

ANSWERS TO AUDIENCE QUESTIONS

EXPLORING THE IMPACT OF ENDOCRINE DISRUPTORS ON HUMAN HEALTH

SPEAKERS



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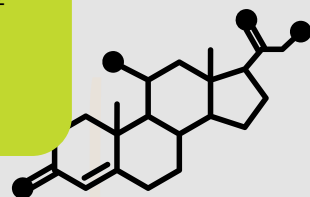


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CHAIRS

HOW CAN WE ADDRESS THE TESTING OF THE PHTHALATES AND OTHER CHEMICALS IN A GP OFFICE SETTING? ARE THERE ANY TESTS WE CAN DO?

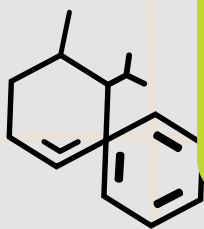
Josef K: There are some highly specialized commercial laboratories offering validated tests for some key phthalates and EDC. However, these analyses are usually very expensive requiring mass spectrometry methods and typically are not covered by regular health insurance companies, unless there is strong evidence of occupational or accidental (environmental) exposure.



WE ARE AWARE THAT THE NUMBER OF EDC REGULATED BY EU IS EXTREMELY AND ABSURDLY LOW. HOW DO YOU RECOGNIZE AN EDC WITH NO HESITATION? WHERE DO YOU LOOK FOR THE NEWS AND WHAT ARE YOUR GUIDELINES AND STEPS TO IDENTIFY A CHEMICAL COMPOUND AS AN EDC?

Pauliina D: There are multiple definitions for an EDC, ranging from legal definitions within the PPP and biocide regulation in the EU, to the one by WHO. There are no tests that unambiguously identify an EDC, so that all parties (industry, regulators, researchers) would be satisfied. Personally, if I see that a chemical disrupts ovarian follicle growth and/or steroidogenesis or other endocrine mode of action, and associates to reduced fertility and/or altered steroids in women, it is sufficient to me to name a chemical as an EDC.

Josef K: You may check the ECHA website on the current status of chemical declared as EDC or those being under evaluation (<https://echa.europa.eu/de/ed-assessment>). Various governmental regulatory agencies also have such EDC lists, which also include suspected EDCs (<https://edlists.org/>). Also many NGOs collect such data. However, it typically takes many years until scientific data, published in peer reviewed scientific journals enters the complex, time consuming and controversial regulatory international process, e.g. along OECD test guidelines. This situation has to be changed for those groups of chemicals to which already identified EDCs belong, e.g., bisphenols, low molecular weight phthalates, many flame retardants, etc.



WITH EVER INCREASING NUMBER OF EDCS NOWADAYS, DO YOU THINK WE CAN GET THE FULL LIST OF SUCH COMPOUNDS AND REGULATE THEM?

Pauliina D: As chemicals are continuously being added to the market without proper testing, the goal of getting all EDCs listed is unachievable unless the regulations are changed.

Josef K: We probably will need group assessments for suspected EDCs and if such chemicals need to be entering the market, the producer has to demonstrate that this specific chemical is safe and not an EDC like the other related compounds.



HOW DO YOU SEE THE ECONOMIC BENEFIT OF EDCS VS THE HEALTH IMPACTS?

Pauliina D and Josef K: We personally think that public health is an invaluable top priority, and chemical industry revenues should not drive the regulations.

WHAT CAN I CHANGE IN MY DAY-TO-DAY LIFE TO REDUCE EXPOSURE TO EDCS?

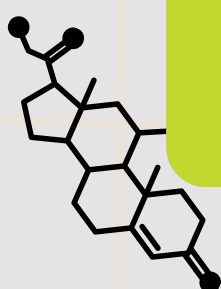
Pauliina D: Some common advice include avoiding soft plastics, reducing the use of personal care products, avoiding plastics in the kitchen, not heating food in plastic containers, choosing organic foods whenever possible, avoiding processed/packaged foods, and following any health based guidance the local food safety authorities may have. And of course, remember the EDC questions when you vote. The situation can only be changed through better legislation.

Josef K: You also may carefully choose your selection of children's toys, cosmetics, clothing (outdoor wear), textiles, furniture, etc. to ensure that they do not contain flame retardants. Make sure that you and the family have adequate iodine intake to protect your thyroid hormone system.



THE EFFECTS OF POLLUTANTS ON THE THYROID FUNCTION WAS MENTIONED. IS THE PARATHYROID AFFECTED BY THIS TOO?

Josef K: There is no data to my knowledge on EDC effects on the parathyroid. Very few data indicate that some EDC may interfere with bone cell development, differentiation and function.



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A LOT OF PRODUCTS ARE LABELLED AS BPA FREE OR PHTHALATE FREE. HOW RELIABLE ARE THESE LABELS? IS THERE ANY REGULATORY BODY THAT MONITORS THE AUTHENTICITY?

Pauliina D: Typically, the BPA and phthalate free products contain other chemicals that give the products the same properties, such as BPS and replacement phthalates. These are typically not as well studied at all, and as structural analogues to the restricted chemicals they often possess similar ED-properties. This is the concept of "regrettable substitution". I do not know if any authority follows these labels to make sure they are true.

Josef K: Pauliina is right! Unfortunately, the label "BPA-free" does not mean free of BPF,S, etc. The same for phthalates! Therefore, I plead that closely related chemicals need to be considered and banned as EDC, unless the producer has proven that the chemical has properties distinct from an already declared EDC and thus probably may be safe to be used as substitute if urgently needed for any essential application!



A MAJORITY OF US CONSUME MILK THAT IS PACKAGED IN PLASTIC CONTAINERS. WOULD THIS MILK BE EXPECTED TO BE CONTAMINATED WITH ANY EDCS?

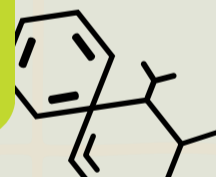
Pauliina D: I don't know much about milk packaging except that cows living in contaminated areas, for example drinking PFAS contaminated water, can have high levels of chemicals in their milk.

Josef K: If possible, try to use milk from glass bottles!



ARE ANY OF THE METALS USED IN DENTAL WORK ASSOCIATED WITH REDUCED FERTILITY?

Pauliina D: Dental fillings may contain bisphenols that can disrupt fertility. The older amalgam fillings contain mercury, which is also toxic not only to reproduction but to nervous system, too.



YOU'VE MENTIONED THE EFFECT OF COSMETICS THAT ARE LADEN WITH EDCS. WHAT ABOUT ESSENTIALS LIKE SOAP AND SHAMPOO?

Pauliina D: Soaps and shampoos count as personal care products, too, which as a category is recognized as a source of EDCs.



COULD THESE ENDOCRINE DISRUPTORS CONTRIBUTE TO THE OBESITY EPIDEMIC?

Pauliina D: Many EDCs can stimulate adipogenesis, for example via the PPAR receptors, thereby altering energy metabolism.

Josef K: Yes, there is strong evidence for this, some EDC are, therefore, also called obesogens.

WHAT ARE YOUR OPINIONS ABOUT USING BAYESIAN KERNEL MACHINE REGRESSION (BKMR) TO EVALUATE THE IMPACT OF EDCS MIXTURE?

Pauliina D and Josef K: All methods used for assessing chemical mixtures come with their benefits and limitations. There are no gold standards that the community has agreed upon.

