RISK-BASED REGIONAL RANKING OF HEALTH ENVIRONMENTAL STRESSORS

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The EU Health and Environment Action Plan (2004) highlights that more integrated and effective information and tools are required to support environmental health policies. In this context, there is a need for screening approaches to address detailed health risk and impact assessment towards the most critical stressors and scenarios. The identification in a regional context of the priority chemical contaminants to be further investigated, according to their risk for human health, is indeed a challenging task. To this aim, in the frame of the FP6 European Project 2-FUN (Full-chain and UNcertainty Approaches for Assessing Health Risks in FUture ENvironmental Scenarios) a "Risk-based Tool for the Regional Ranking of Environmental Chemical Stressors" has been developed, aimed at supporting decision-makers in the identification of priority environmental contaminants, as well as priority areas, to be further assessed. The tools implements a methodology based on a Weight-of-Evidence approach, integrating three types of information, identified as "Lines-of-Evidence", i.e.: 1) LoE "Environmental Contamination", including data on chemical contamination of environmental matrices in the region and informing thus about potential population exposure; 2) LoE "Intake", including results from biomonitoring campaigns (i.e., chemicals concentrations in human biological matrices) and supporting the knowledge on actual population exposure to chemicals; 3) LoE "Observed Effects", including information on the incidence of health outcomes associated to environmental exposure to chemicals. A Multi-Criteria Decision Analysis methodology was developed to support the integration of information related to the three LoEs for each chemical and associated health outcomes. The tool allows to rank chemical stressors at the regional level as well as within each sub-area (e.g. counties). Moreover, it supports the identification of priority sub-areas within the region, where environmental and health data suggest possible health effects and thus more investigation efforts are needed. Results of a testing application to the region of Flanders (Belgium) will be presented. In the application, data on soil contamination by metals and organic contaminants are integrated with data on exposure biomarkers and data on health effects measured in adolescents within the frame of the biomonitoring campaign realized by the Flemish Centre of Expertise for Environment and Health in the period 2002-2006.

Keywords: chemicals ranking, health risks, biomonitoring