

Short Symposium: Indoor pollutants

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Exposure to elements from dust – from home to kindergarten (by car)

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Given the large amount of time people spend indoors, exposure to indoor contaminants causes increasing public health concerns. Indoor dust is a heterogeneous and complex mixture of organic and inorganic particles and may present an important source of daily exposure to toxic elements. Children are the most vulnerable population group for adverse health effects that toxic elements may induce due to their extensive interactions to floor and dusty surfaces as well as hand-to-mouth activities typical for that age. This work presents the levels of 18 elements measured in dust samples collected from 68 households, 10 kindergartens and 21 cars from the area of Zagreb, Croatia. Based on the obtained data, the health risks from overall daily exposure to trace elements was assessed for children aged 2–6 years considering three pathways of dust intake – ingestion, dermal absorption and inhalation, and two exposure scenarios – central and worst-case scenario. Based on the obtained data from dust analysis and the questionnaire on the house characteristics and habits of the residents, possible indoor sources of elements were also evaluated. The median concentration of most elements was significantly higher in dust obtained from cars compared to households and kindergartens, especially in the cases of Co, Cr, Cu, and Mo. The house age and house area were identified as the most important contributors for most trace elements. Oral intake was identified as the most important exposure pathway, except for Cr, Ni, and Sb where dermal contact was the main route of exposure. Health risk assessment considering dust ingestion, inhalation, and dermal absorption of analysed dust indicated that no adverse effects are expected for young children from overall daily exposure to trace elements in the Zagreb area.

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Horizon Europe Twinning project as a way of reinforcing capacities towards excellence in analysis of contaminants of emerging concern – TwiNSol-CECs project

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The European Commission recognized the need for reinforcing the existing research capacities of less developed countries, so-called Widening Countries, in order to connect these research “pockets” to top leading research institutions from different Member States or Associated Countries and harmonize the R&D systems across the continent making it more competitive within the global research landscape. To address this need, there emerged the horizontal component “Widening Participation and Strengthening the European Research Area” within the Horizon Europe (HE) programme and the so-called twinning calls for projects through which it is expected that coordinating institutions from Widening Countries collaborate with at least two advanced partners in the form of joint research, new research endeavours, transfer of advanced knowledge, and experience in research management and administration. The main objective of the HE twinning project called TwiNSol-CECs is to raise the scientific and innovation excellence of the Faculty of Technology, Novi Sad (FoT NS) in various aspects of research on contaminants of emerging contaminants (CECs) integrated in broader EU networks of excellence, with two prestigious partners from the EU, CSIC-IDAEA, Barcelona and NOVA School of Science and Technology, Lisbon. The expected outcome of TwiNSol-CECs is to contribute to national and regional scientific and economic growth and well-being and the harmonization of advanced research and innovation efforts important for the overall faster and sustainable transition of Europe foreseen by the European Green Deal (EGD) towards zero-pollution and a toxic free environment. The presentation gives insight into the gaps within the field of CEC research, and how TwiNSol-CECs is going to contribute to narrowing the observed gaps by reinforcing the surveillance of CECs in environmental samples in Serbia.

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