




EUROPEAN HUMAN BIOMONITORING INITIATIVE (HBM4EU) INDICATOR LEAFLETS

EMERGING CHEMICALS SCREENED IN HUMAN SAMPLES

Indicator 8.1 Number of emerging (mixtures of) chemicals screened in human samples

 **SPECIFIC GOAL 8:** Identifying chemicals of concern through novel methods for the holistic analysis of HBM samples and improving the use of HBM data in assessing exposure to and the risks of chemical mixtures

 **RESPONSIBLE:** University of Antwerp (UAntwerpen), Belgium / Institut National de la Recherche Agronomique (INRA), France

 **WORK PACKAGE:** 16 (INRA)

KEY MESSAGES

- Suspect screening and non-targeted screening (NTS) are new large-scale open methodological approaches for characterizing human exposure to emerging chemicals.
- They are valuable new tools which bring innovation by better integrating exposomics and HBM.
- They also represent a major strategical perspective for providing scientific based support to risk assessment and policy.
- The wide screening of urinary pesticide-related markers (few thousands) is one particular application of these approaches that is developed in the frame of an WP15-WP16 interaction

WHY

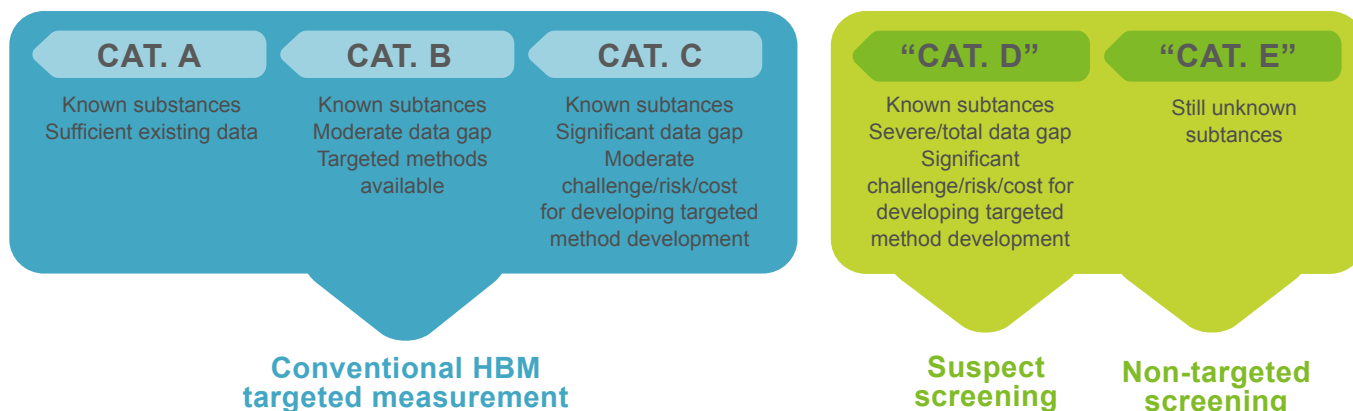
- 1 Emerging chemicals are currently a major concern for the scientific community, societal actors, and public authorities
- 2 High need to produce relevant information on emerging chemicals (new compounds or chemical of new concern)
- 3 Current targeted methods do not reflect the simultaneous exposure to the wide variety of existing chemicals, and do not allow capturing not yet identified markers of exposure
- 4 Suspect and non-targeted screening approaches have already been developed in the environmental or food safety areas, but are in the current state less mature in the HBM field
- 5 Significant medium to long-term analytical and network development work is needed to reach the ambition promised by these new screening approaches

Positioning of the WP16 related work within the HBM4EU substance categorisation process:

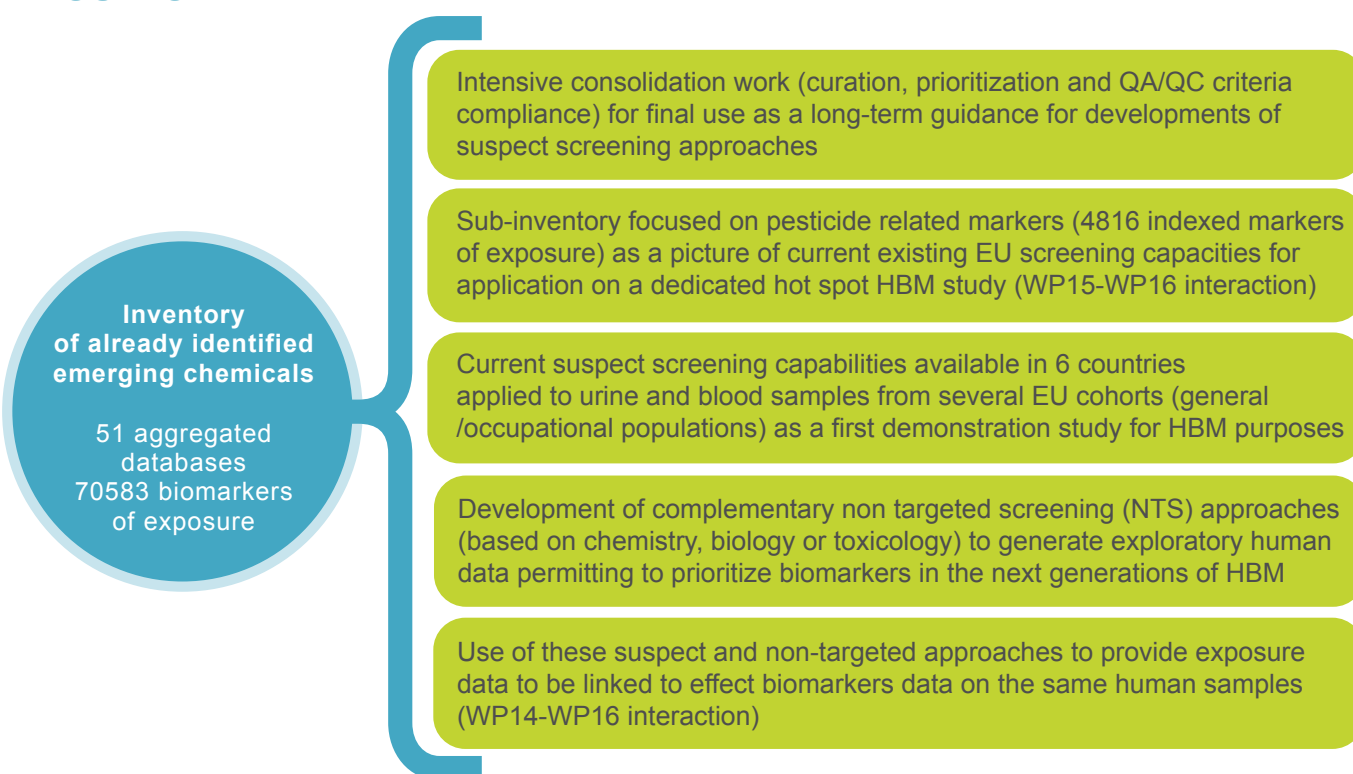




WP16



RESULTS

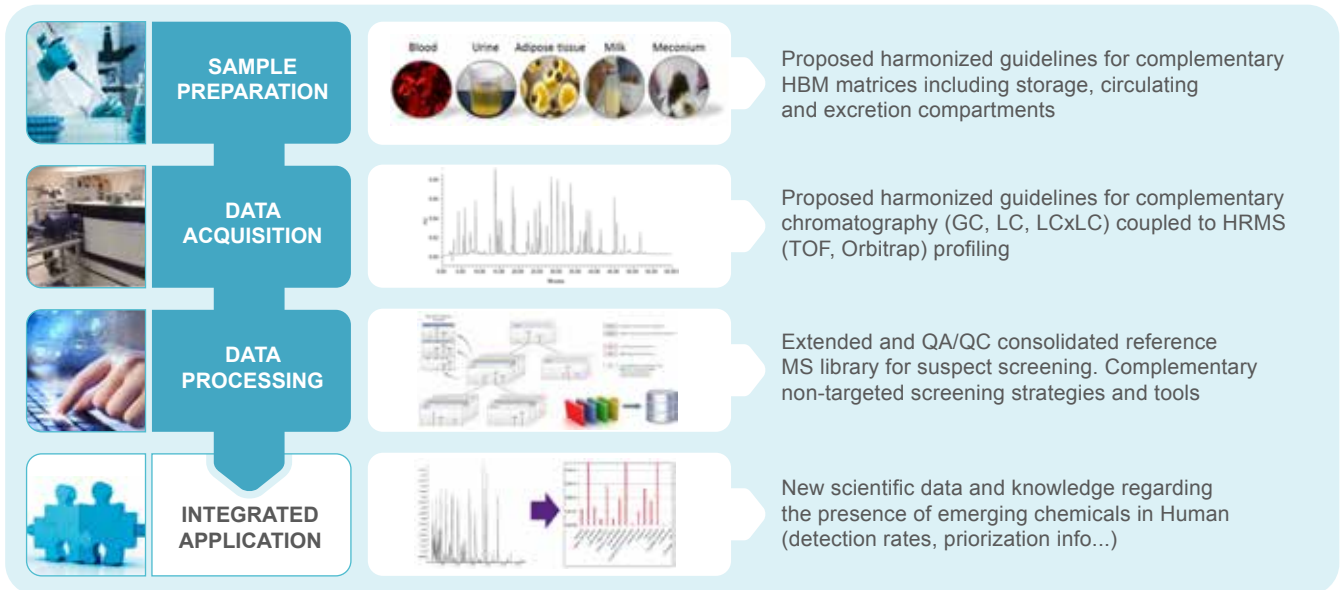


 ON TRACK	<ul style="list-style-type: none"> • Inventory of already identified emerging chemicals aggregated from various sources • Qualitative consolidation and mass spectrometry (MS) ready curation of the inventory • Harmonised procedures for collection and generation of reference MS and MS/MS data • Analysis of urine and serum samples as first demonstration of suspect screening capabilities • Development of a software for non-targeted data processing and analysis (Haloseeker)
 WORK IN PROGRESS	<ul style="list-style-type: none"> • Collection of existing / acquisition of new reference MS data to update the library • Interlab study to evaluate the comparability / complementarity of suspect screening data • Development of a particular and harmonised suspect screening approach for pesticides • Application of the NTS approach developed for halogenated markers to human samples • Complementary developments for NTSbased on the detection of effects (adductomics and effect-directed analysis, EDA).





METHODOLOGY



GC = gas chromatography, LC = liquid chromatography, TOF = time of flight, QA/QC = Quality assurance Quality control, HRMS = high resolution mass spectrometry



HBM4EU deliverables: D16.1, D16.2, AD16.1, AD16.2, AD16.3, AD16.4

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