Micro Trace Minerals Laboratory
40+ years of clinical & environmental laboratory diagnostics

Roehrenstr. 20
91217 Hersbruck, Germany

Phone +49.9151.4332
Fax +49.9151.2306

info@microtraceminerals.com
https://microtraceminerals.com

MTM Newsletter **N° 23 - March 2018**

Laboratory News

Organic Environmental Pollutants / Environmental Pollutants

Toxicological reactions to organic pollutants are known. Exposure to organic toxins such as pesticides have been linked to the development of environmental diseases. Micro Trace Minerals Laboratories are offering appropriate diagnostics.

Toxic reactions are different than immunological reactions. Data indicates that immunological reactions follow toxic exposure. Similarly, immunological and toxicological reactions are reduced or eliminated after the toxic burden has been reduced.

The following lists includes common chemicals pollutants such as fluoride or formaldehyde, plus widely used insecticides and pesticides.

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These organic environmental pollutants can be ordered as single tests, or combined in profiles:

Toxic Profile 1
Tests: Fluoride, Formaldehyde, PCB, PAH

Toxic Profile 2
Tests: Fluoride, Formaldehyde, Glyphosate, PCB, PAH

Organic Environmental Profile 1
Tests: DDT, PCP

Environmental Pollutant Profile 2
Tested are the insecticides/herbicides: Lindane, Pyrethroids (Metabolite 1-4)

- **Commonly used Environmental pollutants**

- **Fluoride**

Industrially, fluorine and its compounds are used in the aluminum industry and glassmaking.

On a daily basis, fluorides are found in fluorine-containing table salt (sodium fluoride), fluoride-containing toothpastes, fluorine-containing mineral waters or fluoridated drinking water.
Acute toxicity symptoms: nausea, vomiting, ulceration of the mucous membranes, diarrhea, vomiting of blood.

Symptoms of long-term exposure: tooth fluorosis, skeletal fluorosis with stiffening of the spine (calcification of the ligamentous apparatus, irregular bone compaction, joint pain)

An overdose of more than 6 mg per day over a longer period of time may result in fluorosis, which starts with irregular white, cosmetically disturbing calcium spots. High doses taken over a long time may also lead to local softening of the enamel, but this is extremely rare and this process appears to be reversible: A study of 40 Indians with the symptoms of fluorosis shows that the daily intake of 500 mg vitamin C, 800 IU vitamin D and 250 mg calcium is able to reduce the onset of the disease.

Test material	Reference range
Serum, 1 ml	< 30.0 µg/l
	< 4.0 mg/g Creatinine (= recommended exposure level for workers before work)
Urine, 10 ml	
	< 7.0 mg/g Creatinine (= recommended exposure level for workers after work)

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Formaldehyde

A major source is tobacco smoke. In homes and offices, formaldehyde can be found in in chipboard and corkboards, insulation materials and floor coverings.

Other possible sources:
Antiperspirants, pharmaceuticals, car care products, bath preparations, deodorants, disinfectants, paints, felt-tip pens, floor sealers, dishwashing detergents, rubber, household cleaners, wood preservatives, insulating foams, adhesive foils, adhesives, charcoal lighters, cosmetics, plastics, plastic foams, lacquers, leather, glue, metals, mouthwashes, nail hardeners, paper, photographic paper, cleaning products, shoe care products, soap, shampoos, putty, chipboard, textiles, detergents, softeners, toothpaste.

Possible health problems include respiratory problems, nose irritation, constant cold, irritable cough, asthma, skin allergies, hair loss, sore throat and headache, nausea, vomiting, insomnia, conjunctivitis, stomach discomfort, heart problems, dizziness, difficulty concentrating.

Tested is Formate, the metabolite of Formaldehyde.

Test material	Reference range
Urine, 10 ml	< 15.0 mg/l

Polychlorinated Biphenyl (PCB)

PCBs are toxic and carcinogenic chlorine compounds. Until the 1980s, they were mainly used in transformers, electric capacitors, as hydraulic fluid in hydraulic systems, in paints, sealants, insulating materials and plastics. Jointing compounds can be the cause of PCB indoor air pollution as used in concrete buildings in the years 1955 - 1975. In Germany, the production of polychlorinated biphenyls was discontinued in 1983.

Chlorodiphenyl smells intensively fruity and can be absorbed by the body and through skin contact. PCBs are detectable in the atmosphere, in waters and in soil.

Described symptoms range from tiredness, headaches to nervous disorders and blood changes. PCB poisonings are characteristically unspecific. Cancers caused by PCBs have so far only been proven in animal experiments.

Test material	Reference range
Heparin blood, 10 ml	< 0.01 µg/l

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- **Polycyclic Aromatic Hydrocarbons (PAH)**

According to the German Federal Environmental Agency, PAHs are produced by the incomplete combustion of organic material such as wood, coal or oil, as well as in small combustion plants, by industrial processes, open fireplaces or tobacco smoke. In addition, this group of substances is a natural component raw fossil materials such as coal and petroleum. Tar oils and certain oils from petroleum processing may be mixed with softening rubber and plastics. The largest proportion of PAHs reaching the consumer comes from these uses. Whether in mouse pads, toys or bathing shoes - "Polycyclic Aromatic Hydrocarbons" (PAH) are omnipresent.

Many PAHs have carcinogenic, mutagenic and / or reproduction affecting properties (Crone and Tolstoy, 2010). Some PAHs are simultaneously persistent, bioaccumulating and toxic to humans and other organisms. Substances that combine these properties are particularly dangerous.

Testing includes up to seven polycyclic aromatics.

Test material	Reference range
Heparin blood, 10 ml	< 0.10 µg/l

- **Insecticides / Pesticides**

- **General Information**

Complaints are nonspecific and heterogeneous. Sensitivity disorders and neurological symptoms are mentioned. Some of these pollutants are carcinogenic.

- **Dichlorodiphenyltrichloroethane (DDT)**

DDT has been used as an insecticide since early 1940. Some of its breakdown products act as endocrine disruptors. In addition, DDT acts on the peripheral nervous system and is thought to be carcinogenic.

Thus, in the 1970s, the use of DDT was banned in many Western industrialized countries. In West Germany, DDT has not been used since 1972, in East Germany, DDT was used until 1989. Consequently, DDT can still be found today. Worldwide, DDT can only be used for the control of disease-transmitting insects such as malaria transmitters. In 2006, the World Health Organization announced that DDT should be reinstated.

Test material	Reference range
EDTA blood, 5 ml	< 0.15 µg/l

- **Dichlorodiphenyldichloroethylene (DDE)**

DDE is the metabolite of DDT.

Test material	Reference range
EDTA blood, 5 ml	see report

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Glyphosate

Glyphosate is one of the most widely used pesticides marketed by the Monsanto Group since 1974. It is sold under the brand name Roundup. Glyphosate is a broad-spectrum herbicide and is non-specific to many plant species. It is used in agriculture and by private users to kill weeds or competing crops.

105 glyphosate-containing weed killers are approved on the market. As of December 2017, 51 products are sold and distributed via internet or in garden centers to home owners and gardeners. In 2014, 95 tons of glyphosate landed in German homes and gardens.

According to §12 of the German Plant Protection Act, application is limited to areas of forestry, agriculture or horticulture and the sprays must not be applied on sealed surfaces such as garage door entrances, sidewalks, squares or schoolyards, or in the immediate vicinity of water. Nevertheless, such illegal applications are widespread, as many private users are poorly or very poorly advised on the use and toxicity of the agent.

Test material	Reference range
Urine, 10 ml	see report

Lindane (Hexachlorocyclohexane - gamma-HCH)

Lindane is a widely used contact insecticide. Since about 1945 it has been used in household and garden (against ants, cockroaches, fleas, mites, lice, etc.) for moth control and textile protection, in veterinary medicine and for external use in humans. Until the mid-eighties, most wood preservatives contained Lindane in a concentration of 0.5 to 2 %. Today, Lindane is used as a pesticide only for specific indications in the forestry sector.
In human medicine, it is used as an active agent in powders, gels and ointments for the treatment of mites and lice.

Test material	Reference range
Heparin blood, 5 ml	< 0.10 µg/l MABC-Value < 25.0 µg/l (= maximum allowable biological concentration)

Pentachlorophenol (PCP)

Pentachlorophenol is an organochlorine pesticide, a fungicide, herbicide and insecticide. PCP is, or has been used as a wood preservative, leather and textile preservative and as a disinfectant.

In Germany, the use of PCP is practically forbidden. Imported products, however, may contain PCP. Possible PCP sources are wooden structures and wall coverings in houses, textiles such as leather clothing, leather furniture, awnings, or tents. Adhesives, paints and varnishes as well as mineral oils may contain PCP.
PCPs can be detected for several weeks after exposure

Test material	Reference range
Serum, 4 ml	< 12.0 µg/l
Urine, 10 ml	< 5.0 µg/l

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Pyrethroids

Permethrin is an insecticide of the pyrethroid group used in wood preservatives, in wool carpets and other textiles to protect them from damage due to moth and beetle. Pyrethroids have been replacing lindane in plant, wood and textile protection products and in pest control since the beginning of the 1980s.

Permethrin is available for topical application against lice). The use of Permetrun in closed rooms is considered hazardous to health.

The Pyrethroid-Metabolites are tested:

- Metabolite 1 (C12CA)
- Metabolite 2 (m-PBA)
- Metabolite 3 (Br2CA)
- Metabolite 4 (4F3PBA)
- and Permethrin

Test material	Reference range
Urine, 10 ml (Metabolites of pyrethroid)	see report
Heparin blood, 5 ml (Permethrin)	< 0.25 µg/l

Diagnostic reports

All our reports contain information that allows the treating therapist to assess results. This includes valid reference ranges, usually provided by environmental agencies, information on toxicological and long-term effects and therapy suggestions, if available.

Please inform us if patients are to receive report copies.

If a comparison of present and past results is desired, please submit the last respective report number.

Report evaluation and advice

We are happy to answer analytical questions and basic information to submitting and referring physicians.

Patient inquiries are referred to the treating physician.

For the evaluation of diagnostic reports from other laboratories, please consult the responsible laboratory physician.

New Reference Ranges for Blood and Urine

We have updated reference ranges for metals in whole blood and baseline urine and have taken into account recommended values by Federal Environmental Agencies.

Changes are effective as of May 1, 2018.

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Medical Workshops and Conferences

International Conferences & Workshops 2018

04/21/2018 6:30 PM - 7:30 PM	**Workshop Medical Congress Freudenstadt** **Individual chelation therapy for patients with chronic metal exposure, plus an update on the diagnosis of organic environmental toxins. We also provide information about gadolinium contrasting agents, and chelation therapy potentials.** Freudenstadt, Germany (German)

From Saturday April 21, 2018 until Sunday, April 22, 2018 we are also present in at the Medical Congress in Freudenstadt, Germany.

For future workshops and updates, please visit:
https://microtraceminerals.com/en/workshops

Webinars

05/09/2018	**How do I recognize pollution? Diagnosis and consequences.** (German)

At present, we are offering German Webinar presentation on chelation and diagnostics at various dates throughout the year.

If you are interested in English Webinar presentation, please let us know time and day of your liking.

The following Webinar presentations are available. A minimum of 10 attendees is requested, thus early registration is required:

- The Neurotoxicity of Metals
- Proper Use of Chelating Agents
- Diagnosing Metal Toxicity
- Organic Environmental Pollutants
- Environmental Pollutants

For registration and further information, please visit:
https://www.edudip.com/academy/e.blaurock-busch

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Happy Easter!

We wish you a wonderful time.

Happy Easter!

And all the best

Your

E. Blaurock-Busch and Team