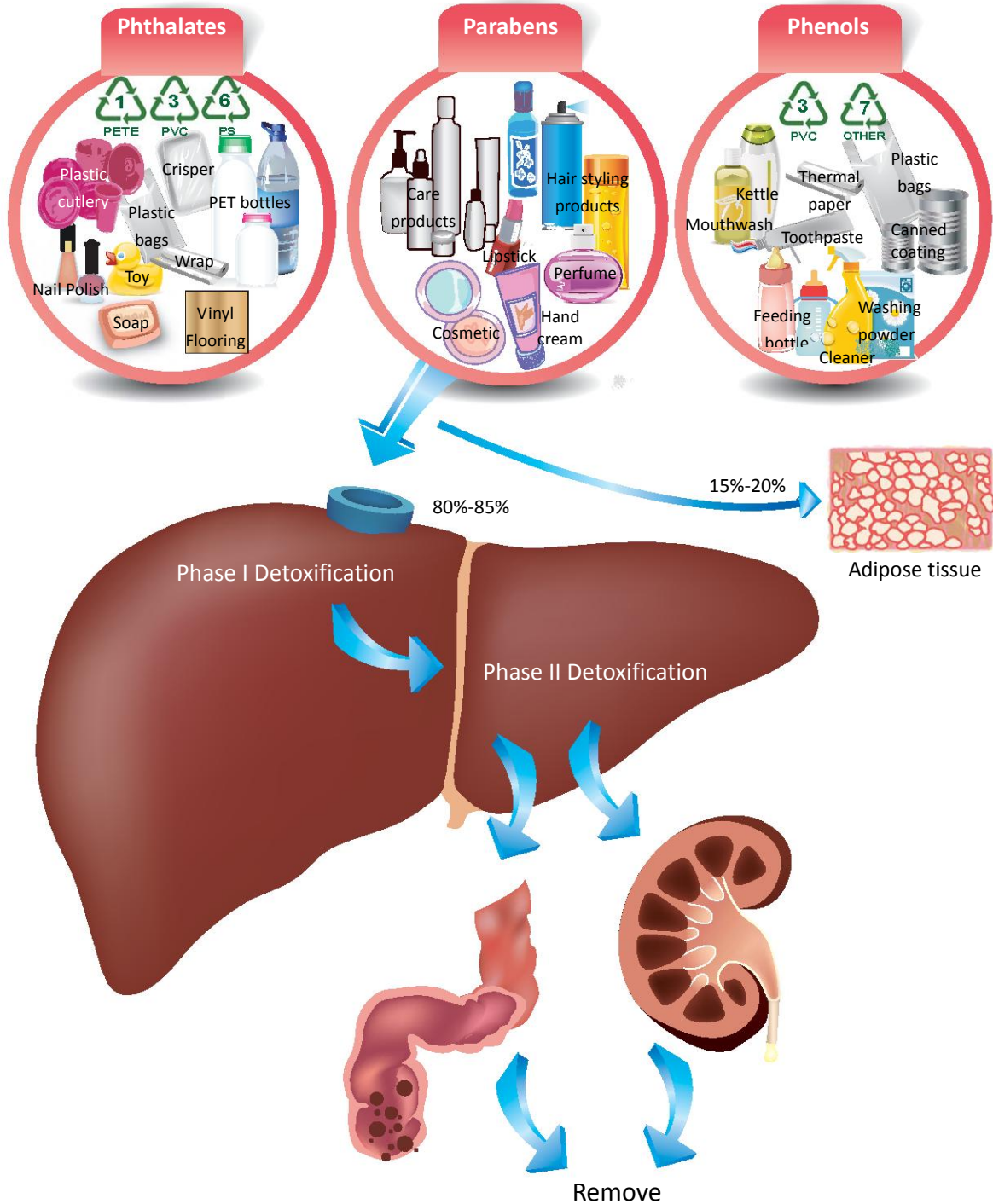


SAMPLE REPORT

Profile: : FNPPP: Xenoestrogen: Phthalates, Parabens, Phenols

Xenoestrogen Metabolism



Xenoestrogen

Phthalates Plasticizer	Phthalates Urine Metabolites	Results	Percentile				75% Reference Interval
			50 th	75 th	90 th	95 th	
DMP	MMP	7.28					≤34
DEP	MEP	29.4					≤42
DBP	MnBP	41.6					≤26
BBzP	MBzP	1.03					≤0.5
DEHP	MEHP	6.86					≤10

Parabens Plasticizer	Parabens Urine Metabolites	Results	Percentile				75% Reference Interval
			50 th	75 th	90 th	95 th	
MP	MP	31.2					≤240
EP	EP	0.347					≤16
PP	PP	0.291					≤16
BP	BP	0.054					≤1.6

Phenols Compounds	Phenols Urine Metabolites	Results	Percentile				75% Reference Interval
			50 th	75 th	90 th	95 th	
APnEO	NP	4.77					≤3
	4-t-OP	0.271					≤0.4
	2,4-DTBP	5.77					≤6
BPA	BPA	1.05					≤6
Triclosan	Triclosan	0.904					≤16

Unit: µg/g-creatinine

Xenoestrogen

Test data interpretation and explanation:

1. Xenoestrogen are also called Endocrine Disrupting Chemicals (EDCs). EDCs may interfere the body' s endocrine system and produce toxic effects to reproductive, neurological, and immune systems in both humans and wildlife. Environmental toxins should be evaluated as the "first step" to help patients get back on the road to wellness.
2. "Plasticizer" are compounds used in the production of plastics. "Urine Metabolites" are plasticizer that went through the liver metabolic transformation (biotransformation) by urine.
3. The reference range is based on the Redox Functional Medicine Laboratory research. Using 75th (percentile) as a reference value, $\mu\text{g/g-creatinine}$ as a unit. **The length of the line moves with the test result.** If the test result shows "<dL", your body plasticizer concentration limit lower than the instrument measured, which regard as exempt from illness in clinical health. On the contrary, higher test result means higher chance of suffering from illness.
4. Currently in medicine, there is no standard phenols concentration level. Findings on the report do not mean you will suffer from some of the symptoms or disease. Detoxification function is related to your physique, physical health status, and lifestyle, eating habits. If the test result is high, we recommend a variety of ways to enhance the body' s "self-healing ability", strengthening the detoxification function.

5. Common phthalate exposure source in home environment:

Living Room	Vinyl furniture, for example puzzle floor mat, plastic floor, imitation leather sofas etc.
Bedroom	Plastic Toys, Nail Polish, Perfume, Air detergents, Cosmetic.
Bathroom	Hairspray, Deodorant, Shower Curtains, Soap, Shampoo, Conditioner, Hair Dryer.
Kitchen	Soap, Food Packaging, Plastic bags, Wrap.
External Environment	Pipes, Gardening plastic products, Roof tiles, Raincoat, Repellents.

6. Common parabens exposure source in home environment:

Living Room	Cosmetic, Lotion, Emulsion, Humectant, Lubricating oil, Medicine
Bedroom	Shampoo, Shaving cream, Sprays, Toothpaste.
Bathroom	Dry cleaning detergent, Detergents.
Kitchen	Food Additives.
External Environment	Sunscreen.

7. Common phenols exposure source in home environment:

Living Room	Kettle, PET bottles, Beverage containers.
Bedroom	Toothpaste, Cleanser, Mouthwash, Shaving foam, Soaps, Body Wash.
Kitchen	Infant feeding bottles, PET bottles, Food Containers, Plastic cutlery, Canned Coating, Preservative.
Bathroom	Cleaning agents, detergents.
External Environment	Air freshener, Thermal paper, Pesticide.

* Endocrine Disrupting Chemicals (EDCs):

EDCs are chemicals that may interfere with the body' s endocrine system and produce adverse developmental, reproductive, neurological, and immune effects in both humans and wildlife. Endocrine disruptors may be found in many everyday products– including plastic bottles, metal food cans, detergents, flame retardants, food, toys, cosmetics, and pesticides.

Xenoestrogen

I. Phthalates:

Phthalates are so widely used in the production of plastics, cosmetics, and other convenience items that exposure to phthalates is universal for all but the most primitive and remote cultures. Numerous other uses in consumer products constitute the worldwide production of, roughly, a billion pounds of phthalates per year. Phthalates are widely used in polyvinyl chloride (PVC), polypropylene (PP), polyethylene (PE), and polystyrene (PS) production, also as a plasticizing agent, adhesives, coatings, ink and other purposes.



Di-(2-ethylhexyl) phthalate ester, DEHP is a common additive to Polyvinyl Chloride (PVC). This additive helps make PVC soft and pliable to be molded into eye-pleasing shapes. PVC products are marked with the plastic identification code 3. The analytes measured in this profile are metabolites of DEHP. In perfumes and air fresheners, phthalates are often listed as "fragrance".

In one study of 27 female and 23 male healthy subjects, food was the main source for DEHP. For some phthalates, the most significant exposure may be via inhalation of aerosols that can deliver highly absorbable phthalates. Skin exposure from lotions and creams can easily reach nearly 1000 mg/day. Seven of the most commonly encountered phthalates in consumer products were detectable in 81% of infants, which demonstrated widespread exposure from lotions, powders, and shampoos.

Phthalates and Their Metabolites:

Phthalates Name	Urinary Metabolite	Common source
Dimethyl phthalate (DMP)	Mono-methyl phthalate (MMP)	Plastic products, Repellents
Diethyl phthalate (DEP)	Mono-ethyl phthalate (MEP)	Toothbrush, Toys, Food packing, Cosmetic, Repellents, Aspirin.
Dibutyl phthalate (DBP)	Mono-n-butyl phthalate (MnBP)	Carpet, Paint, Glue, Repellents, Hair spray, Nail Polish.
Benzyl butyl phthalate (BBzP)	Monobenzyl phthalate (MBzP)	PVC resin softener, Computer Mouse.
Di-2-ethylhexyl phthalate (DEHP)	Mono-2-ethylhexyl phthalate (MEHP)	Furniture and Decoration, Shower Curtains, Raincoat, Toys, Shoes, Packaging films.

II. Parabens:

Parabens are widely used as preservatives in cosmetic, pharmaceutical, and food products because of their bactericidal and fungicidal properties. Their name comes from the chemical name, para-hydroxybenzoic acid, which encompasses a family of esters that differ at the para position of the benzene ring. The most common parabens used in production are methylparaben, ethylparaben, propylparaben, butylparaben and benzylparaben. While parabens used in commercial products are chemically synthesized, they also occur naturally in foods such as blueberries, strawberries, blackberries, and currants. Methyl- and propylparaben are the most commonly used preservatives in cosmetics, and are allowed in concentrations up to 1%. Parabens are found in shampoos and conditioners, moisturizers, hair care products, shave gels, cosmetics, personal lubricants, sunscreen and tanning lotions, deodorants and antiperspirants, toothpastes, food additives, and topical and parenteral pharmaceuticals.

Common source of Paraben:

- Cosmetics
- Lotion
- Cream
- Sunscreen Lotion
- Shaving cream
- Toothpaste
- Shampoo
- Air-conditioning system

Xenoestrogen

III. Phenols:

Alkylphenols (APs) are compounds widely used as plastic, rubber additives and antioxidants and for surfactants. Alkylphenols are known estrogenic xenobiotics in fish, birds and mammals. Although some of the alkylphenols present in the environment are known to be released from plastic material, the main origin for this contaminant is from the microbial break-down of alkylphenols polyethoxylates (APnEO), a large group of nonionic surfactants. Nonylphenol (NP), octylphenol (OP) and butylphenol (BP) are the most common alkylphenols. Therefore, human usually expose to alkylphenols, compounds of endocrine disrupters.

Nonyl Phenol, 4-tert-Octyl-Phenol, and 2,4-di-tert-Butylphenol

Nonylphenol(NP), 4-tert-Octyl-Phenol(OP) and 2,4-di-tert-Butylphenol(BP) are alkylphenol breakdown products. Alkylphenol ethoxylates and related compounds have been reported to be estrogenic because they have demonstrated in laboratory studies that they mimic the effects of estradiol both in vitro and in vivo. Nonylphenols are used as industrial surfactants and detergents. They are added to hundreds of consumer products for carpet and dry cleaning, pesticides, paper manufacturing, paints and coatings, as well as cosmetics and household cleaners.



BPA

Bisphenol A (BPA) is found mostly in plastics labeled with the recycling codes 3 or 7. BPA is a key monomer used to produce polycarbonate plastic. This type of plastic is usually clear and shatter-proof. Other uses of BPA consist of epoxy resins, which are used to coat the inside of food and beverage cans. BPA studies have been linked to obesity, neurological development delays in infants, thyroid disruption, developmental issues of sexual organs in infants, and sexual dysfunction in adults. Exposure to BPA occurs mostly through digestion of food and liquids that have been stored and heated in plastic materials.

Triclosan

Triclosan is an anti-microbial and preservative agent used in personal care products such as toothpaste, shaving cream, and hand soaps. Exposure occurs from use of these products in the home. Triclosan bioaccumulates in the body and is considered to block thyroid activity affecting metabolism and thyroid hormone signaling.

Phenols and Their Metabolites :

Phenol Name	Urinary Metabolite	Common source
Alkylphenol ethoxylates, (APnEO)	Nonyl phenol ; 4-tert-octyl-phenol ; 2,4-di-tert-butylphenol	Emulsifying, wetting, dispersing, or stabilizing agents, PVC food packaging.
Bisphenol A	Monoglucuronide of bisphenol A	Beverage containers, compact discs, plastic dinnerware, food containers, receipts, water bottles, baby bottles, impact-resistant safety equipment, automobile parts and toys.
Triclosan	Triclosan	Personal care products, deodorants, toothpastes, shaving creams, mouthwashes, cleaning supplies, medical devices, and is infused in consumer products such as kitchen utensils, toys, bedding, socks, and trash bags.

Health Effects:

EDCs have low water solubility and high lipid solubility making way for bioaccumulation in adipose tissue. Conditions associated with endocrine disruption include infertility, decreased sperm count, breast cancer, endometriosis, prostate cancer, ovarian cancer, asthma, allergies, and obesity.

Xenoestrogen

Steps for Reducing Elevated levels of Xenoestrogen:

※ Lifestyle modification:

1. Avoid ingested, topical, and airborne plasticizer sources to reduce elevated levels. Read labels and avoid anything that mentions "plasticizer" on the ingredient list.
2. Increase excretion and metabolism to enhance the rate of removal from the body. Increasing parabens free fluid intake can improve rates of excretion, leading to lowering of tissue levels. Exercise stimulates hepatic detoxification enzymes and promotes excretion via the kidneys and skin, and use of saunas can further enhance removal of parabens in sweat.
3. Eat more cruciferous vegetables: Broccoli, cauliflower, cabbage, kale, large cabbage, carrots, bok choy, mustard, ginger, onion and garlic

※ Supplementation needed:

A. Maintain Normal Liver Function

1. Vitamin B complex: Vitamin B2, Vitamin B3, Vitamin B6, Vitamin B12, Folic acid.
2. Amino Acid: Glycine, Taurine, Arginine, Ornithine, Glutamine.
3. Antioxidants: Lipoic acid, Glutathione, N-Acetyl-Cysteine (NAC), Cysteine, Methionine, CoQ10, Vitamin A, Vitamin C, Vitamin E.

B. Enhancement of Hepatic Detoxification Enzyme and Promote Liver Health

1. Sodium Glucuronate: Strengthen the liver phase II glucuronidation to remove body parabens.
2. Phytochemicals: Wasabia japonica, broccoli sprout, turmeric, catechins, silymarinphosphatidylcholine, siliphos®.

C. Maintain a Healthy Balance of Intestinal Flora

1. Probiotics, prebiotics: Maintain the equilibrium of intestinal bacteria, avoid microflora imbalance (dysbiosis).
2. Calcium-D-glucarate: Harmful intestinal bacteria secrete β -glucuronidase, suppress the liver phase II glucuronidation detoxification. Calcium-D-glucarate can inhibit intestinal secretion β -glucuronidase.

Additional Profiles to Consider :

- Estrogen Metabolism Health Profile
- Comprehensive Metabolic Function Profile

*** The above suggestions are for doctor' s reference only ***