The Scope of the Toxicant Problem

Toxicity is a growing concern for both doctors and their patients. In the United States alone, there are over 80,000 chemicals registered for use.

Approximately 2,300 new chemicals are annually submitted for review to the U.S. Environmental Protection Agency (EPA); less than half of the high-volume chemicals have been tested for toxic risk to humans and only 7 percent have been assessed for developmental effects in children. Unknown to many, the effects of multiple chemical exposures, or synergistic effects are rarely evaluated—researchers are only now beginning to learn of the serious and far-reaching consequences. Additionally, it can be difficult to identify which toxin the patient may have been exposed to.

These concerning facts are behind the development of the comprehensive Toxic Effects CORE (Chemical Occurrence & Related Exposure) Profile, which tests for exposure to multiple compounds in six categories of common environmental toxicants.
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Chemical Exposure

Pervasive chemical compounds have been found to disrupt the immune, nervous, and endocrine systems. As more toxicants are used in products that increase the “convenience factor” of our busy lives, there continues to be increases in infertility, certain cancers, developmental delays, asthma, chemical sensitivities, and hormonal imbalances. Environmental toxicants have been implicated in causing and exacerbating many of these conditions.

Populations at increased risk from the effects of these toxicants include:

- Infants
  - Including in utero development and children
- Couples involved in preconception planning or infertility
- People with multiple and repeated toxicant exposures
  - Jobs and hobbies
- People with immune impairment
- People with poor nutrient status
- People experiencing significant weight loss
  - Post bariatric surgery
- Elderly
  - Since toxicants bioaccumulate over time

Additionally, the impact of various exposures (whether individual, simultaneous, sequential, or cumulative over a lifetime) may not be simply additive. Instead, combinations of exposures may have synergistic effects that intensify or otherwise alter their impact, when compared with the effects of each contaminant alone.\(^2,3\)

The presence of toxicants can be a burden, hindering patients from responding to treatment. Practitioners searching for a patient’s underlying causes of illness should consider testing for toxicants as a priority in their assessment. The CORE Profile can help identify a patient’s specific toxic burden and allow the clinician to determine the optimal way to biotransform the toxicants and help the patient avoid further exposure.

How To Use The Toxic Effects CORE Test Results

The summary of elevated toxicants indicates those compounds found at or above the 95th percentile which are indicative of exposure to higher levels of toxicants than found in the general population. Appropriate treatment may be determined by the levels of detected toxicants and/or the clinical symptoms consistent with those outlined in this interpretive guide.

To help identify possible sources of exposure, each toxicant class is summarized in the following tables, along with commonly associated health effects. This guide concludes with General Action Steps required to help relieve body burden for all toxic exposure and Specific Action Steps for indicated toxicants.

### Turn the Tide on Toxic Exposures

1. Overview of Tests Included in the Toxic Effects CORE Profile

<table>
<thead>
<tr>
<th>Category</th>
<th>Alkylphenols</th>
<th>Organochlorines</th>
<th>Organophosphates</th>
<th>Plasticizers/Preservatives</th>
<th>Polychlorinated Biphenyls (PCBs)</th>
<th>Polychlorinated Biphenyls (PCBs) Special Organochlorine Group</th>
<th>Volatile Organic Compounds (VOCs)</th>
</tr>
</thead>
<tbody>
<tr>
<td>All Compounds Tested For in the Complete Toxic Effects CORE Profile</td>
<td>Bisphenol A</td>
<td>Chlorinated Pesticides</td>
<td>Organophosphates</td>
<td>Phthalates &amp; Parabens</td>
<td>Dioxin-Like</td>
<td>Non-Dioxin-Like</td>
<td>Volatile Solvents</td>
</tr>
<tr>
<td>Individual Test Profile Name</td>
<td>BPA</td>
<td>DDE</td>
<td>DMTP</td>
<td>MEHP</td>
<td>PCB 77</td>
<td>Benzene</td>
<td>Ethylbenzene</td>
</tr>
<tr>
<td>4-Nonylphenol</td>
<td>Triclosan</td>
<td>DOT</td>
<td>DMTP</td>
<td>MEHP</td>
<td>PCB 118</td>
<td>Ethylene</td>
<td>Xylene</td>
</tr>
<tr>
<td>4-Nonylphenol</td>
<td>Dieldrin</td>
<td>DETP</td>
<td>DEDTP</td>
<td>MEHHP</td>
<td>PCB 126</td>
<td>Styrene</td>
<td>Toluene</td>
</tr>
<tr>
<td></td>
<td>Heptachlor Epoide</td>
<td>Atrazine</td>
<td>Atrazine mercapturate</td>
<td>MEOHP</td>
<td>PCB 156</td>
<td>N-Hexane</td>
<td>2-methyl-pentane</td>
</tr>
<tr>
<td></td>
<td>Hexachlorobenzene</td>
<td></td>
<td></td>
<td>Parabens</td>
<td>PCB 169</td>
<td></td>
<td>3-methyl-pentane</td>
</tr>
<tr>
<td></td>
<td>Mirex</td>
<td></td>
<td></td>
<td></td>
<td>Butylparaben</td>
<td>PCB 74</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Oxychlordane</td>
<td></td>
<td></td>
<td></td>
<td>Ethylparaben</td>
<td>PCB 138</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Trans-Nonachlor</td>
<td></td>
<td></td>
<td></td>
<td>Methylparaben</td>
<td>PCB 153</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Endosulfan Sulfate</td>
<td></td>
<td></td>
<td></td>
<td>Propylparaben</td>
<td>PCB 180</td>
<td></td>
</tr>
</tbody>
</table>
2. Alkylphenols

<table>
<thead>
<tr>
<th>Compound</th>
<th>Sources/Exposures</th>
<th>Toxicant Effects</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bisphenol A</td>
<td>Food and beverage containers, thermal sales receipts, water bottles, plastic dinnerware, baby bottles</td>
<td>In population based studies, urinary BPA levels were significantly associated with heart disease, PAD and hypertension, independent of traditional risk factors.</td>
</tr>
<tr>
<td>Triclosan</td>
<td>Deodorants, toothpastes, shaving cream, mouth wash, cleaning supplies</td>
<td></td>
</tr>
<tr>
<td>4-Nonylphenol</td>
<td>Stabilizing agents, PVC food packaging, emulsifying agents, wetting agents</td>
<td></td>
</tr>
</tbody>
</table>

[Shankar A, Teppala S, Sabanayagam C. 2012 Sep;120(9):1297-300.  

Organochlorines are compounds that contain carbon, chlorine, and hydrogen; the most infamous organochlorine being DDT.

Long used as insecticides in a wide variety of applications, these compounds are ubiquitous in the environment. Because their chlorine-carbon bonds are very strong, they do not break down easily. Therefore, despite the long-term banning of most compounds within this class in the U.S., these compounds persist in the environment today.

Organochlorines are highly insoluble in water, but bioaccumulate in fats, resulting in high fat meats, dairy, and fish becoming a major source of food-borne exposure. 

2. Alkylphenols

<table>
<thead>
<tr>
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<tbody>
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<td>Deodorants, toothpastes, shaving cream, mouth wash, cleaning supplies</td>
<td></td>
</tr>
<tr>
<td>4-Nonylphenol</td>
<td>Stabilizing agents, PVC food packaging, emulsifying agents, wetting agents</td>
<td></td>
</tr>
</tbody>
</table>

[Shankar A, Teppala S, Sabanayagam C. 2012 Sep;120(9):1297-300.  

3. Organochlorines

<table>
<thead>
<tr>
<th>Compound</th>
<th>Sources/Exposures</th>
<th>Toxicant Effects</th>
</tr>
</thead>
<tbody>
<tr>
<td>DDT, DDE (DDT breakdown product)</td>
<td>Used agriculturally until 1972, currently found in meat, poultry, dairy products, and fish</td>
<td>Several Chlorinated Pesticides have been noted as persistent organic pollutants (POP) by the United Nations Environment Programme Governing Council. In humans, reproductive, developmental, behavioral, neurologic, endocrine, and immunologic adverse health effects have been linked to POPs.</td>
</tr>
<tr>
<td>Dieldrin</td>
<td>Used as an insecticide on corn and cotton from 1950s until 1978</td>
<td></td>
</tr>
<tr>
<td>Heptachlor Epoxide</td>
<td>Used as a residential termicide until 1988</td>
<td></td>
</tr>
<tr>
<td>Hexachlorobenzene</td>
<td>Used as a pesticide until 1965, as fungicide in cereal grains, and as a wood preservative by-product</td>
<td></td>
</tr>
<tr>
<td>Mirex</td>
<td>Used as a pesticide for fire ant control until 1978, and as a flame retardant additive</td>
<td>NHANES correlation studies have confirmed an association between type 2 diabetes and chlorinated pesticides in a general urban population, as well a risk factor in peripheral arterial disease (PAD).</td>
</tr>
<tr>
<td>Oxychlordane</td>
<td>Metabolite of chlordane and nonachlor compounds used agriculturally until 1974 and residentially until 1988</td>
<td></td>
</tr>
<tr>
<td>Trans-Nonachlor</td>
<td>Chlordane metabolite used agriculturally until 1974, as termicide until 1988</td>
<td></td>
</tr>
</tbody>
</table>


Endosulfan Sulfate | Currently used agriculturally (cotton, tea, fruits, vegetables, tobacco, grains), and as a wood preservative | No national percentiles have been set for Endosulfan Sulfate. Detected levels are above the Metametix limit of quantification (0.34 ppb). |
4. **Organophosphates**

<table>
<thead>
<tr>
<th>Compound</th>
<th>Sources/Exposures</th>
<th>Toxicant Effects</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dimethylthiophosphate (DMTP)</td>
<td>Crops, trees, ornamentals, lawn treatments, Insect control (mosquito, fleas, termites), livestock</td>
<td>Epidemiologic studies suggest that prenatal exposure to organophosphates is associated with poorer neurobehavioral development, and postnatal exposure has been correlated with behavioral problems, and impairments in short term memory, executive function, and motor skills. Effects of acute high dose or high-dose worker exposures include neurological dysfunction.</td>
</tr>
<tr>
<td>Dimethyldithiophosphate (DMDTP)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Diethylthiophosphate (DETP)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Diethyldithiophosphate (DEDTP)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Atrazine</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Atrazine mercapturate</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

www.cdc.gov/exposureresport  

5. **Plasticizers/Preservatives**

<table>
<thead>
<tr>
<th>Compound</th>
<th>Sources/Exposures</th>
<th>Toxicant Effects</th>
</tr>
</thead>
</table>
| **Phthalates**          | Plastics, cosmetics, perfumes, medications, medical bags, commonly appears as “fragrance” | Possible steroid hormone disruption;  
| MEHHP, MEHP, MEOHP, MEtP|                                                                                                          | • Synergistic effect may enhance estrogen receptor response  
|                         |                                                                                                          | • Impaired male reproductive development  
|                         |                                                                                                          | • Endometriosis  
|                         |                                                                                                          | Have been linked to obesity in research. |
| **Parabens**            | Shampoo and conditioner, shave gels, cosmetics, personal lubricants, deodorant, and food additives |                                                                                                          |
| Butylparaben, Ethylparaben |                                                                                                          |                                                                                                          |
| Methylparaben, Propylparaben |                                                                                                          |                                                                                                          |

CDC. Biomonitoring Summary: Phthalates Overview. National Biomonitoring Program 2012;  
www.cdc.gov/biomonitoring/DEP_BiomonitoringSummary.html  

Phthalates are compounds added to plastic to make it more flexible. Known as plasticizers, these compounds are also added as stabilizers to other product groups. Therefore, phthalates can be found in a wide array of items, as seen in the table below. Phthalates are easily released from the original product; as plastic ages, phthalate release accelerates.

Most Americans tested by the Centers for Disease Control (CDC) have metabolites of multiple phthalates in their urine. Parabens are the most widely used preservative in personal care items and appear in over 10,000 of the 25,000 products analyzed in the Environmental Working Group’s Skin Deep database.

Although parabens are still considered safe by the FDA at certain levels of use, a 2004 study raised questions concerning the relationship between parabens and breast cancer; parabens are estrogen mimics and may disrupt hormonal function.
Over 200 PCBs were introduced into our environment before 1977. The CDC currently measures for 15 PCBs in population studies, commonly finding 10 of them in people tested. Of those 10, six have known negative health effects published in the medical literature.12

A special category of organochlorines, PCBs have gained notoriety in recent years due to the emerging information on their persistence in the environment and their demonstrated potential for soil-to-human biomagnification.

According to the Occupational Safety & Health Administration (OSHA), millions of workers are exposed to solvents on a daily basis. Volatile solvents are also heavily used in the average home.

Common household products, which often contain organic solvents, include cleaning and polishing fluids, spray-on personal care items, nail-polish removers, contact adhesives, paint, and lacquer thinners.

Indoor air fresheners and fabric deodorizers are a particularly common source of exposure, as are gasoline and cigarette smoke. These organic solvents are also sometimes purposely inhaled for psychoactive effects.13

### 7. Polychlorinated Biphenyls (PCBs)

<table>
<thead>
<tr>
<th>Compound</th>
<th>Sources/Exposures</th>
<th>Toxicant Effects</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dioxin-Like PCBs</td>
<td>Contaminated food (high fat dairy and meat, Atlantic farmed salmon and other farmed fish), contaminated water, old electrical fixtures, breast milk from mothers with elevated levels.</td>
<td>Studies in humans provide supportive evidence for potential carcinogenic and non-carcinogenic (immune, reproductive, neurologic and endocrine) effects of PCBs. PCBs have been correlated with lowered IQs in children exposed prenatally.</td>
</tr>
<tr>
<td>PCB 118; PCB 126</td>
<td></td>
<td></td>
</tr>
<tr>
<td>PCB 156; PCB 169</td>
<td></td>
<td></td>
</tr>
<tr>
<td>PCB 77</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Non-Dioxin-Like PCBs</td>
<td></td>
<td></td>
</tr>
<tr>
<td>PCB 74; PCB 138</td>
<td></td>
<td></td>
</tr>
<tr>
<td>PCB 153; PCB 180</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>


### 6. Volatile Solvents

<table>
<thead>
<tr>
<th>Compound</th>
<th>Sources/Exposures</th>
<th>Toxicant Effects</th>
</tr>
</thead>
<tbody>
<tr>
<td>Benzene</td>
<td>Gasoline, cigarette smoke, indoor air fresheners, glues, paints, well water, and detergents</td>
<td>Exposure to Volatile Solvents in humans has resulted in ocular and respiratory irritation; neurologic symptoms (headaches, loss of coordination); nausea; as well as hepatic, renal and CNS damage.</td>
</tr>
<tr>
<td>Ethylbenzene</td>
<td>Gasoline and styrene, paints, inks, varnishes, and glues, pesticides, tobacco products, groundwater</td>
<td></td>
</tr>
<tr>
<td>Styrene</td>
<td>Primarily used in the production of polystyrene plastics, and resins. Airborne exposures: cigarette smoke, auto exhaust, photocopies. Ingestion exposures: food heated or stored in styrofoam containers</td>
<td></td>
</tr>
<tr>
<td>Toluene</td>
<td>Airborne exposures: paint fumes, glues, solvents, gasoline, nail polish, stain removers, carburetor cleaners, cigarette smoke, and auto exhaust. Higher levels are found in smokers, regular drinkers, and those exposed to fumes</td>
<td>Some VOCs have been shown to be carcinogenic in animals; some are suspected or known to be carcinogenic (benzene) in humans.</td>
</tr>
<tr>
<td>Xylenes</td>
<td>Used in printing, rubber, and leather industries. Airborne exposures: gasoline, auto exhaust, cigarette smoke, fumes from paint, varnish, cleaners. Dermal exposure: direct contact</td>
<td></td>
</tr>
<tr>
<td>n-Xylene</td>
<td></td>
<td></td>
</tr>
<tr>
<td>o-Xylene</td>
<td></td>
<td></td>
</tr>
<tr>
<td>p-Xylene</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>


| n-Hexane      | Used in glues, adhesives, and gasoline. Exposure sources: gasoline exhaust, paints, quick-drying glues and adhesives, jet fuel and jet exhaust. (Hexane consists of n-hexane and its isomers of 2-methylpentane and 3-methylpentane) | No national reference ranges are established for hexane, 2- and 3-methylpentane and iso-octane. Percentile ranges are based on patient samples analyzed at Metametrix. |
| 2-Methylpentane|                                                                                  |                                                                                                          |
| 3-Methylpentane|                                                                                  |                                                                                                          |
| Iso-octane    | A component of gasoline, usually in a mixture of related hydrocarbons              |                                                                                                          |
General Action Steps

Identify the most likely exposure source(s) using the previous tables (see also Additional Resources on Individual Toxicants) and take steps to avoid further exposures. This may mean discontinuing the use of certain household cleaning products or personal hygiene preparations, avoiding commonly contaminated foods, and substituting organic foods whenever possible.

- Protect against toxicant damage from:
  - Oxidative stress
  - Inflammation
  - Mitochondrial injury
  - Minimize such damage through the use of nutrients and botanicals, such as: vitamin C, vitamin E, alpha lipoic acid, B-complex, magnesium, milk thistle, curcumin.

- Support and Stimulate Liver Biotransformation (Phases 1 & 2)
  - Support biotransformation with proper diet and supplementation (nutrients and botanicals that are substrates for and inducers of Phase 2 pathways).
  - The majority of these compounds are cleared from the body after undergoing oxidation, followed by a variety of conjugation reactions with substrates like glucuronic acid, glycine, or glutathione. Some compounds, that are frequently used as dietary supplements to support or stimulate the biotransformation pathways in the liver and protect tissues and cells from toxic effects, are:
    - Taurine
    - N-Acetyl cysteine
    - Glycine
    - Lipoic acid
    - Glutamine
    - Milk thistle
    - Exercise stimulates hepatic detoxification enzymes.\textsuperscript{14}

- Enhance the clearance of environmental toxins (Phase 3)
  - Reduce renal and hepatic recycling. Exercise promotes excretion via the kidneys and skin.\textsuperscript{14}
  - Sauna therapy has been used to reduce the presence of fat-soluble toxicants.\textsuperscript{15}
  - Ensure good intestinal function and bacterial balance to promote elimination of toxicants and toxicant by-products. Detoxification by-products that are passed into the gut may be broken down by bacterial enzymes and released for absorption back into the blood. Supplements, such as calcium D-glucarate, may be used to reduce this process, and steps to improve intestinal bacterial balance can help to restore healthy elimination of toxicants.\textsuperscript{15}
  - Support phase 3 clearance of toxicants through the use of products such as rice-bran fibers, chlorophyll, and fat-binders. Increasing these foods in the diet, or using daily supplementation, will slowly increase the excretion of these compounds from the body.
  - In addition to the chlorophyll containing agents, polyphenols (found highest in white and green teas) have been shown to increase fecal excretion of fat-soluble toxins.\textsuperscript{16}

\* U.S. Department of Health and Human Services Agency for Toxic Substances and Disease Registry (ATSDR)
Toxicant-Specific Action Steps

Alkylphenols
- Avoid polycarbonate containers that contain BPA, which usually have the symbol #3 or #7 on the bottom.
- Look for BPA-free cans and containers and reduce your use of canned foods overall.
- When possible, opt for glass, porcelain, or stainless steel containers, particularly for hot food or liquids.
- Avoid handling store receipts, which have been found to be a source of BPA.
- Use baby bottles that are BPA-free.
- Do not microwave polycarbonate plastic food containers, as it will increase release of BPA exposure.
- To minimize 4-nonylphenol exposure, do not heat food in plastic cling-type materials.

Chlorinated Pesticides (CPs)
- Avoid foods found to contain the high levels of Chlorinated Pesticide
  - Non-organic butter – high in DDE, HCB
  - Farmed Atlantic salmon and certain lake-caught fish – high in DDE, dieldrin, HCB, mirex
  - Non-organic greens (spinach, collards) – high in DDE
  - Non-organic cheeses (cream cheese, cheddar, American) – high in DDE, dieldrin, HCB
  - Non-organic fatty meats (lamb, ground beef) – high in DDE, HCB

Organophosphates (OPs)
- Supplementing with nutrients that stimulate detoxification (esp. taurine, glycine, and n-acetylcysteine) may be useful in reducing body burden of OPs.
- Supplementing with antioxidants vitamin E, vitamin C and alpha lipoic acid may protect against OP-induced oxidative stress.
- Evaluation of oxidative stress can be useful for monitoring exposed people.

Plasticizers and Preservatives
- Look for labels indicating “Phthalate- or Paraben- Free.”
- Oligoantigenic diets containing whole, organic foods, including dark colored vegetables, nuts, seeds, and whole grains along with the detoxification stimulating components from such foods are usually recommended for patients with elevated levels of urinary phthalates.
- Increasing phthalate-free fluid intake may improve rates of phthalate excretion, leading to lowering of tissue levels.
Polychlorinated Biphenyls (PCBs)

- Avoid known contaminated foods, especially farmed Atlantic salmon and fish from the Great Lakes, non-organic butter, and non-organic meats.
- Daily use of rice bran fiber has been documented in several studies in Japan to increase the clearance of PCBs.\textsuperscript{22-24}
- Chlorophyll and chlorophyll-containing foods may be effective at increasing the excretion of fat-soluble persistent toxins through the feces.\textsuperscript{17, 18}

Volatile Organic Compounds

- Keep area well ventilated when working with any type of volatile solvent.
- Avoid the use of indoor air fresheners.
- Avoid breathing household cleaning products and begin transitioning to non-toxic cleaners.
- Avoid heating or eating foods in Styrofoam containers (especially hot drinks).
- Volatile solvent detoxification products that have been passed into the gut may be broken down by bacterial enzymes and released for absorption back into the blood. D-Glucaric acid (as calcium D-glucarate, for example) may be used to reduce this process.
- Supplementation of vitamin C, selenium, glycine, glutamine, taurine, N-acetylcysteine, and alpha lipoic acid has been proposed.\textsuperscript{22}

Retesting

If initial levels are found extremely high, then retesting for individual toxicant(s) categories may be done in monthly intervals to ensure that effective steps are being taken in an effort to decrease the high risk of adverse health effects. For moderate or mild elevations, intervals of four to six-plus months or more are commonly employed to give assurance of improvements and to detect any new exposures that may occur.

Complementary Test Panels

Assess detoxification ability with the organic acid analysis, amino acid analysis, and genetic-predisposition testing. These tests can aid in designing appropriate detoxification protocols for patients.
Additional Resources

• Metametrix Learning Center
  › www.metametrix.com/learning-center

• Walter J. Crinnion, ND – Six part audio series on environmental toxicants
  › Part 1 – Why is it important to understand total toxic body burden?
    www.metametrix.com/learning-center/podcasts/2010/why-it-is-important-to-understand-total-toxic-body-burden
  › Part 2 – Why should we test for toxic exposure?
  › Part 3 – How do toxicants affect mitochondria?
  › Part 4 – Immunotoxicity—First to the party
  › Part 5 – Hey Fathead, your brain is an easy target for toxicants
  › Part 6 – Who’s your mama? Is your generation at risk?
    www.metametrix.com/learning-center/podcasts/2010/is-your-generation-at-risk

Additional Resources on Individual Toxicants:

After identifying the specific categories of concern through the CORE profile, more extensive information for each toxicant category and individual compounds may be found by visiting:

• www.metametrix.com/files/test-menu/interpretive-guides/BPA-IG.pdf
• www.metametrix.com/files/test-menu/interpretive-guides/Chlorinated-Pesticides-IG.pdf
• www.metametrix.com/files/test-menu/interpretive-guides/OP-IG.pdf
• www.metametrix.com/files/test-menu/interpretive-guides/Phthalates-Parabens-IG.pdf
• www.metametrix.com/files/test-menu/interpretive-guides/PCBs-IG.pdf
• www.metametrix.com/files/test-menu/interpretive-guides/Volatile-Solvents-IG.pdf
References


Toxic Effects CORE Can Benefit Patients with These Issues

Toxic Effects CORE Profile
* Test #1765 Toxic Effects CORE includes:
  - Bisphenol A
  - Chlorinated Pesticides
  - Organophosphates
  - Phthalates and Parabens
  - Polychlorinated Biphenyls (PCBs)
  - Volatile Solvents

Specimen Requirements
  - Urine, 12 ml (refrigerated)
  - Serum, 8 ml (refrigerated)
  - Whole Blood, 14 ml (refrigerated)

Tests Available for Follow-up
* Test #0740 Phthalates and Parabens
* Test #0760 Chlorinated Pesticides
* Test #0761 Polychlorinated Biphenyls
* Test #0762 Volatile Solvents
* Test #0763 Organophosphates
* Test #0764 Bisphenol A (BPA)

CPT codes, turnaround times, sample reports, and additional information is available online at www.metametrix.com/tecore
* Not available in NY