HBM4EU project

Time trends in Phthalates & DINCH from 2000-2017

Nina Vogel (UBA)

2nd HBM4EU Training School 2018

Anna-Maria Hendersson (RegionH) - Task 10.4

Hanne Frederiksen (RegionH) - Task 10.4

Rosa Lange (UBA) – CGL

1. Research questions
2. Identification of studies
3. Planned analyses
4. Current status
5. Future plans and timeline

…from the scoping documents…

1. To which degree has exposure to the regulated Cat A and Cat B Phthalates decreased in European populations from year 2006 until today?

2. Are there different time trends for unregulated and regulated Phthalates?

Prerequisites

- Repeated measurement, cross-sectional
- Individual level data
- Homogeneous sample
- Comparable recruiting and sampling
- Little variation in laboratories

Inclusion /exclusion criteria

✚ 3 measurement points between 2006 and 2017

⊘ special population

Identified studies

- Danish Young Men Study (DYMS)
- Environmental Specimen Bank (ESB)

The Danish Young Men Study (DYMS)

Examining changes over time in the degree and pattern of exposure to phthalates within the last decade (2009-2017)

~

Time trend study

Methods

- DYMS Subjects: 300 young Danish men, 19.0 years of age (17.4-28.5) from the general population
- Samples: Spot urine samples collected in 2009 (n=100), 2013 (n=100), 2017 (n=100)
- Chemical analysis: Isotope diluted on-line-TurboFlow-LC-MS/MS
- Analytes measured:
  - 32 metabolites of 15 phthalate diesters
  - 6 metabolites of the phthalate substitutes; DINCH and DEHTP

~

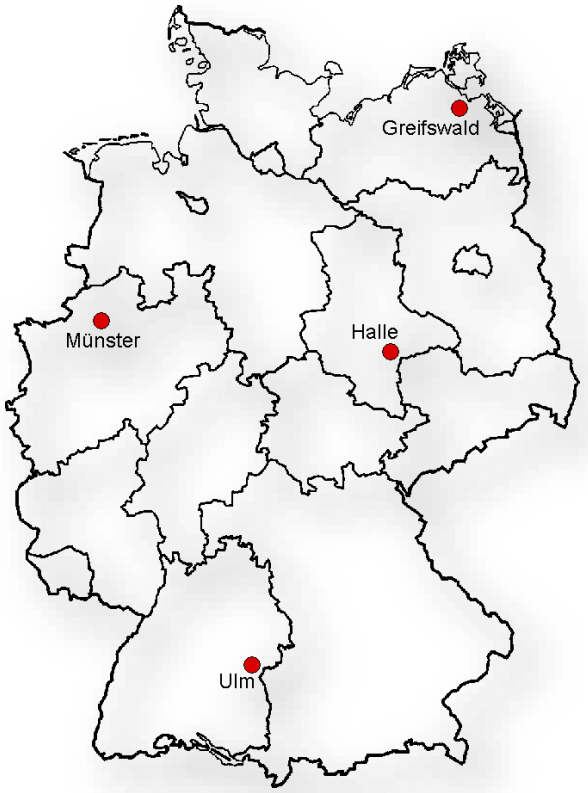
Anna-Maria Andersson and Hanne Frederiksen
Dept. of Growth and Reproduction, Rigshospitalet, University of Copenhagen, Denmark

The Environmental Specimen Bank

Since 1997:

regular standardized sampling at 4 locations

approx. 120 healthy male and female students (20 - 29 yrs.) in each city



No specific exposure

- Urine (24 hrs.)
- Blood (whole blood, plasma)

- Self-administered questionnaire
- Dental anamnesis

Cryo-archiving of samples: retrospective analyses

HBM4EU substances:

1st Prio group: Phthalates, bisphenol, PFAS, FRs, cadmium

2nd Prio group: Aprotic solvents, arsenic, lead, mercury, pesticides, uv filters

…follow statistical analysis plan in D 10.2…

Separately for Phthalates/DINCH

Check for normality, descriptives statistics, correlations, …

Regression with „time“ as predictor

- Covariates: sex, laboratory, physiological measures …

Mixed models with studies as additional cluster

- Two-phase model (trend before and after regulation)

Sensitivity analyses

- Individuals of the same age/ for same year range / complete year range/ …

Both studies participate

List of variables

- Harmonized across studies
- Suggestion of harmonized variables to codebook

Collaborated with T 7.3. phthalate questionnaire development: Kim Pack (UBA)

List of available biomarkers and years

- 21 (11/10) common (Cat A/Cat B)

Sharing of data

- ESB – last data protection checks (anonymised individual)
- DYMS – data protection is being finalized

Another study to join?

November 2018 – Data transfer

December 2018 – Cleaning & preparation of data

February 2018 – Analyses

March-April 2018 – Manuscript

Radboudumc
university medical center

Thank you for your attention.

Questions?

nina.vogel@uba.de

Umwelt Bundesamt

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 733032.

Nina Vogel, PhD, works as scientific associate at the Umweltbundesamt, UBA, Germany. She received training in psychology and statistics and contributes mainly to WP 10 (partly to 5.4, 8.1 & 15.1). She is the lead of the Phthalate/DINCH statistical analyses group.