



NEUROSOME



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Exploring The Neurological Exposome

Exposure to Endocrine Disruptors

Urinary PHTHALATE metabolite concentrations in the Slovenian GENERAL POPULATION

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Overview



<http://www.healthyhospitals.eu>
an initiative of the European Commission
program action H2020



<http://www.healthyhospitals.eu>
exposure and children's health



Kisado package: motor, getting function



<http://www.foodphoto.com>





What are phthalates and why are they of **CONCERN**?

- Esters of phthalic acid
- Long chain phthalates (LCP) -> plasticizers
 - PVC, soft plastics
- Short chain phthalates (SCP) -> solvents, additives
 - Personal care products, pesticides, paints....

ENDOCRINE DISRUPTERS

CAN MIGRATE INTO FOOD

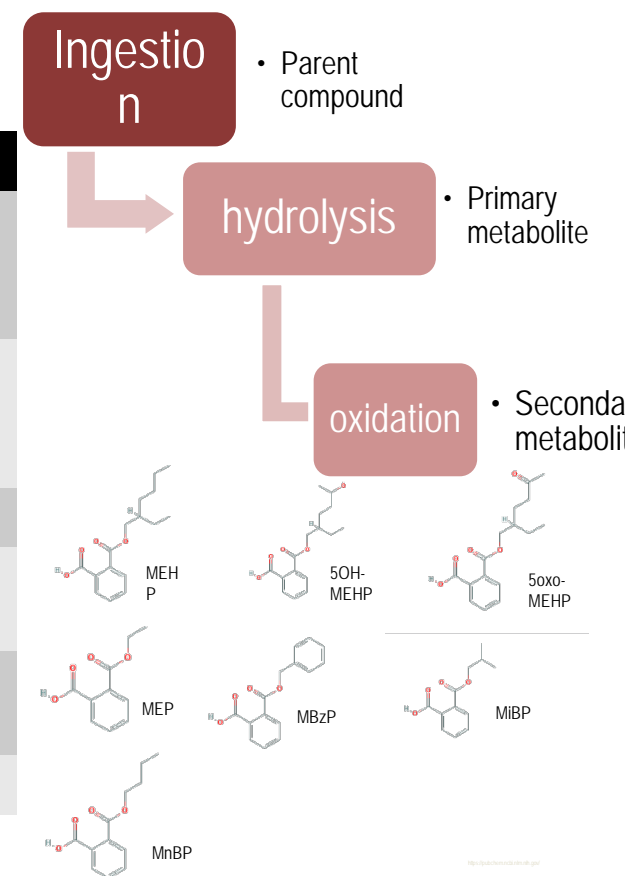
Properties

- Polar compounds (carboxyl group)
- Lipophilic
- Low volatility
- colorless, odorless liquids
- Owes properties mainly to the length of alkyl chain and the kind of alcohol used
- Do not bind to plastics



The METABOLIC pathway of selected phthalate parent compounds

Parent compound	Primary metabolite	Secondary metabolite
Di(2-ethylhexyl)phthalate (DEHP)	Mono(2-ethylhexyl)phthalate (MEHP)	Mono(2-ethyl-5-hydroxyhexyl) phthalate (5OH-MEHP) Mono(2-ethyl-5-oxohexyl) phthalate (5oxo-MEHP)
Diethyl phthalate (DEP)	Monoethyl phthalate (MEP)	
Butyl-benzyl phthalate (BBzP)	Monobenzyl phthalate (MBzP)	
Di-iso-butyl phthalate (DiBP)	Monoisobutyl phthalate (MiBP)	
Di-n-butyl phthalate (DnBP)	Monobutyl phthalate (MnBP)	





EXPOSURE to phthalates





URINARY phthalate concentrations in Slovenia

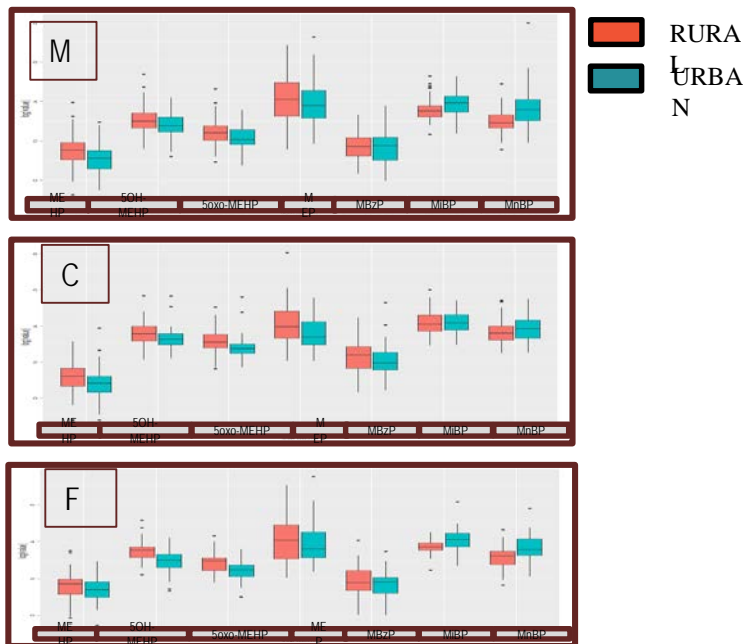
Metabolite	Median ($\mu\text{g/L}$)			Range ($\mu\text{g/L}$)		
	M	C	F	M	C	F
MEHP	3.60	2.66	4.64	0.5 - 52	0.3 - 48	0.6 - 33
5OH-MEHP	18.2	29.6	26.4	3.3 - 216	8.3 - 291	3.7 - 173
5oxo-MEHP	9.95	18.4	13.4	2.1 - 103	5 - 270	2.7 - 75
MEP	50.2	39.0	39.7	4.8 - 1442	7.7 - 3175	7.7 - 1858
MBzP	5.50	8.64	5.96	1 - 43	1.4 - 199	1 - 58
MiBP	38.0	61.4	47.3	10.2 - 198	18 - 403	12 - 472
MnBP	25.3	36.7	29.4	4.8 - 2956	12.1 - 242	5.1 - 326

Mothers n = 155 (30-52)
 Children n = 172 (6-12)
 Fathers n = 71 (30-70)

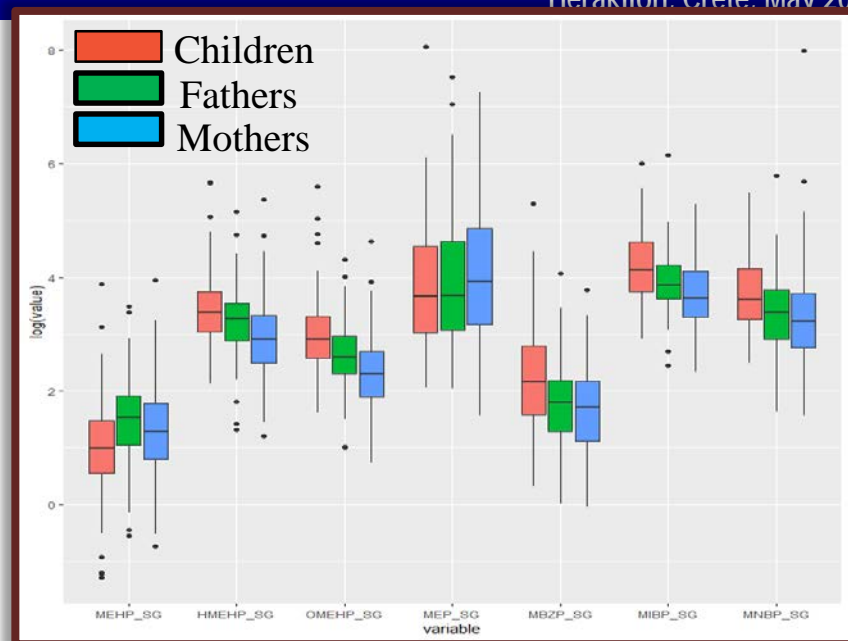
M = mothers C = children F = fathers



DESCRIPTIVE statistics



DEHP: higher in **rural** areas in all populations
DEP: higher in **rural** areas in all populations
BBzP: higher in **rural** areas in all populations
DiBP: higher in **urban** areas in all populations
DnBP: higher in **urban** areas in all populations



Age groups

C: 6 – 7 y-olds have sign. higher DEHP metabolite levels than 8 – 12 y-olds

M: 30 -37 y-olds have sign. higher DEHP metabolite levels than 38 -52 y-olds

F: 30 – 38 y-olds have sign. higher DEHP metabolite levels than 39 – 53 y-olds



What comes NEXT?

Preliminary results have to be tested for **confounding** using linear regression modeling.

From the metabolite concentrations we will calculate the **intake dose** using known excretion factors.



**Thank you
for your
attention**

**There are too many people
counting calories
and not enough people
counting chemicals.**

