Assessing exposure to environmental contaminants in portuguese mother-infant pairs: the project ARTEMIS

4th CHRC Annual Summit

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Background

Background

Human Biomonitoring (HBM): methodology used to evaluate human exposure to chemicals and potential adverse health effects associated to that exposure.

- measures the concentration of chemicals or of their metabolites in human biological samples;
- evaluates total internal exposure in an individual at a given moment.

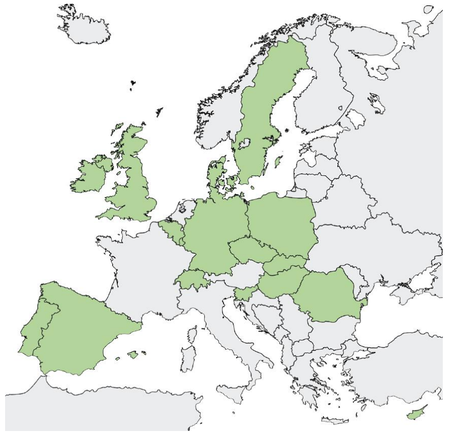
Background

2003 – Action 3 (Develop a coherent approach to biomonitoring in Europe) of the European Environment and Health Strategy.

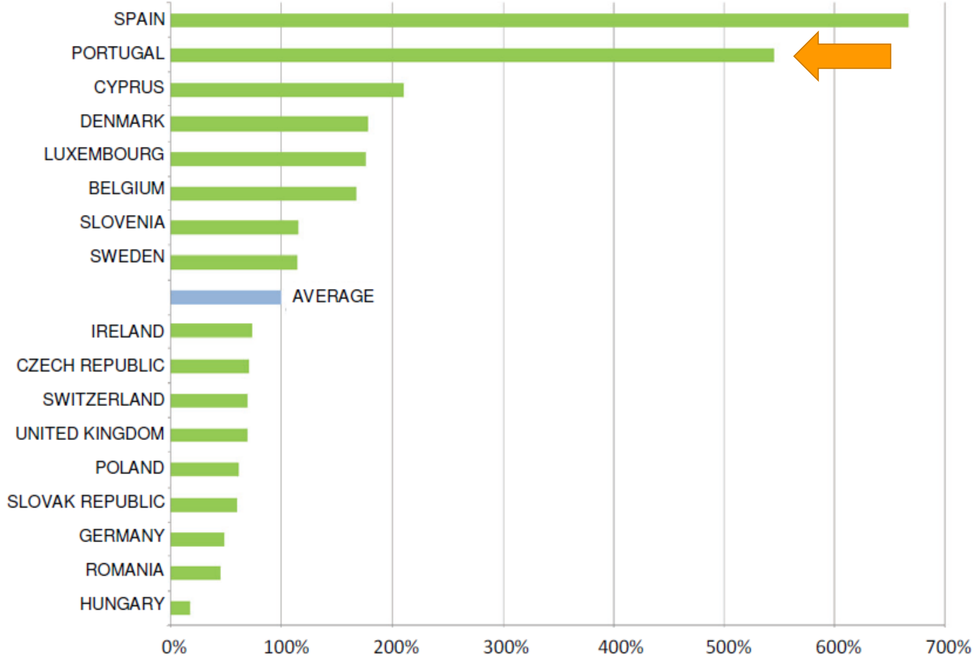
2010-2012 – Projects **COPHES** (Consortium to Perform Human Biomonitoring on a European Scale) and **DEMOCOPHES** (DEMOnstration of a study to COordinate and Perform Human biomonitoring on a European Scale).

Background

In DEMOCOPHES 17 countries tested a common approach for human biomonitoring and produced comparable data on exposure to cadmium, mercury, cotinine and phthalates.



Mercury in hair of mothers,
% of the DEMOCOPHES countries average

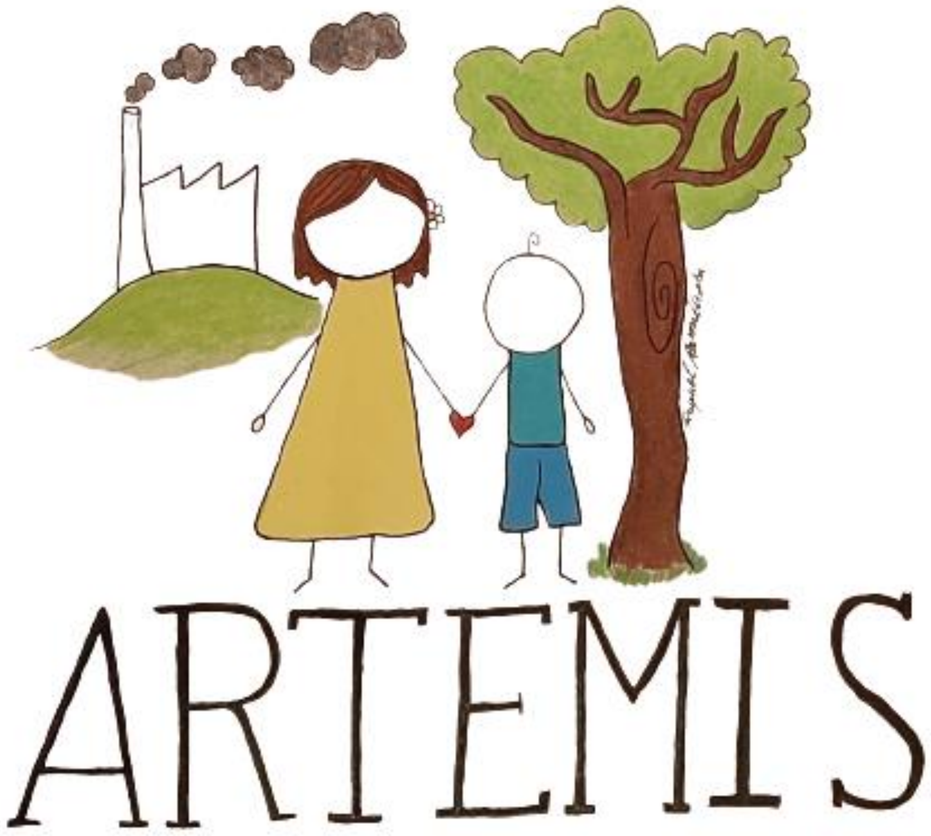


Portuguese mercury levels were among the highest in Europe and Portuguese cotinine levels showed a high exposure to tobacco smoke, while values for cadmium and phthalates were below the European average.

Assessing Risk from exposure To Environmental contaminants in Portuguese Mother-Infant pairS

Aim: Contribute to the **reduction of the impact** from **exposure to hazardous chemicals** on the health of the Portuguese population, namely in two specific vulnerable sub-groups of the population - **children and women of childbearing age**.

ARTEMIS



Specific objectives:

- Characterize the current environmental exposure of Portuguese children and women of childbearing age to selected chemicals.
- Study time trends;
- Quantify salivar proteome;
- Raise awareness of study participants to the possible effects of exposure to chemicals.

Methodology

Target population: children aged 6 to 11 years old and their mothers aged 45 years or less living in Portugal.

Sampling locations: one rural and one urban area in the regions of Lisbon and Tagus Valey and Alentejo.

Sample size: 240 mother-child pairs (60 in each sampling location; children will be stratified by sex and age).

Methodology

Recruitment

Invitation letter and leaflet with study team contacts delivered to children at school

↓

Children take home invitation letter and leaflet with study team contacts

↓

Interested parents contact the study team

↓

Compliance with elegibility criteria

No → Mother-child pair not accepted as participants

↓ Yes

Mother-child pair accepted as participants

Methodology

Colection of biological samples: urine, hair and saliva.

Chemical analysis

- Mercury in hair;
- Metals (cadmium, lead, chromium, arsenic, zinc, etc), cotinine in urine;
- Salivary proteome.

Biobank

- For the analysis of other chemicals (phthalates, bisphenols, pesticides, UV filters).

Methodology

Sampling questionnaires (paper) to register the conditions of sample collection**.**

Computer Assisted Telephone Interview: collection of information on socio-demographic characteristics of the individuals, house location and characteristics, habits/lifestyle, nutrition, health, occupation and substance specific information covering possible exposure routes.

REDCap
Research Electronic Data Capture

Expected results

- Data on the current exposure of the Portuguese population to chemicals;
- Evaluation of time trends of exposure to cadmium, mercury and cotinine;
- Results on the association of exposure and effect biomarkers;
- ARTEMIS's biobank.

Acknowledgements

- Comprehensive Health Research Center (funding under the CHRC Research Grants 2022).