

FROM FIELD TO PLATE: DISCUSSION ON TRANSFER OF METALS IN FOOD CHAIN

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Abstract

Transfer of essential major, minor and trace elements from environment to food, as well as possible contamination of food chain with toxic and potentially toxic elements (e.g., As, Cd, Ni, Pb) in step with impact assessment of environmental pollution is a hot topic not only at scientific level but very important for the interest and safety of society. The discussion involves investigation of metallic element transfer specifics in regard to *soil-plant* segment of food chain based on performed laboratory and field experiments. A question arises how transfer and bioavailability of elements can be affected at agricultural or gardeners' level with the main aim to gain safe and healthy food of plant origin – how soil can be treated, what can be added to soil to diminish the transfer of pollutants, what local resources can be used to improve soil quality. Another point of discussion involves an overview of quantitative research of food samples derived regionally in Latvia to reveal element composition of local food and to discover possible contamination risks as well as to compare the results with similar worldwide studies. Furthermore, also fruit and vegetable samples grown in allotment gardens of Riga city have been collected and quantitatively analyzed looking for impact of urban pollution on *soil-plant* segment of food chain. Results of experiments and analyses revealed influence of several factors that may have a key role in element transfer 'from field to plate', e.g., seasonality, botanical origin, site-specific factors, applied agricultural practice, food processing. Anyone can join this discussion and see related topics on the project's website: <http://wise.lu.lv/>.

Keywords: element transfer, environment, food composition, major and trace elements, quantitative analysis