, plumbers, welders, petroleum workers, painters, renovators, lead lighting, fishermen
- **Aluminum:** Plumbers, ducting installers, aircraft workers, welders, miners and refinery workers

Definition of a Heavy Metal
"Heavy metals" are chemical elements with a specific gravity that is at least 5 times the specific gravity of water. The specific gravity of water is 1 at 4°C (39°F). Simply stated, specific gravity is a measure of density of a given amount of a solid substance when it is compared to an equal amount of water. Some well-known toxic metallic elements with a specific gravity that is 5 or more times that of water are arsenic, 5.7; cadmium, 8.65; iron, 7.9; lead, 11.34; and mercury, 13.546 (Lide 1992).

Arsenic
Arsenic is the most common cause of acute heavy metal poisoning in. Arsenic is released into the environment by the smelting process of copper, zinc, and lead, as well as by the manufacturing of chemicals and glasses. Arsine gas is a common byproduct produced by the manufacturing of pesticides that contain arsenic. Arsenic may be also be found in water supplies worldwide, leading to exposure of shellfish, cod, and haddock. Other sources are paints, rat poisoning, fungicides, and wood preservatives.

Target organs are the blood, kidneys, and central nervous, digestive, and skin systems (Roberts 1999; ATSDR ToxFAQs for Arsenic).

Exposure to arsenic occurs mostly in the workplace, near hazardous waste sites, or in areas with high natural levels. Symptoms of acute arsenic poisoning are sore throat from breathing, red skin at contact point, or severe abdominal pain, vomiting, and diarrhea, often within 1 hour after ingestion. Other symptoms are anorexia, fever, mucosal irritation, and arrhythmia. Cardiovascular changes are often subtle in the early stages but can progress to cardiovascular collapse.

Chronic or lower levels of exposure can lead to progressive peripheral and central nervous changes, such as sensory changes, numbness and tingling, and muscle tenderness. A symptom typically described is a burning sensation ("needles and pins") in hands and feet. Neuropathy (inflammation and wasting of the nerves) is usually gradual and occurs over several years. There may also be excessive darkening of the skin (hyperpigmentation) in areas that are not exposed to sunlight, excessive formation of skin on the palms and soles (hyperkeratosis), or white bands of arsenic deposits across the bed of the fingernails (usually 4-6 weeks after exposure). Birth defects, liver injury, and malignancy are possible. (Arsenic has also been used in homicides and suicides.)

Lead

It is a very soft metal and was used in pipes, drains, and soldering materials for many years. Millions of homes built before 1940 still contain lead (e.g., in painted surfaces), leading to chronic exposure from weathering, flaking, chalking, and dust. Lead is commonly found in U.S. urban dust and soil resulting from the past use of lead in gasoline and paints, and also industrial emissions. Lead-contaminated surfaces in the workplace represent a potential source of exposure for workers.

Every year, industry produces about 2.5 million tons of lead throughout the world. Most of this lead is used for batteries. The remainder is used for cable coverings, plumbing, ammunition, and fuel additives. Other uses are as paint pigments and in PVC plastics, x-ray shielding, crystal glass production, and pesticides.

Lead exposure may occur either by direct hand-to-mouth contact, or indirectly through contamination of hands, cigarettes, cosmetics, or food. In the workplace, generally little or no correlation occurs between surface lead levels and employee exposures because ingestion exposures are highly dependent on personal hygiene practices and available facilities for maintaining personal hygiene. No Federal standard provides an exposure limit for lead contamination of surfaces in the workplace.

Target organs are the bones, brain, blood, kidneys, and thyroid gland.

Acute exposure to lead is also more likely to occur in the workplace, particularly in manufacturing processes that include the use of lead (e.g., where batteries are manufactured or lead is recycled). Even printing ink, gasoline, and fertilizer contain lead. Symptoms include abdominal pain, convulsions, hypertension, renal dysfunction, loss of appetite, fatigue, and sleeplessness. Other symptoms are hallucinations, headache, numbness, arthritis, and vertigo.

Chronic exposure to lead may result in birth defects, mental retardation, autism, psychosis, allergies, dyslexia, hyperactivity, weight loss, shaky hands, muscular weakness, and paralysis (beginning in the forearms).

Low-level exposure to lead as possibly causing impaired cognitive and behavioral development in children, accumulation of cadmium being associated with renal tube dysfunction, and allegations that mercury vapor from dental amalgam may be a possible cause of chronic health problems (Goyer 1996).

Children are particularly sensitive to lead (absorbing as much as 50% of the ingested dose) and are prone to ingesting lead because they chew on painted surfaces and eat products not intended for human consumption (e.g., hobby paints, cosmetics, hair colorings with lead-based pigments, and even playground dirt). In addition to the symptoms found in acute lead exposure, symptoms of chronic lead exposure could be allergies, arthritis, autism, colic, hyperactivity, mood swings, nausea, numbness, lack of concentration, seizures, and weight loss.

Mercury

Mercury is generated naturally in the environment from the degassing of the earth's crust, from volcanic emissions. It exists in three forms: elemental mercury and organic and inorganic mercury. Mining operations, chloralkali plants, and paper industries are significant producers of mercury (Goyer 1996). Atmospheric mercury is dispersed across the globe by winds and returns to the earth in rainfall, accumulating in aquatic food chains and fish in lakes (Clarkson 1990).

Mercury compounds were added to paint as a fungicide until 1990. These compounds are now banned; however, old paint supplies and surfaces painted with these old supplies still exist.

Mercury continues to be used in thermometers, thermostats, and dental amalgam. (Many researchers suspect dental amalgam as being a possible source of mercury toxicity [Omura et al. 1996; O'Brien 2001].)

Medicines, such as mercurochrome and merthiolate, are still available. Algaecides and childhood vaccines are also potential sources. Inhalation is the most frequent cause of exposure to mercury.

Exposure to mercury occurs from breathing contaminated air, ingesting contaminated water and food, and having dental and medical treatments.

The nervous system is very sensitive to all forms of mercury. Methylmercury and metallic mercury vapors are more harmful than other forms, because more mercury in these forms reaches the brain. Exposure to high levels of metallic, inorganic, or organic mercury can permanently damage the brain, kidneys, and developing fetus. Effects on brain functioning may result in irritability, shyness, tremors, changes in vision or hearing, and memory problems.

Short-term exposure to high levels of mercury may cause effects including lung damage, nausea, vomiting, diarrhea, increases in blood pressure or heart rate, skin rashes, and eye irritation.

Target organs are the brain and kidneys (Roberts 1999; ATSDR ToxFAQs for Mercury).

Acute mercury exposure may occur in the mining industry and in the manufacturing of fungicides, thermometers, and thermostats. Liquid mercury is particularly attractive to children because of its beautiful silver color and unique behavior when spilled. Children are more likely to incur acute exposure in the home from ingesting mercury from a broken thermometer or drinking medicine that contains mercury. Because mercury vapors concentrate at floor level, crawling children are subject to a significant hazard when the mercury is sprinkled throughout the house during religious ceremonies or when there is an accidental spill (Zayas et al. 1996). Mercury spills are difficult to clean up, and mercury may remain undetected in carpeting for some time. Symptoms of acute exposure are cough, sore throat, and shortness of breath; metallic taste in the mouth, abdominal pain, nausea, vomiting and diarrhea; headaches, weakness, visual disturbances, tachycardia, and hypertension.

Chronic exposure to mercury may result in permanent damage to the central nervous system (Ewan et al. 1996) and kidneys. Mercury can also cross the placenta from the mother's body to the fetus (levels in the fetus are often double those in the mother) and accumulate, resulting in mental retardation, brain damage, cerebral palsy, blindness, seizures, and inability to speak.

Dental amalgam is also suspected as being a possible source of mercury toxicity from chronic exposure. Some physicians suggest that amalgam fillings could be part of the explanation for the explosion of learning problems and autism in children since World War II, a time period corresponding with the introduction and widespread use of mercury amalgam (O'Brien 2001). Studies in both animals and humans have confirmed the presence of mercury from amalgam fillings in tissue specimens, blood, amniotic fluid, or urine (Vimy et al. 1990; Willershausen-Zonnchen et al. 1992; Gebel et al. 1996; Omura et al. 1996; Sallsten et al. 1996; Isacsson et al. 1997).

The ADA does acknowledge that amalgam contains mercury and reacts with others substances. However, to date the ADA concludes that amalgam continues to be a safe material. Researchers reported finding "no significant association of Alzheimer's disease with the number, surface area, or history of having dental amalgam restoration" and "no statistical significant differences in brain mercury levels between subjects with Alzheimer's disease and control subjects" (Saxe et al. 1999).

Interestingly, the metallic mercury used by dentists to manufacture dental amalgam is shipped as a hazardous material to dental offices. Although the ADA does not advise removing existing amalgam fillings from teeth, it does support ongoing research to develop new materials that will prove to be as safe as dental amalgam (Anderton 2001).

Mercury vapor is released from amalgam in new fillings, when old amalgam fillings are replaced (Omura et al. 1996), and even when amalgam is scraped during cleaning.

Symptoms of metallic mercury poisoning can include nausea, vomiting, diarrhea, increased blood pressure and heart rate, chest tightness and decrease performance of the lungs, stomatitis (inflammation of the oral mucus membranes), drooling, increased white blood cell counts, skin rashes (especially for those allergic to mercury), mood changes, inability to concentrate, memory loss, tremors, anxiety, forgetfulness, emotional instability, insomnia, fatigue, weakness, anorexia, cognitive and motor dysfunction, a fine shaking or tingling, loss of feeling (in the hand, tongue, or eyelid), discoloration of the cornea and lens of the eye, disturbances of vision, and kidney disease.

Symptoms in adults and children could include and kidney damage. People who consume more than two fish meals a week are showing very high serum levels of mercury.

Cadmium

Cadmium is a byproduct of the mining and smelting of lead and zinc and is number 7 on ATSDR's "Top 20 list." It is used in nickel-cadmium batteries, PVC plastics, and paint pigments. It can be found in soils because insecticides, fungicides, sludge, and commercial fertilizers that use cadmium are used in agriculture. Cadmium may be found in reservoirs containing shellfish. Cigarettes also contain cadmium. Lesser-known sources of exposure are dental alloys, electroplating, motor oil, and exhaust. Inhalation accounts for 15-50% of absorption through the respiratory system; 2-7% of ingested cadmium is absorbed in the gastrointestinal system.

Target organs are the liver, placenta, kidneys, lungs, brain, and bones (Roberts 1999; ATSDR ToxFAQs for Cadmium).

Acute exposure to cadmium generally occurs in the workplace, particularly in the manufacturing processes of batteries and color pigments used in paint and plastics, as well as in electroplating and galvanizing processes. Symptoms of acute cadmium exposure are nausea, vomiting, abdominal pain, and breathing difficulty.

Chronic exposure to cadmium can result in chronic obstructive lung disease, renal disease, and fragile bones. Protect children by carefully storing products containing cadmium, especially nickel-cadmium

batteries. Symptoms of chronic exposure could include alopecia, anemia, arthritis, learning disorders, migraines, growth impairment, emphysema, osteoporosis, loss of taste and smell, poor appetite, and cardiovascular disease.

Aluminum

Although aluminum is not a heavy metal, environmental exposure is frequent, leading to concerns about accumulative effects and a possible connection with Alzheimer's disease (Anon. 1993). Acute exposure is more likely in the workplace (e.g., unintentional breathing of aluminum-laden dust from manufacturing or metal finishing processes).

It is readily available for human ingestion through the use of food additives, antacids, buffered aspirin, astringents, nasal sprays, and antiperspirants; from drinking water; from automobile exhaust and tobacco smoke; and from using aluminum foil, aluminum cookware, cans, ceramics, and fireworks (ATSDR ToxFAQs for Aluminum).

Chronic exposure may occur in the workplace from accumulated exposures to low levels of airborne aluminum dust and handling aluminum parts during assembly processes over many years. In the home, we are in constant contact with aluminum in foods and in water; from cookware and soft drink cans; from consuming items with high levels of aluminum (e.g., antacids, buffered aspirin, or treated drinking water; or even by using nasal sprays, toothpaste, and antiperspirants) Citric acid (e.g., in orange juice) may increase aluminum levels by its leaching activity.

Interestingly, aluminum-based coagulants are used in the purification of water. However, the beneficial effects of using aluminum in water treatment have been balanced against the potential health concerns. Water purification facilities follow a number of approaches to minimize the level in "finished" water (WHO 1998). Symptoms of aluminum toxicity include memory loss, learning difficulty, loss of coordination, disorientation, mental confusion, colic, heartburn, flatulence, and headaches.

Studies began to emerge about 20 years ago suggesting that aluminum might have a possible connection with developing Alzheimer's disease when researchers found what they considered to be significant amounts of aluminum in the brain tissue of Alzheimer's patients. Although aluminum was also found in the brain tissue of people who did not have Alzheimer's disease, recommendations to avoid sources of aluminum received widespread public attention. As a result, many organizations and individuals reached a level of concern that prompted them to dispose of all their aluminum cookware and storage containers and to become wary of other possible sources of aluminum, such as soda cans, personal care products, and even their drinking water (Anon. 1993).

However, the World Health Organization (WHO 1998) concluded that, although there were studies that demonstrate a positive relationship between aluminum in drinking water and Alzheimer's disease, the WHO had reservations about a causal relationship because the studies did not account for total aluminum intake from all possible sources. Although there is no conclusive evidence for or against aluminum as a primary cause for Alzheimer's disease, most researchers agree that it is an important factor in the dementia component and most certainly deserves continuing research efforts.

Therefore, at this time, reducing exposure to aluminum is a personal decision. Workers in the automobile manufacturing industry also have concerns about long-term exposure to aluminum (contained in metal working fluids) in the workplace and the development of degenerative muscular conditions and cancer (Brown 1998; Bardin et al. 2000). The ATSDR has compiled a ToxFAQs for Aluminum to answer the most frequently asked health questions about aluminum.

Target organs for aluminum are the central nervous system, kidney, and digestive system.

Laboratory Testing and Diagnosis for the Presence of Heavy Metals

Heavy metals like mercury ***don't stay in the blood*** for very long. They quickly deposit in the body's soft tissues or become lodged in micro capillaries or combine with plaque that lines the walls of the arterial and venous systems. So a Heavy Metal Testing done on blood can only tell you if you had a **RECENT** exposure. If you have Mercury Toxicity Symptoms from exposure many years ago or minute amounts of chronic exposure, a blood test will not be accurate. The most accurate assessments for heavy metal toxicity are as follows:

EXPOSURE	**BEST TESTING METHOD**
Recent high level exposure (poisonings)	Blood testing
Chronic exposure	Provocative urine challenge testing
Childhood exposure	Provocative urine challenge testing
Amalgam dental fillings	Provocative urine challenge testing
War injuries (gun shot or shrapnel)	Biopsy of bone or muscle

The diagnosis of heavy metal toxicity requires observation of presenting symptoms, obtaining a thorough history of potential exposure, and the results of laboratory tests

Analysis of the levels of toxic metals in urine after the administration of a metal detoxification agent (***Provocative urine challenge testing)*** is the most effective and objective way to evaluate the accumulation of toxic metals. Acute metal poisoning is rare. More common, however, is a chronic, low-level exposure to toxic metals that can result in significant retention in the body that can be associated with a vast array of adverse health effects.

One cannot draw valid conclusions about adverse health effects of metals without assessing net retention. For an individual, toxicity occurs when net retention exceeds physiological tolerance. Net retention is determined by the difference between the rates of assimilation and excretion of metals. To evaluate net retention, one compares the levels of metals in urine before and after the administration of a pharmaceutical metal detoxification agent such as EDTA, DMSA or DMPS.

Different compounds have different affinities for specific metals, but all function by sequestering "hidden" metals from deep tissue stores and mobilizing the metals to the kidneys for excretion in the urine.

Common Agents	**Half Life**	**Collection Period**
EDTA (IV)	**~1 hr**	**6 – 24 hrs**
DMPS (IV)	**~1 hr**	**2 – 6 hrs**
DMPS (oral)	**~9 hrs**	**6 – 9 hrs**
DMSA	**4 hrs**	**6 – 9 hrs**

If acute exposure is assumed, it is important to perform both pre-and post-provocation urinalysis to permit distinction between ongoing exposures to metals (pre-) and net bodily retention.

Many clinicians also request the analysis of essential elements in urine specimens or Comprehensive Metabolic Panel (blood work) to evaluate nutritional status and the efficacy of mineral supplementation during metal detoxification therapy.

Significance of Individualized Treatment Regime

It is very important to note that treatment regimens vary significantly and are tailored to each specific individual's medical condition and the circumstance of their exposure. Providing a complete history of the person, including their occupation, hobbies, recreational activities, and environment, is critical in diagnosing heavy metal toxicity.

A possible history of ingestion often facilitates a diagnosis, particularly in children. Findings from physical examinations vary with the age of the person, health status of the person, amount or form of the substance, and time since exposure (absorption rate) (Ferner 2001).

Chelation Therapy
Chelation is pronounced key-lay-shun. The process of chelation in the chemical sense has many applications including sustaining life. Many chelating agents (vitamins and minerals) assist the body when they are supplied in sufficient quantities or combinations. Other chelating agents are man made and must be supplies orally or via intravenous injection.

Chelation is a chemical process that has applications in many areas, including medical treatment, environmental site rehabilitation, water purification, and so forth. In the medical environment, chelation is used to treat cardiovascular disease, heavy metal toxicity, and to remove metals that have accumulated in body tissues.

Chelation therapy, simply defined, is the process by which a molecule encircles and binds (attaches) to the metal and removes it from tissue (Dr. Joseph F. Smith Medical Library 2001).

Depending on the drug used, chelating agents specific to the heavy metal involved are given orally, intramuscularly, or intravenously. Once the bound metal leaves the tissue, it enters the bloodstream, is filtered from the blood in the kidneys, and then is eliminated in the urine (Dupler 2001). The decision to chelate should be made only by professionals with experience using chelation therapy.

EDTA Intravenous Chelation Therapy EDTA is an abbreviation for ethylene diamine-tetra-acetic acid, the primary therapeutic ingredient used in EDTA intravenous chelation therapy. Intravenous means in a vein or veins. During therapy, EDTA is infused into the blood stream through a vein. Technically, chelation is a chemical process where metals enter into claw like bonds with molecular ring-like configurations.

The process of chelation in the chemical sense has many applications including sustaining life. Therapy is a process which is used to improve health or mitigate disease. EDTA is one of seemingly countless substances which may be involved in the chemical process of chelation. In this sense, EDTA is not synonymous with chelation.

Clinically, the therapeutic process of chelation may involve substances other than EDTA and routes of administration other than intravenous. Other metal binding substances such as DMSA (dimercaptosuccinic acid) may bind with metals similarly to EDTA, however via different kinds of molecular configurations. Such metal binding although not technically the same as chelation in the true chemical sense is nevertheless called chelation in a broader sense. In yet a broader sense, chelation may be used to depict intravenous EDTA or even an entire program involving EDTA, nutritional supplementation and life style changes.

The terms EDTA chelation, EDTA intravenous chelation, intravenous chelation and chelation are often used interchangeably.

In addition to being known as a treatment for metal toxicity, such as found in lead poisoning, chelation has been successfully used to overcome various conditions associated with aging. Impaired circulation due to hardening of the arteries and discomfort due to arthritis are among the most notable. Numerous scientific articles reflecting effectiveness and safety have been published.

In one study evaluating over 22,000 patients, 87% demonstrated objective improvement. Millions of chelation administrations have been performed over 40 years, world wide. According to the American College for Advancement in Medicine not one fatality proven to be caused by chelation therapy has been reported when appropriate protocol is followed.

Studies involving chelation therapy have demonstrated improvement in complications of diabetes mellitus; strength of heart contraction; symptoms of arthritis; impairment of brain, heart, and leg circulation; impairment of kidney function; elevated cholesterol and more.

In one study following chelation, patients with chronic obstructive lung disease averaged 20% improvement in volume and speed that air could be expelled. In another study of patients with greater than 70% blockage of carotid arteries carrying blood to the brain, clogging decreased 41.6%.

In a case report one patient had a complete unclogging of a 30% obstructed coronary artery demonstrated by angiography. In another study, 58 of 65 patients referred for coronary bypass surgery and 24 of 27 patients referred for lower extremity amputation, no longer needed surgery after opting to have chelation.

In regard to prevention, after 18 years following a course of chelation therapy the cancer death rate decreased by 10 fold. Chelation involves cleansing the body of harmful accumulations of metallic chemicals which interfere with normal function and repair. An amino acid, EDTA, after administration through a vein, attaches to these metals and carries them out of the body via the kidneys in the urine.

During a session of chelation therapy, patients relax in the doctor's office usually in reclining chairs in private rooms or in a communal room with other patients. Most patients enjoy the camaraderie and exchange of information. Sessions of chelation range from 1-4 hours each. The frequency and the number of administrations vary with patient need. Chelation is becoming popular for promoting health as well as dealing with disease. Many patients take chelation to help overcome stress, maintain youthfulness, and improve vitality.

Intravenous administration of EDTA chelation improves health by cleansing the body of harmful accumulations of metals which contribute to many diseases. Benefits of EDTA chelation therapy are greatly enhanced when intravenous administrations are augmented by appropriate nutritional and other health strategies. Chelation therapy addresses conditions which make arteries hard and clogged and interfere with normal biological function.

In the United States, hardening of the arteries has been found to be a major underlying factor in deaths caused by disease. With chelation therapy, circulatory conditions associated with hardening of the arteries leading to stroke, hypertension, angina, heart attack, poor memory, impotence, leg pain and amputation may be improved. Breathing capacity and function is often found to improve for sufferers of chronic obstructive lung disease. Patients with macular degeneration frequently remark about seeing better. Chelation therapy has been shown to reduce joint stiffening and arthritic pain while maintaining strength of the bones. Conditions without apparent diagnosis such as tiredness, lack of vitality, forgetfulness, slowed thinking, and feelings of ill-being may be improved.

Chelation therapy is thought to combat degenerative processes in all organs of the body. Chelation has been shown through one scientific study to be associated with the prevention of malignancy where a dramatic decrease in cancer death rate had been found 18 years after treatment. Intravenous chelation therapy counteracts destructive chemicals, “free radicals”, which are constantly forming in the body.

These chemicals cause degeneration associated with aging. In laboratory tests, the life expectancy of living cells exposed to intravenous chelation substances has been extended. Improvement in human longevity with intravenous chelation therapy has not been confirmed through scientific study. EDTA chelation brings improvement in different ways at different rates for different individuals under different circumstances. Measurable changes in performance, sense of well being and test results using various diagnostic instruments attest to the efficacy of intravenous EDTA chelation therapy.

EDTA is an amino acid. Amino acids are known as building blocks for proteins. Natural amino acids may combine with other amino acids to form proteins. Natural amino acids may also be combined with other structures or be metabolically changed into other structures within the body. EDTA is man-made. Unlike many other amino acids, EDTA is not changed metabolically nor incorporated into other structures in the body. EDTA attaches to metals via claw-like chemical bonds. The process is called chelation. The word chelation is derived from the Greek word “chele” meaning claw. EDTA preferentially attaches to some metals more than others, including toxic ones.

In essence, EDTA, after entering the bloodstream, grabs harmful substances in a “claw-like” manner and eventually carries the substances out of the body through the urine via the kidneys. In addition to EDTA, various other substances may be administered during the course of chelation therapy to improve biochemical harmony. Supplemental nutrients are taken at home by mouth to support more optimal function and repair. Modern intravenous chelation therapy is a relatively simple, safe, and effective procedure. Millions of administrations have been given since the 1950’s.

Although EDTA intravenous therapy is not effective in preventing and relieving all conditions partially and completely to everyone’s satisfaction all of the time, its use flourishes on the basis of previous successes. Hundreds of thousands of people in the United States have received the benefits of intravenous chelation therapy.

Hundreds of published papers and scientific studies have documented the efficacy of this therapy. Patient and family testimonials describing the disappearance of angina, leg cramps, shortness of breath on exertion, joint pain, and impaired mental function following intravenous EDTA chelation therapy are commonplace. Chelation is generally accepted by all prominent conventional medical groups and governmental agencies for some, but not necessarily all, purposes. For example, treatment for acute lead toxicity with chelation may be generally accepted, whereas, treatment for hardening of the arteries may not.

Proponents experienced in chelation therapy may herald treatment in regard to hardening of the arteries as nearly miraculous while opponents may denounce it as unproved quackery. For medically controversial uses, medical organizations, governmental agencies, and physicians may classify chelation as investigational. Although published scientific studies have proven chelation to be effective in regard to hardening of the arteries, the existence of such studies is still unknown to many physicians. The types of studies range from simple to sophisticated with names like “angiographic”, “meta analysis” and “double blind”. One meta-analysis study involves scientific data compiled from over 20,000 patients.

Misinformation regarding whether chelation has been proven or not often stems from the erroneous assumption that ignorance of existence of proof means proof does not exist. Following publication of scientific data favoring treatment of hardening of the arteries with chelation therapy in the 1950’s, the appearance of such information in widely read medical literature virtually 11 ceased. The contents of widely distributed medical journals are ultimately controlled by those who control financial support to these

publications. Unfortunately chelation is often perceived as competition by individuals belonging to organizations which have financial interests in other methods of addressing hardening of the arteries.

Chelation is often used as a safer method to replace much costlier conventional surgical and related medical procedures. Hardening of the arteries is a lucrative, multi- billion dollar industry. Generally those who profit from an industry, whether it be a surgical/medical industry or any other industry, tend to be antagonistic to changes that reduce profits. Today, data on chelation is published in progressive, although lesser known medical journals and read worldwide. In the past, some doctors were persecuted by governmental agencies and licensing boards for administering chelation. As a result of one such persecution in Florida, the state supreme court justices unanimously ruled in favor of chelation therapy being legally administered to the public. Through judicial and other governmental processes chelation has become more readily available in the U.S.A.

The F.D.A. has approved the study of chelation therapy for occlusive (blocked) peripheral circulatory disease. In face of growing acceptance and voluminous scientific proof, many private and national health insurance plans including U.S. Medicare still refuse to pay for chelation therapy when used for conditions associated with hardening of the arteries. However, the number of insurance plans that pay for such uses is increasing. With the realization of dramatic cost savings over conventional surgical and related medical approaches, court rulings favoring patient reimbursement in suits against reluctant- to-pay insurance companies, and patient political pressure advocating safer alternatives, chelation therapy is enjoying increasing respect.

Chelation therapy is a specialty recognized by the American College for Advancement in Medicine. The American College for Advancement in Medicine recognizes the American Board of Chelation Therapy as the certifying board for specialists in this field. The American Board of Chelation Therapy certifies physicians with required training and clinical experience who have successfully passed written, oral, and clinical tests to assure excellence. Board certified physicians, also known as diplomats, are also required to be recertified periodically to assure continued quality of care.

The medical protocols used by the American Board of Chelation Therapy are based on the experience of millions of therapies administered. Not one death has been proven to be caused by chelation therapy when these protocols are followed according to the records of the American College for Advancement in Medicine. Not all physicians who administer chelation are board certified nor necessarily follow the guidelines of the American College for Advancement in Medicine

The demand for chelation as well as the number of doctors administering and receiving chelation is increasing nationally and worldwide. Chelation therapy is used in conjunction with programs involving diet, exercise, and stress reduction. It also complements standard medical and surgical therapy with the improvement of health, the medical necessity for harmful and potentially harmful pharmaceutical drugs may be reduced. Although better known as a substitute for cardiovascular surgery, chelation also has been used as a strategy to prevent reclogging of arteries after surgical bypass and balloon angioplasty. Surgical bypass involves rerouting blood around clogged areas of arteries by connecting a segment of a blood vessel from elsewhere to the affected artery to overcome the obstruction. Balloon angiosplasty increases blood flow by inflating a balloon within an arterial passageway, compressing encrustations at the site of clogging.

The ultimate goal of chelation therapy is to help prevent, slow, or reverse processes associated with disease, impaired vitality, and aging which conditions or combination of conditions have been reported to improve following intravenous chelation therapy?

Partial list of conditions or combination of conditions which have been reported to improve following intravenous chelation therapy, in alphabetical order without reference to degree of improvement:

• age spots • aging • angina pectoris • arteriosclerosis (cerebral, coronary, peripheral) • blood fats • Buerger's disease • bursitis • cardiac rhythm irregularities • cholesterol • chronic obstructive lung disease • circulation • cirrhosis • congestive heart failure • coronary atherosclerosis • dementia • diabetes mellitus • diabetes retinopathy • digitalis toxicity • enlarged heart • erectile failure • fatigue • free radicals • gangrene • general circulation • hair growth • headaches • heavy metal poisoning • hypercalcemia • hyperlipidemia • hypoglycemia • hypertension • immunity • impotence • kidney disease • lead toxicity • leg circulation • lupus erythematosus • macular degeneration • mood • multiple sclerosis • neuralgia • neuropathy • nuclear poisoning • osteoarthritis • osteoporosis • Parkinson's syndrome • Peyronie's disease • poison gas • post-stroke syndrome • probability of getting cancer • psoriasis • iron toxicity • intermittent claudication • malaise • male sexual dysfunction • memory • mental function • mercury toxicity Raynaud's disease • renal insufficiency • rheumatoid arthritis • schizophrenia • scleroderma • senility • skin wrinkles • skin ulcers • strokes • tachycardia • tinnitus • thrombophlebitis • transient ischemic attack • vasculitis • vertigo • vitality

WHAT DETERMINES IMPROVEMENT? Various conditions may improve to various degrees at different rates with chelation therapy. Chelation on the biochemical level helps reverse degenerative tendencies and helps promote regenerative tendencies as circumstances permit. Chelation must be administered properly with appropriate numbers of intravenous infusions for optimal results. Less than optimal administration produces limited results.

Limitations are also defined both by the condition and the person who has the condition. Some conditions are more amenable to chelation therapy than others. For example, reversal of arthritic pain is often favorably influenced whereas reversal of gross bone deformities are not. Among factors which determine outcome based on the person are lifestyle, stress, inherited genes, attitude, nutrition, and environment. Those with favorable genes living under more ideal conditions would be expected to enjoy faster, longer lasting results with less therapy than those with less favorable genes living under less ideal conditions.

Whether or not chelation has a favorable influence and if such an influence results in a dramatic recovery or simply a delay of the inevitable is dependent on circumstances of the administration, the condition, and the individual.

Typically, a patient receives a programmed series of intravenous infusions, intramuscular injections, or oral administration of a chelating agent (possibly a combination of the three). The duration of therapy varies from a few hours to repeated courses of treatment over several months. (Wentz 2000).

Frequent follow-up testing is required to determine the amount of the metal that is being removed. Sometimes, as in the case of lead, testing may show a rapid decline initially, but then a leveling off occurs over time. In the case of lead, this leveling off is caused by lead that continues to enter the blood from the bones where it has been stored (the "rebound effect"). The leveling off effect is used as a guide for determining how long chelation therapy should be continued (Wentz 2000).

Acutely poisoned symptomatic persons or persons with a clear history of exposure to a toxic heavy metal may require chelation therapy to start before confirmation can be obtained from a laboratory. However, asymptomatic patients are not usually treated with chelation therapy until after test results reveal levels that require treatment. Interestingly, Goyer (1996) points out that there is growing interest in removing toxic metals from asymptomatic persons who are known to have received low-levels of environmental exposure to heavy metals. Preventive medicine experts assert that within the next ten years health insurance companies will mandate heavy metal toxicity testing on all new applicants, as a predictor of morbidity and mortality.

This interest has been generated because of the toxic effects (or damage) that may occur at levels that were previously thought to be safe. According to Goyer, "It is clear that the margin between the levels of

exposure for persons living in the industrialized nations of the world and levels of exposure currently recognized as producing the lowest adverse effect is small."

Chelation is effective in treating arsenic, cadmium, lead, iron, mercury, and aluminum poisoning. Millions of chelation administrations have been performed over 40 years, world wide. According to the American College for Advancement in Medicine not one fatality proven to be caused by chelation therapy has been reported when appropriate protocol is followed (such can not be said even for the most benign medications such as aspirin, flu shots, penicillin etc.)

Please feel free to call for a FREE CONSULTATION and to schedule an appointment to pick up a Provocation Urine Heavy Metal Kit for $25.00 (includes chelating medicine for test).

PLEASE LET STAFF KNOW IF YOU HAVE SULFA ALLERGY—YOU WILL NEED AN ALTERNATIVE TEST TO THE ORAL CHELATING AGENT.

Laboratory services are only $60.

FILL IT OUT BEFORE VISITING OUR OFFICE

Metal Toxicity Questionnaire

EXPOSURE TO LEAD:

Please provide a check mark if you have any of these symptoms?

_____occasional abdominal discomfort
_____mild fatigue
_____loss of appetite
_____metallic taste in mouth
_____Headache
_____moderate fatigue
_____difficulty concentrating
_____irritability
_____muscle aches
_____paresthesia (pins and needles sensations)
_____joint pain
_____nausea
_____diffuse abdominal pain
_____constipation
_____weight loss

_____decreased libido
_____intermittent severe abdominal cramps
_____muscle weakness
_____mental confusion

Please provide a check mark to any situations where it is likely that you were exposed to lead?

_____lead production or smelting YEARS EXPOSED_____
_____battery manufacturing or recycling YEARS EXPOSED_____
_____brass, bronze, or lead foundries YEARS EXPOSED_____
_____radiator repair YEARS EXPOSED_____
_____scrap-metal handling YEARS EXPOSED_____
_____lead soldering YEARS EXPOSED_____
_____firing ranges YEARS EXPOSED_____
_____ceramics manufacturing YEARS EXPOSED_____
_____machining or grinding lead alloys YEARS EXPOSED_____
_____sanding, scraping, burning, or disturbing lead paint YEARS EXPOSED_____
_____demolition of old structures YEARS EXPOSED_____
_____welding or torch-cutting lead paint-coated metal YEARS EXPOSED_____
_____live in or regularly visit a house or apartment built before 1950 YEARS EXPOSED_____
_____live in or regularly visit a house or apartment built before 1978 that has been/or is undergoing renovation or remodeling YEARS EXPOSED_____
_____hobbies that involve lead-based paints, ceramics, or gasoline YEARS EXPOSED_____

ANY OTHER EXPOSURES:_____

If you have been exposed and are currently engaged in activities that bring you in contact with lead you MUST AVOID ADDITIONAL EXPOSURE.

EXPOSURE TO MERCURY:

Exposure to mercury occurs from breathing contaminated air, ingesting contaminated water and food, and having dental and medical treatments.

Please provide a check mark if you have any of these symptoms?

_____irritability
_____shyness
_____tremors
_____changes in vision or hearing
_____memory problems
_____lung damage
_____nausea
_____vomiting
_____diarrhea
_____increases in blood pressure or heart rate
_____skin rashes
_____eye irritation

Please provide a check mark to any situations where it is likely that you were exposed to mercury?

_____Frequently eating fish or shellfish. YEARS EXPOSED_____
_____Breathing vapors in air from spills, incinerators, and industries that burn mercury-containing fuels. YEARS

EXPOSED_____

_____Release of mercury from dental work and medical treatments. YEARS EXPOSED_____

_____Breathing contaminated workplace air or skin contact during use in the workplace (dental, health services, chemical, and other industries that use mercury). YEARS EXPOSED_____

_____Practicing rituals that include mercury. YEARS EXPOSED_____

ANY OTHER EXPOSURES:_____

If you have been exposed and are currently engaged in activities that bring you in contact with mercury you MUST AVOID ADDITIONAL EXPOSURE.

EXPOSURE TO CADMIUM:

In the United States, for nonsmokers the primary source of cadmium exposure is from the food supply. People who regularly consume shellfish and organ meats will have higher exposures. In general, leafy vegetables such as lettuce and spinach, potatoes and grains, peanuts, soybeans, and sunflower seeds contain high levels of cadmium.

Tobacco leaves accumulate high levels of cadmium from the soil.

The national geometric mean blood cadmium level for adults is 0.47 µg/L. A geometric mean blood cadmium level of 1.58 µg/L for New York City smokers has been reported. The amount of cadmium absorbed from smoking one pack of cigarettes per day is about 1–3 µg/day. Direct measurement of cadmium levels in body tissues confirms that smoking roughly doubles cadmium body burden in comparison to not smoking.

Highest risk of exposure from processes involving heating cadmium-containing materials such as smelting and electroplating. Risk will vary depending on the workplace.

Major route of exposure is through inhalation of dust and fumes or incidental ingestion from contaminated hands, food, or cigarettes.

EPA has mandated that water suppliers control cadmium concentrations in drinking water to <5 µg/L. Therefore, exposure to cadmium through public drinking water sources is not a major concern.

Elevated cadmium levels in water sources in the vicinity of cadmium-emitting industries (historical and current) have been reported. Aquatic organisms will accumulate cadmium, possibly entering the food supply. People who fish in local waters as a means of food should be cautious and abide by any advisories.

Most of the cadmium that enters your body goes to your kidney and liver and can remain there for many years. A small portion of the cadmium that enters your body leaves slowly in urine and feces.

Your body can change most cadmium to a form that is not harmful, but too much cadmium can overload the ability of your liver and kidney to change the cadmium to a harmless form.

The U.S. Department of Health and Human Services (DHHS) has determined that cadmium and cadmium compounds are known human carcinogens. The International Agency for Research on Cancer (IARC) has determined that cadmium is carcinogenic to humans. The EPA has determined that cadmium is a probable human carcinogen.

Please provide a check mark if you have any of these symptoms?

_____Diminished kidney function
_____Lung disease
_____Chronic bronchitis
_____Lung cancer
_____Kidney cancer
_____Prostate cancer
_____Asthma

Please provide a check mark to any situations where it is likely that you were exposed to cadmium?

_____smoking cigarettes or use of other tobacco products YEARS EXPOSED_____
_____heavy exposure to second hand smoke YEARS EXPOSED_____
_____exposure to smelting and electroplating YEARS EXPOSED_____
_____exposure to deteriorating nickel-cadmium batteries YEARS EXPOSED_____
_____regularly consume shellfish YEARS EXPOSED_____
_____regularly consume organ meats YEARS EXPOSED_____
_____excessively consume leafy vegetables such as lettuce and spinach YEARS EXPOSED_____
_____excessively consume potatoes and grains, peanuts, soybeans, or sunflower seeds YEARS EXPOSED_____
_____consume fish from local waters YEARS EXPOSED_____
_____worked in a factory that utilized cadmium in its production YEARS EXPOSED_____

ANY OTHER EXPOSURES:_____

If you have been exposed and are currently engaged in activities that bring you in contact with excessive cadmium you MUST AVOID ADDITIONAL EXPOSURE.

ALUMINUM EXPOSURE:

Everyone is exposed to low levels of aluminum from food, air, water, and soil. Exposure to high levels of aluminum may result in respiratory and neurological problems. Aluminum (in compounds combined with other elements) has been found in at least 596 of the 1,699 National Priority List (NPL) sites identified by the Environmental Protection Agency (EPA).

- Virtually all food, water, air, and soil contain some aluminum.
- The average adult in the U.S. eats about 7-9 mg aluminum per day in their food.
- Breathing higher levels of aluminum dust in workplace air.
- Living in areas where the air is dusty, where aluminum is mined or processed into aluminum metal, near certain hazardous waste sites, or where aluminum is naturally high.
- Eating substances containing high levels of aluminum (such as antacids) especially when eating or drinking citrus products at the same time.
- Children and adults may be exposed to small amounts of aluminum from vaccinations.

Some people with kidney disease store a lot of aluminum in their bodies and sometimes develop bone or brain diseases which may be caused by the excess aluminum. Some studies show that people exposed to high levels of aluminum may develop Alzheimer's disease, but other studies have not found this to be true. We do not know for certain whether aluminum causes Alzheimer's disease.

Studies in animals show that the nervous system is a sensitive target of aluminum toxicity. Obvious signs of damage were not seen in animals after high oral doses of aluminum. However, the animals did not perform as well in tests that measured the strength of their grip or how much they moved around.

Please provide a check mark if you have any of these symptoms?

_____Respiratory problems
_____Neurological problems
_____Alzheimer's disease
_____Diminished strength

Please provide a check mark to any products where it is likely that you were exposed to excessive amounts of aluminum?

_____antacids YEARS EXPOSED_____
_____astringents YEARS EXPOSED_____
_____buffered aspirin YEARS EXPOSED_____
_____food additives YEARS EXPOSED_____
_____antiperspirants YEARS EXPOSED_____

_____cosmetics YEARS EXPOSED_____
_____cooking tomato sauce in aluminum pots YEARS EXPOSED_____

ANY OTHER EXPOSURES:_____

If you have been exposed and are currently engaged in activities that bring you in contact with excessive aluminum you MUST AVOID ADDITIONAL EXPOSURE.

I certify that the questions answered above are accurate and correct:

Print: Patient Name Date

SIGNATURE