

Environmental & Chemical **Toxicity** & Its Negative Impact On Your Health



By Kurt N. Woeller, D.O & Tracy Tranchitella, N.D.



Disclaimer

The material contained within this book is not intended to replace the services and/or medical advice of a licensed health care practitioner. The material is for educational purposes only. Kurt N. Woeller, D.O., Tracy Tranchitella, N.D., Health Training Associates, Integrative Medicine Academy, Toxicity Mastery Course and its associated companies, affiliates, shareholders, management, employees or independent contractors assume absolutely NO legal or personal responsibility for any issues, problems or conditions arising from use of or experimentation with the information described herein. You, individually and wholly, whether licensed health professional or lay person, are solely responsible for the result of implementation of any suggestions made herein. Any application of suggestions set forth in the following portions of this document/presentation, including but not limited to supplements, herbs, dietary changes, medications, and/or lifestyle changes, etc., is done so at your sole risk and personal and responsibility.

This book is not intended as a substitute for medical advice. The reader should consult a physician in matters relating to their health; particularly with respect to any symptoms that may require diagnosis or medical attention or treatment.

Some names and identifying details may have been changed to protect the privacy of individuals. Although the author and publisher have made every effort to ensure that the information in this book was correct at press time, the author and publisher do not assume any liability and hereby disclaim any liability to any party for any loss, damage, or disruption caused by errors or omissions, whether such errors or omissions result from negligence, accident, or any other cause.

Images are for artistic representation only, and should not be taken literally.

Publishing or redistribution of this book, in part or in whole without the express written consent of Health Training Associates, Dr. Kurt Woeller and/or Dr. Tracy Tranchitella is strictly prohibited.

Copyright© 2024 Health Training Associates, Integrative Medicine Academy, Toxicity Mastery Course, Dr. Kurt Woeller and Dr. Tracy Tranchitella.





“Better Living Through Chemistry” was a variant of a sales slogan used by a major chemical company back the 1930’s. As we advance in our ability to make things that are more efficient and effective, we have also increased our toxic burden in the world.

Chemicals play a significant role in many of the products that we take for granted in modern society such as adhesives, ceramics, electronics, plastics and petroleum. Modern agriculture is an area where the use of specific chemicals has allowed for mass food production to be resistant to common pests. However, the impact of these chemicals on the environment and human health can be severe and lasting. Many of these foods, particularly mass-produced grain products, can also be contaminated with molds and mycotoxins (aka mold toxins).

We have yet to fully uncover the long-term effects of these chemicals on our environment, in our food, and in our bodies.



One of the most vulnerable groups at risk for the detrimental effects of various chemicals are pregnant women.

In research done by the National Health and Nutrition Examination Survey (NHANES), the exposure rates to various chemicals such as “polychlorinated biphenyls, organochlorine pesticides, PFCs, phenols, PBDEs, phthalates, polycyclic aromatic hydrocarbons, and perchlorate were detected in 99–100% of pregnant women” (1).

Birth defects and developmental disabilities such as autism, are often linked to certain chemical exposures (2).

The chemical glyphosate, which is used worldwide in a popular herbicide, is now suspected to be the causative agent in various birth defects, premature babies and miscarriages. Glyphosate is also suspected in increased rates of many other diseases including various cancers, diabetes, dementia and other neurological disorders (3).





It's estimated that 1.2 billion pounds of toxic chemicals are released into the air and water in the United States in one year.

There are approximately 80,000 different chemicals in use in the U.S. alone ⁽⁴⁾. Less than 10% have had any safety evaluations.

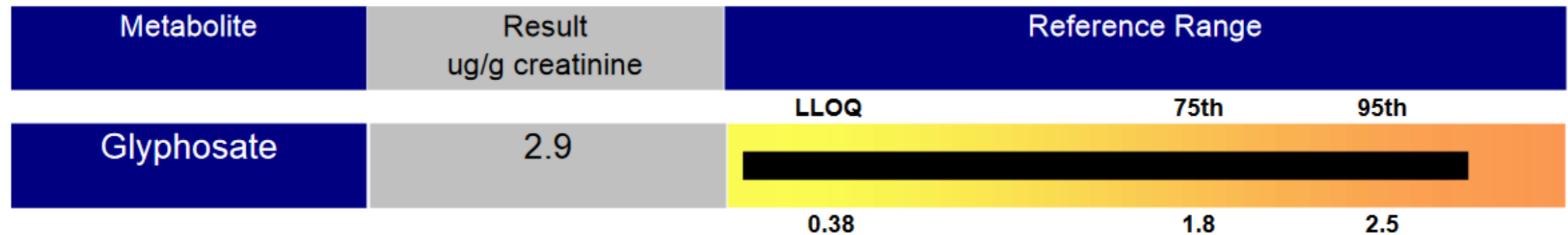
Fortunately, there are things that can be done to limit exposure to chemicals, reduce their negative impact on health and remove them from the body.



Examples of Environmental Chemicals & Their Role in Human Illness

Glyphosate:

Creatinine Value*: 75.61 mg/dl



Glyphosate is a chemical used in the well-known herbicide called **Roundup**. First introduced in 1974, it has become a popular chemical used on a variety of genetically modified crops such as soy, corn and cotton. It is now available in most home and garden stores for personal use at home. There are many concerns over glyphosate and human health. Here are few examples:

1. "Probably carcinogenic in humans" (category 2A) based on epidemiological studies, animal studies, and in vitro studies." This statement comes from the World Health Organization (WHO) International Agency for Cancer Research ⁽⁵⁾.
2. Glyphosate is known to disrupt the normal digestive system bacteria (aka microbiome). This causes diminishment of healthy bacteria and increases the potential for pathogenic bacteria, i.e. clostridia, salmonella ⁽⁶⁾.
3. Glyphosate disrupts liver enzyme function compromising liver function and detoxification pathways ⁽⁷⁾.





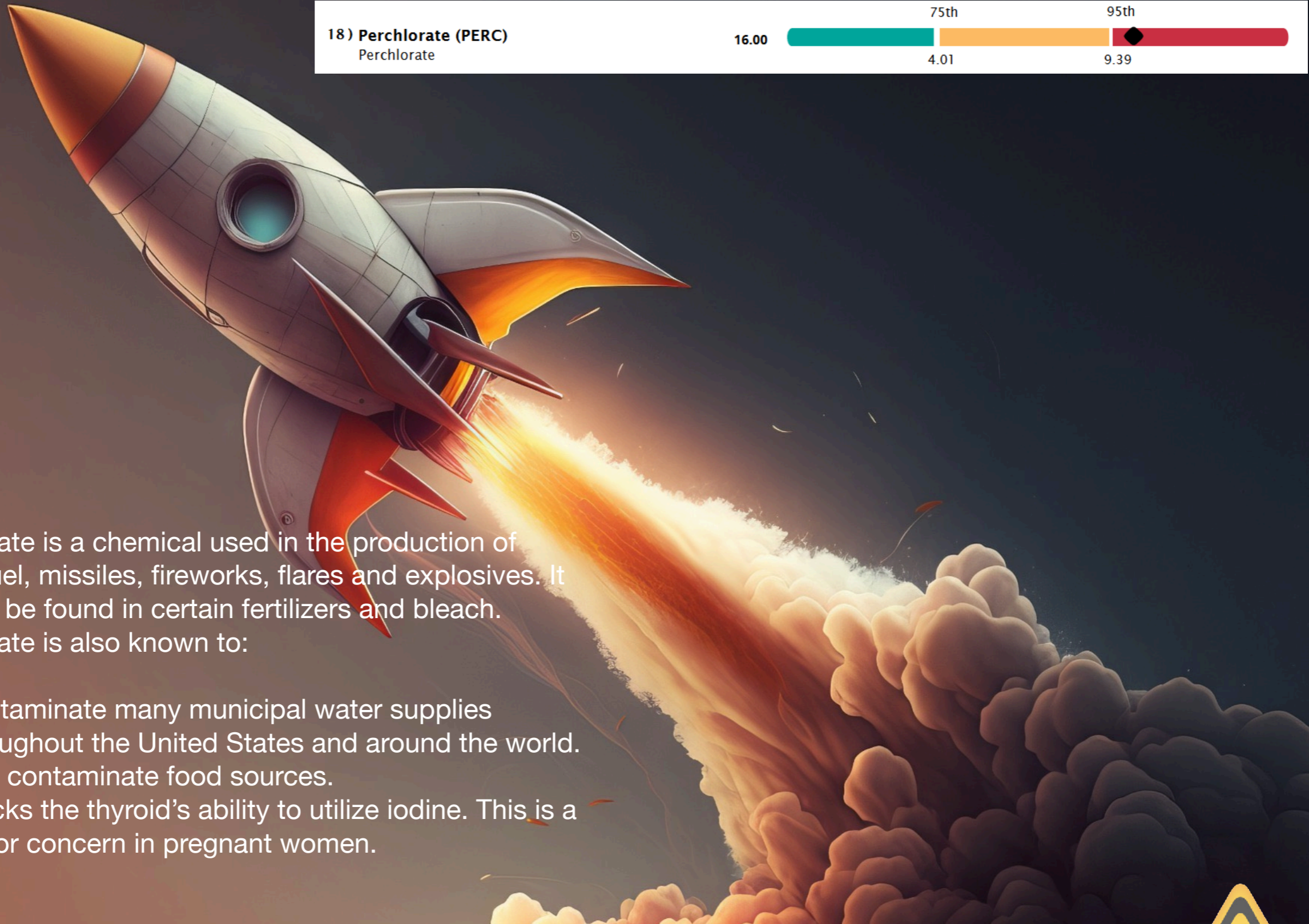
The avoidance of genetically modified (GMO) foods and glyphosate in commercial herbicide products can go a long way in reducing exposure to this toxic compound. Certain supplements like humic acid may help to reduce levels in the body.

Glyphosate can be measured through the [Glyphosate Profile](#) from Mosaic Diagnostics Laboratory.

The topic of *Glyphosate* is covered extensively in **Module #4** of the [Toxicity Mastery Course](#).



Perchlorate:



Perchlorate is a chemical used in the production of rocket fuel, missiles, fireworks, flares and explosives. It can also be found in certain fertilizers and bleach. Perchlorate is also known to:

1. Contaminate many municipal water supplies throughout the United States and around the world.
2. Can contaminate food sources.
3. Blocks the thyroid's ability to utilize iodine. This is a major concern in pregnant women.



Organophosphates:

15) Diethylphosphate (DEP)

Organophosphates



Organophosphates are extremely toxic chemicals. Pregnant women have increased risk for having a child with autism through organophosphate exposure and children are extremely vulnerable to the toxicity effects of these chemicals.

Here are some examples of organophosphate toxicity:

1. Children exposed to pesticides (called organophosphates) used to kill insects had more than twice the risk of developing pervasive developmental disorder (PDD). For organochlorines, there was 7 times autism rate. Mothers exposed to such pesticides were also likely to have shorter pregnancies and their children to have impaired reflexes ⁽⁸⁾.
2. Organophosphates can be lethal to humans because they inhibit acetylcholinesterase, causing acetylcholine (ACh) to accumulate in cholinergic synapses.
3. Excess ACh relative to other brain chemicals such as serotonin, norepinephrine and dopamine can have an adverse effect on brain function.
4. In larger amounts, ACh acts like an inhibitory neurotransmitter causing increased nervous system inhibition (aka depression).



2,4-Dichlorophenoxyacetic Acid (2,4-D):

13) **2,4-Dichlorophenoxyacetic Acid (2,4-D)**
2,4-Dichlorophenoxyacetic Acid (2,4-D)

5.10



2,4-D was part of a chemical mixture called **Agent Orange** and was used by the U.S. military during the Vietnam War. Agent Orange was sprayed in heavily forested regions to increase the visibility for war planes by destroying plant undergrowth and crops. 2,4-D is now being used as an herbicide, sometimes combined with Glyphosate, for commercial purposes.





Examples of 2,4-D toxicity:

1. Men who work with 2,4-D are at risk for abnormally shaped sperm and impaired fertility.
2. There is an increased risk of Amyotrophic Lateral Sclerosis (ALS) among workers exposed to 2,4-D compared to other company employees ⁽⁹⁾.
3. 2,4-D interfered with myelination in the brain of animals as the result of lactational exposure, changing behavior patterns of animals that included apathy, reduced social interaction, repetitive movements, tremors and immobility in pups.
4. Neuritis, weakness, nausea, abdominal pain, headache, dizziness, peripheral neuropathy, stupor, seizures, brain damage, and impaired reflexes have been associated with dermal or oral exposure.

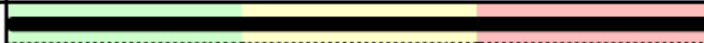
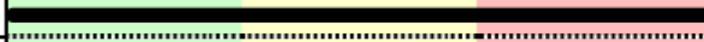


These chemicals and others can be measured through the TOX Detect Profile from Mosaic Diagnostics Laboratory.

The topic of *Environmental Chemicals* (aka. non-metal toxins) is covered extensively in **Modules #1, #2 and #3** of the Toxicity Mastery Course.



Examples of Heavy Metal Toxins and Their Role in Human Illness

Aluminum:

TOXIC METALS				
		RESULT µg/g	REFERENCE INTERVAL	PERCENTILE 68 th 95 th
Aluminum	(Al)	61	< 8.0	
Antimony	(Sb)	0.65	< 0.066	
Arsenic	(As)	0.056	< 0.080	
Barium	(Ba)	2.5	< 0.75	

1. Since 1911, experimental evidence has repeatedly demonstrated that chronic Aluminum (Al) intoxication reproduces neuropathological hallmarks of Alzheimer's disease (AD). Only small amounts of Al are needed to produce neurotoxicity, and this criterion is satisfied through dietary Al intake ⁽¹⁰⁾.
2. Al sequesters different transport mechanisms to actively traverse brain barriers.
3. Incremental acquisition of small amounts of Al over a lifetime favors its selective accumulation in brain tissue.
4. The hypothesis that Al significantly contributes to AD is built upon very solid experimental evidence and should not be dismissed. Immediate steps should be taken to lessen human exposure to Al, which may be the single most aggravating and avoidable factor related to AD ⁽¹⁰⁾.



Lead:

Toxic & Essential Elements; Hair

TOXIC METALS			
	RESULT µg/g	REFERENCE INTERVAL	PERCENTILE 68 th 95 th
Aluminum (Al)	21	< 8.0	
Antimony (Sb)	0.077	< 0.066	
Arsenic (As)	0.18	< 0.080	
Barium (Ba)	0.95	< 0.50	
Beryllium (Be)	< 0.01	< 0.020	
Bismuth (Bi)	3.0	< 2.0	
Cadmium (Cd)	0.20	< 0.070	
Lead (Pb)	15	< 1.0	
Mercury (Hg)	0.30	< 0.40	
Platinum (Pt)	< 0.003	< 0.005	
Thallium (Tl)	0.001	< 0.002	
Thorium (Th)	0.003	< 0.002	
Uranium (U)	0.005	< 0.060	
Nickel (Ni)	0.29	< 0.20	
Silver (Ag)	2.7	< 0.20	
Tin (Sn)	5.5	< 0.30	
Titanium (Ti)	0.65	< 1.0	
Total Toxic Representation			

Lead is a toxic metal that can greatly affect brain and nervous system function. Its accumulation in the body over time can significantly affect health, and there is no apparent 'safe' threshold for lead (12). Hair testing for lead exposure, along with blood and urine assessments are well established methods of lead detection. There are many research studies correlating hair lead levels to problems seen in children, for example:

- a. Scalp hair specimens were obtained from 277 first-grade students.
- b. A striking dose-response relationship existed between levels of lead and negative teacher ratings.
- c. An even stronger relationship existed between physician-diagnosed attention-deficit hyperactivity disorder (ADHD) and hair lead (12).



Other Heavy Metals:

Aluminum	(Al)	5.1	< 8.0	
Antimony	(Sb)	0.17	< 0.066	
Arsenic	(As)	0.30	< 0.080	
Barium	(Ba)	0.44	< 0.50	
Beryllium	(Be)	< 0.01	< 0.020	
Bismuth	(Bi)	0.005	< 2.0	
Cadmium	(Cd)	0.032	< 0.070	
Lead	(Pb)	4.6	< 1.0	
Mercury	(Hg)	1.5	< 0.40	
Platinum	(Pt)	< 0.003	< 0.005	

Mercury is a very toxic heavy metal with various effects throughout the brain and nervous system. However, it can be associated with cardiovascular disease too in association with other metals ⁽¹³⁾:

- a. **Mercury** was 22,000X higher in heart biopsy tissue of patients with Idiopathic dilated cardiomyopathy (IDCM) than with controls with valve or ischemic disease.
- b. **Antimony** was 12,000 higher in heart biopsy tissue of patients with IDCM than with controls with valve or ischemic disease.

These heavy metals and others can be measured through hair, blood and urine assessments.

The topic of *Heavy Metal Toxicity* is covered extensively in **Modules #1 and #5** of the Toxicity Mastery Course.



Examples of Mold and Mycotoxins and Their Role in Human Illness

Mold and Mycotoxins :

Molds are fungi that can be found in both indoor and outdoor environments. They can be found in almost every environment, i.e., showers, bathrooms, water damaged building material and damp soil. Fungi have even been found in drinking water ⁽¹⁴⁾.

Common indoors molds are:

- *Cladosporium*
- *Penicillium*
- *Alternaria*
- *Aspergillus*



A very dangerous mold called *Stachybotrys* (aka black mold) can grow on high cellulose and low nitrogen material such as fiberboard, gypsum board, paper, dust and lint. Its growth occurs when there is moisture from water leaks, flooding and damage, high humidity and condensation.

Certain molds also contaminate a wide variety of foods such as grains and fruit. Each can produce various mold toxins (aka mycotoxins) which have adverse health effects such as:

- Headaches
- Nausea and vomiting
- Abdominal pain and bowel changes
- Cancer
- Immune suppression
- Convulsions and other neurological conditions
- Loss of muscular coordination
- Disruption of sleep



Examples of Detectable Mycotoxins:

Aflatoxin:

Aflatoxin M1 (AFM1)

< 0.5



56.01



1. Toxin produced by *Aspergillus mold*.
2. Peanuts and peanut butter are considered high potential sources for Aflatoxin, but environmental exposure through water-damaged building material can occur too.
3. Aflatoxins are considered some of the most carcinogenic substances in the environment. They selectively target human p53 protein which is a tumor suppressor.
4. Toxins can greatly affect liver function.



Ochratoxin:

Ochratoxin A (OTA)

< 7.5



44.64

1. Ochratoxin A (OTA) is toxic to the immune system, kidneys and is carcinogenic. ⁽¹⁵⁾
2. Exposure is primarily through contaminated foods such as cereals, grape juice, dairy, spices, wine, dried vine fruit and coffee. It can also come from inhalation exposure in water-damaged buildings.
3. OTA can cause significant oxidative damage to multiple brain regions and the kidneys.



Zearalenone (ZEA):

Zearalenone (ZEA)

< 3.2



68.12

1. Produced by *Fusarium* mold.
2. This toxin is encountered from water-damaged buildings, as well as mold grains.
3. Low levels can compete with estrogen receptors, as well as cause increased intestinal permeability in the digestive system. ZEA does have some association with tumor growth potential.

These mycotoxins and others can be measured through the [MycoTOX Profile](#) from Mosaic Diagnostics Laboratory.

The topic of Mycotoxins is covered extensively in **Modules #7 and #8** of the [Toxicity Mastery Course](#).

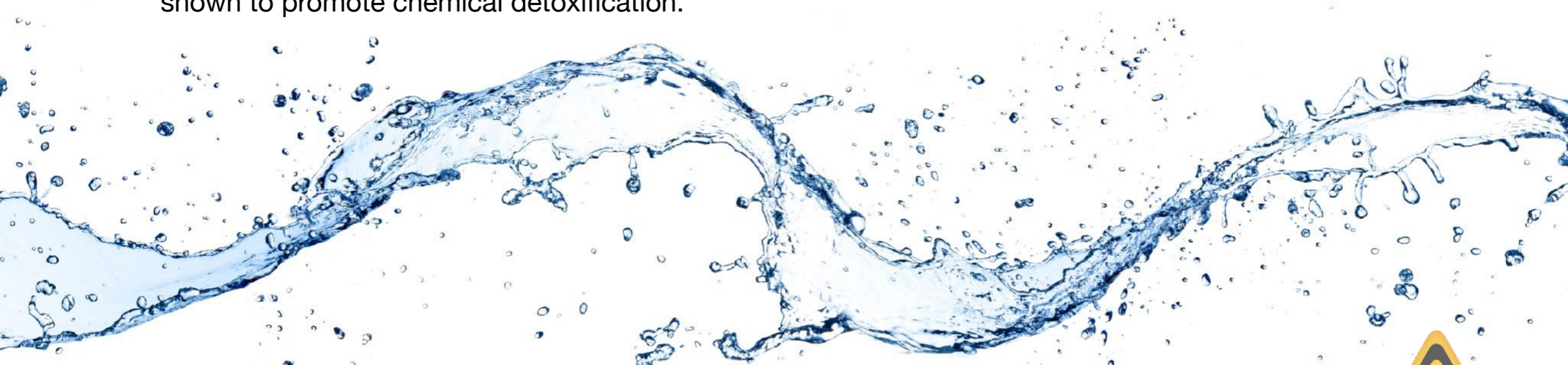


Treatment Approaches for Chemical, Heavy Metal & Mold Toxicity

Reducing exposure to environmental chemicals is the first step in improving overall health with regards to various toxins. This can often be accomplished by eating organic produce, non-GMO foods and drinking filtered water. If mold exposure is occurring through food, then the use of various digestive system binders such as activated charcoal and pyrophyllite clay can be helpful. If mold exposure is occurring environmentally from water-damaged building material, then mold remediation is necessary.

Other interventions are helpful too such as supplement support for healthy liver function and detoxification. Many toxins deplete important antioxidants such as glutathione. Therefore, the use of glutathione (GSH) preparations such as liposomal GSH, along with precursor GSH supplements such as N-acetylcysteine (NAC), help to restore this important nutrient.

Heavy metal detoxification is often necessary when high levels of metals such as aluminum, lead and mercury are present. There are various methods used to accomplish the removal of heavy metals such as intravenous calcium EDTA, oral DMSA or DMPS, as well as natural remedies. The use of an ION Cleanse device that generates positive and negative ions in the body has been shown to help with heavy metal detoxification too. This device alone, or in conjunction with infra-red sauna, has also been shown to promote chemical detoxification.



The Benefits of Integrative Medicine for Environmental Toxin Exposure

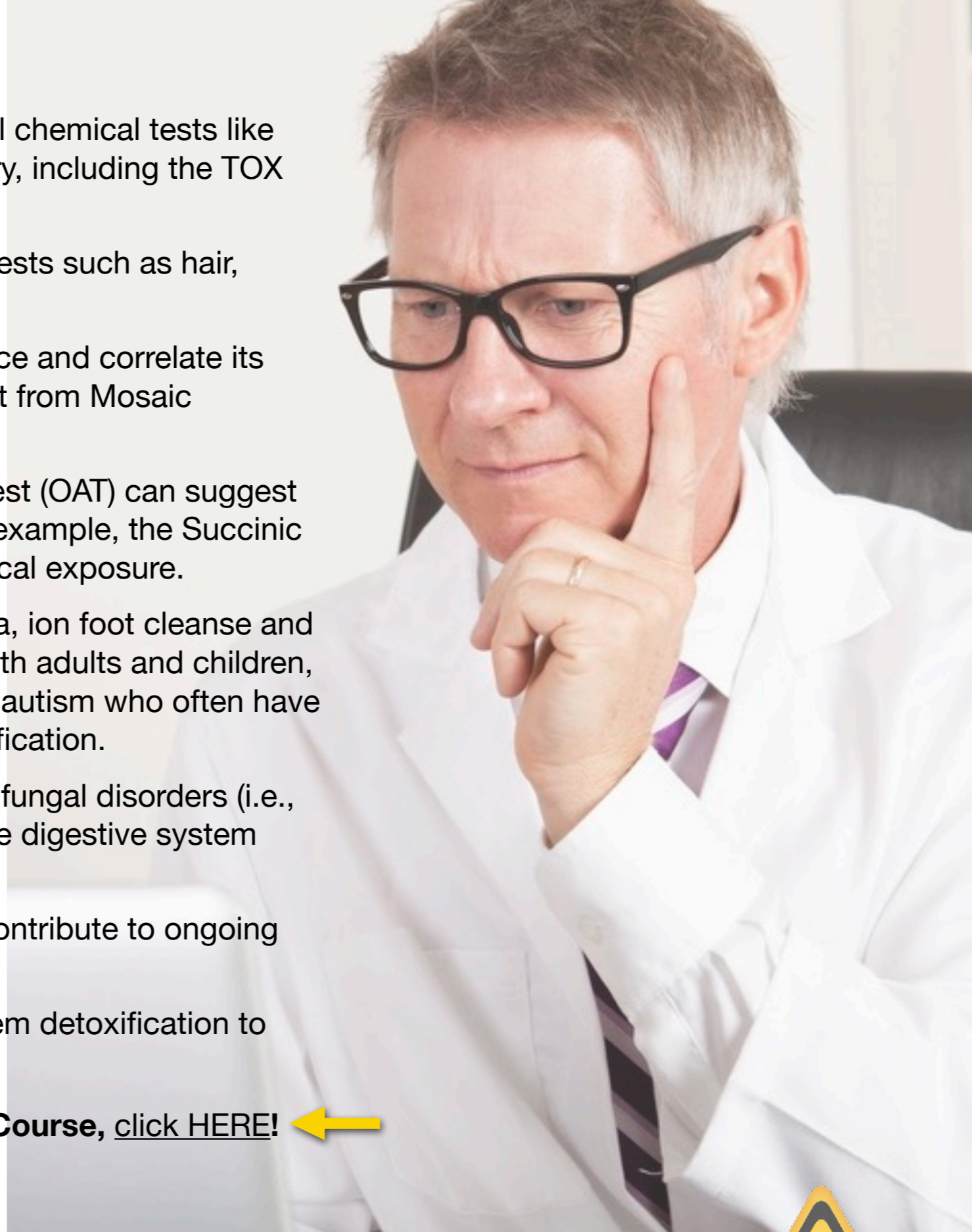


Toxic chemical exposure and the detrimental health effects is a largely untapped area of integrative medicine intervention for people with chronic health problems. Now more than ever, it is imperative that every integrative health practitioner have a complete and comprehensive plan for assessing and treating chemical exposure and toxicity. Listed below are the key elements of the **Toxicity Mastery Course** and why this knowledge is important for you personally and in your practice.

- ★ Learn the hidden dangers of various environmental chemicals and their link to various physical and mental health problems.
- ★ Learn how chemicals and heavy metals impact the methylation system, mitochondrial function, hormones and predispose to many autoimmune diseases.
- ★ Learn how mold and mycotoxins increase risk for serious health problems such as liver and kidney disease, as well as neurological problems.
- ★ Learn which chemicals are most at risk for causing problems with you and your patients/clients.
- ★ Develop strategies to reduce exposure to environmental chemicals.
- ★ Learn which supplements and foods are most helpful for combatting the negative effects of environmental chemicals.



- ➔ Learn to utilize and interpret various environmental chemical tests like toxicity panels from Mosaic Diagnostics Laboratory, including the TOX Detect Profile and Glyphosate test.
- ➔ Learn to utilize and interpret various heavy metal tests such as hair, blood, urine and stool.
- ➔ Learn to use the MycoTOX profile in clinical practice and correlate its information with other tests like Organic Acids Test from Mosaic Diagnostics Laboratory.
- ➔ Learn which biomarkers from the Organic Acids Test (OAT) can suggest environmental, chemical and mold problems. For example, the Succinic marker on an OAT has a strong link to toxic chemical exposure.
- ➔ Have access to protocols including infra-red sauna, ion foot cleanse and heavy metal detoxification that can be used for both adults and children, including special needs individuals like those with autism who often have difficulty with environmental chemicals and detoxification.
- ➔ Learn how to use various anti-fungal remedies for fungal disorders (i.e., mold, yeast), as well as intestinal binders to reduce digestive system absorption of mycotoxins.
- ➔ Learn why digestive system problems can often contribute to ongoing problems with toxins.
- ➔ Learn how to effectively implement digestive system detoxification to improve the overall health of your patient/client.
- ➔ For more information about **Toxicity Mastery Course**, [click HERE!](#) ➔



Meet The Instructors



Tracy Tranchitella, N.D.

Tracy Tranchitella is a Doctor of Naturopathic Medicine integrating the scientific principles of Functional Medicine with the sensibility and holistic view of traditional naturopathy. She provides naturopathic consultations for general health issues including digestive disorders, blood sugar management, autoimmune disorders, cardiovascular disease and metabolic disorders, chronic fatigue, hormone and menstrual issues and general dietary and nutritional consultations. With each patient, Dr. Tranchitella emphasizes a balanced whole food diet coupled with important lifestyle strategies for stress management, quality sleep, regular exercise, and making time for the things that bring joy to our lives.

Dr. Tranchitella graduated from Southwest College of Naturopathic Medicine and has been in practice for 24 years. In addition to patient consultations, Dr. Tranchitella is co-founder of Integrative Medicine Academy (IMA) with her partner Kurt N. Woeller, D.O. IMA provides in-depth courses in various areas of focus within Functional Medicine.

For over 10 years, Dr. Tranchitella served as a Clinical Advisor for BioHealth Laboratory helping practitioners with lab interpretation and program development. Currently, she is a regular contributor to ZRT Laboratory's blog which has developed into an extensive resource for patients and health care providers.

She is an author, educator and cofounder of Integrative Medicine Academy, an online resource for health professionals seeking educational information regarding integrative medicine.

Dr. Tracy Tranchitella can be reached for private consultations at her practice, Sunrise Functional Medicine.



Meet The Instructors

Kurt N. Woeller, DO, FMAPS, is a Doctor of Osteopathic Medicine, integrative and functional medicine physician, and biomedical autism treatment specialist in clinical practice for over 26 years.

Dr. Woeller is the education director and main course developer for [Integrative Medicine Academy](#), an online academy training for health professionals.

He is also the Organic Acids Test (OAT) seminar creator and presenter for Mosaic Diagnostics Laboratory's (formally Great Plains Laboratory's GPL Academy) Mosaic Edge seminars and has been involved in monthly educational webinars for GPL, Mosaic, and other organizations for over a decade.

His private practice, [Sunrise Functional Medicine](#), focuses on specialized diagnostic testing and treatments for individuals with complex medical conditions like autism, autoimmune, gastrointestinal, certain neurological disorders, and other chronic health conditions.

You can follow Dr. Woeller for ongoing education articles and videos through his [Substack Channel](#) and his [You Tube channel for Integrative Medicine Academy](#). Finally, listen to Dr. Woeller's latest health professional interviews through his [Functional Medicine Doc Talk podcast](#).



Kurt N. Woeller, D.O.



References

1. Tracey J. Woodruff, Ami R. Zota and Jackie M. Schwartz. Environmental Chemicals in Pregnant Women in the United States: NHANES 2003–2004. *Environ Health Perspect*; DOI:10.1289/ehp.1002727.
2. Takeo Fujiwara, et. al. Chemicals, Nutrition, and Autism Spectrum Disorder: A Mini-Review. *Front Neurosci*. 2016; 10: 174.
3. Nancy L. Swanson, et. al. Genetically engineered crops, glyphosate and the deterioration of health in the United States of America. *Journal of Organic Systems*, 2014.
4. EPA.gov – <http://epa.gov/sites/production/files/2016-01/documents/mdequritaining.pdf>.
5. Schemata AA, et al. The effect of glyphosate on potential pathogens and beneficial members of poultry microbiota in vitro. *Curr Microbiol*. 2013 Apr;66(4);350-8.
6. Anthony Samsel and Stephanie Seneff. Glyphosate Suppression of Cytochrome P450 Enzymes and Amino Acid Biosynthesis by the Gut Microbiome: Pathways to Modern Diseases. *Entropy* 2013, 15(4), 1416-1463.
7. Eric M. Roberts, et. al. Maternal Residence Near Agricultural Pesticide Applications and Autism Spectrum Disorders among Children in the California Central Valley. *Environ Health Perspect*. 115(10): 1482-1489, 2007.
8. Duffard R, Garcia G, Rosso S, et. al. Central nervous system myelin deficit in rats exposed to 2,4-dichlorophenoxyacetic acid throughout lactation. *Neurotoxicol Teratol*. 1996;18:691-696.
9. Tomljenovic L. Aluminum and Alzheimer's disease: after a century of controversy, is there a plausible link? *J Alzheimers Dis*. 2011;23(4):567-98.
10. *Journal of Inorganic Biochemistry*; 177 (2017), 39-54.
11. Tuthill RW. et al. Hair lead levels related to children's classroom attention-deficit behavior. *Arch Environ Health*, 1996 May-Jun;51(3):214-20.
12. Frustaci, A, et al. Elevation of Myocardial Trace Elements in Idiopathic Dilated Cardiomyopathy (IDCM) Compared With Secondary Dysfunction. *J Ameri Coll of Cardiol*. pp. 1578-1583.
13. Hageskal G, et.al. The study of fungi in drinking water. *Mycol Res*. 2009 Feb;113(Pt 2):165-72.
14. Pfhol-Leskowicz A, et.al. Ochratoxin A: An overview on toxicity and carcinogenicity in animals and humans. *Mol Nutr Food Res*. 2007 Jan;51(1):61-99.
15. David E. Root, M.D., M.P.H. Diagnosis and Treatment of Patients Presenting Subclinical Signs and Symptoms of Exposure to Chemicals Which Bioaccumulate in Human Tissue. *Proceedings of the Natl. Conference on Hazardous Wastes and Environmental Emergencies*, 1985.

