

A new Scientific Committee on Environmental Health and Toxicology at IATDMCT. Scope and goals.

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A huge variety of chemicals are constantly being introduced in the environment. The toxicological significance of exposure to these compounds and the consequences on health for the general population are of increasing concern. There is now general agreement that the diseases most strongly contributing to the public health burden result from complex interactions between environmental and genetic factors.

Knowledge on environmental exposures (internal and external) and how they can affect health outcomes is mandatory in order to create healthy environments and improve health. Direct or indirect assessment of exposure to chemicals is aimed at understanding the extent to which humans or the environment are exposed. Indirect methods involve environmental monitoring (through measurement in water, soil ...) or assessment through questionnaire administration. Direct methods include individual monitoring through the use of biosensor and direct measurement in biological matrices, the so-called human biomonitoring or HBM. Over recent years, great emphasis has been put on HBM.

HBM can be defined as “the method for assessing human exposure to chemicals or their effect by measuring these chemicals, their metabolites or reaction products in human specimens”. HBM involves measurements of biomarkers in bodily fluids such as blood, urine, saliva, breast milk, sweat and other specimens such as feces, hair, teeth and nails. HBM data directly reflect the total body burden resulting from all routes of exposure (oral, dermal, inhalation, trans-placental) and inter-individual variability in exposure levels, metabolism and excretion rates. Therefore, HBM data represent the most relevant metric for exposure assessment and associations with health outcomes in epidemiological studies. HBM can also identify spatial and time trends, contributing lifestyle factors and specific at-risk groups. Finally, HBM facilitates determination of population reference ranges.

HBM of ubiquitous chemicals (e.g., benzene, phthalates, certain pesticides, bisphenol A ...) began relatively recently, and these chemicals present several new challenges; interpretation of data on these chemicals is complicated by their high exposure variability and their

ubiquitous presence, including in analytical laboratories and sampling equipment. These chemicals also present challenges when selecting the matrix to be used for assessment. To date, the scientific community has not developed a set of systematic guidelines for implementing and interpreting biomonitoring studies of these chemicals.

Although HBM uses methods and tools previously developed for clinical toxicology (bioanalysis, toxicokinetics and toxicokinetic modeling, toxicogenetics), there are specific issues that are important to highlight and that need to be addressed. Some of those specific aspects will be presented during this symposium.

In order to cover those emerging aspects of toxicology, a new scientific committee has been created at IATDMCT. The scope of the new scientific committee is to cover health aspects of environmental toxicology and, more specifically, to focus on human biomonitoring. Objectives of the new scientific committee are:

- To promote and disseminate research in this area. Environmental health toxicology and, more specifically, human biomonitoring are emerging aspects of toxicology directly related to individual and public health. Research in this area should also include studies related to analytical chemistry, toxicokinetics and toxicokinetic modeling.
- To bring together scientists and enhance collaboration between groups working in the field.
- To establish recommendations: Assay methods described in published environmental and human biomonitoring studies frequently lack rigorous bioanalytical validation. Recommendations for rigorous validation of the bioanalytical methods used in the area of environmental health are urgently needed since the results of these assays may serve as the basis of important health decisions.

Already involved or wishing to become involved in this emerging field of toxicology, you are welcomed to join the new scientific committee. If you are interested in becoming a member of the new scientific committee and participating to develop environmental health toxicology in IATDMCT, please get in touch.