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BRidging Information and Data Generation for Evidence-based Health Policy and Research

Human biomonitoring special features & its synergies with other health information instruments

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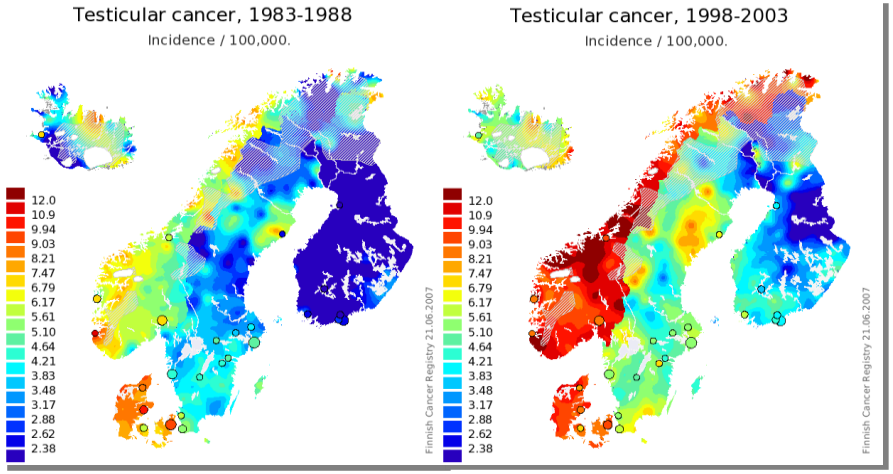
This project is funded by the Health Programme of the European Union

Chronic NCD – a matter of concern

- Cancer
- Cardiovascular diseases
- Allergies/COD
- Mental disorder
- Reproductive disorders
- Congenital anomalies



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Raise in incidence/prevalence not fully understood

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Health information instruments

- Disease registries (perinatal, chronic diseases)
- Health Information Surveys (HIS)
- Health Examination Surveys (HES)
- Nutrition Surveys
- Human Biomonitoring (HBM)
- Health indicators

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Special features of HBM

1. Internal human exposure or effects to exposure

   (occupational/environmental; cross-sectional/longitudinal)

2. May identify particularly vulnerable or exposed sub-groups

3. May associate body burden/reactions to health effects

→ Information on „Determinants of Health“

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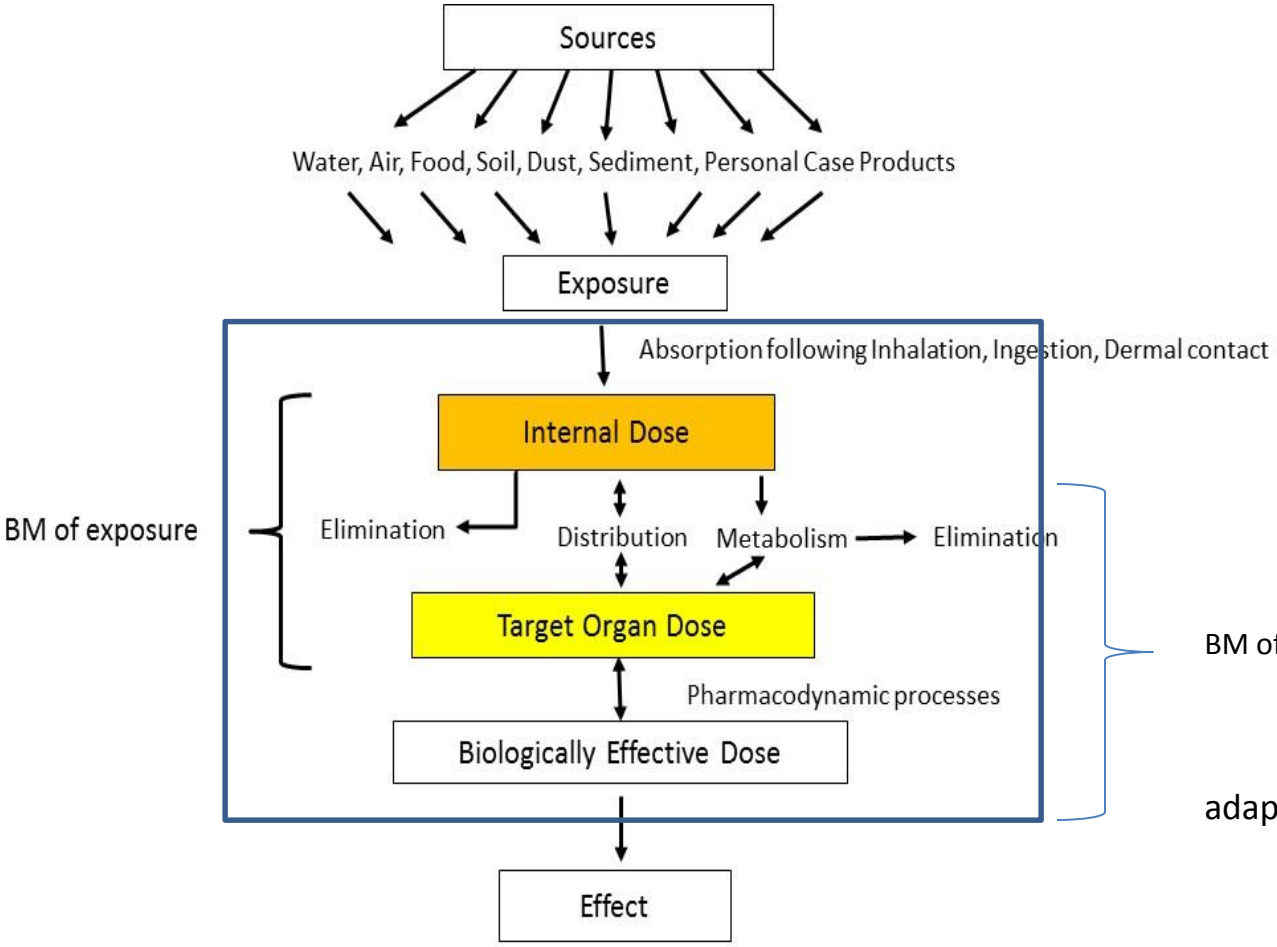
HBM in the causal chain from environment to disease



adapted from (Needham, 2005)

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Examples of national HBM surveys/cohorts

German Environment Surveys (GerES I – V)	since 1985
Czech Environmental Health Monitoring System (EHMS)	since 1994
U.S. National Health and Nutrition Examination Survey (NHANES)	since 1999
The Korea National Health and Nutrition Examination Survey (KNHANES)	since 1998
The Norwegian Mother and Children Cohort Study (MoBa)	since 1999
Flanders human biomonitoring network (FLEHS)	since 2002
The French Nutrition and Health Survey (ENNS)	2006-2007, 2013-2014
Canadian Health Measures Survey (CHMS)	since 2007
Japan Environmental and Children's Study (JECS)	since 2010
French birth cohort (ELFE)	since 2011
French biomonitoring, environment and physical activity surcey (ESTEBAN)	since 2014
Spanish monitoring programme BIOAMBIENT.ES	2009 - 2010
Programme for Italian population exposure (PROBE)	2008 - 2011
Slovenia's national HBM programme	since 2010

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Exemplary EU research studies

- ESBIO (Expert Team to Support Biomonitoring in Europe) 2005-2008
- ECNIS (Environmental Cancer Risk, Nutrition and Individual Susceptibility) 2005-2013
- INTARESE (Integrated Assessment of Health Risks from Environmental Stressors) 2005-2010
- PHIME (Public Health Impact of Long-Term, Low-Level Mixed Element Exposure 2006-2011
- NewGeneris (Newborns and Genotoxic Exposure Risks) 2005-2010

- EnviroGenomarkers – Genomics Biomarkers of Environmental Health 2009-2013
- COPHES (Consortium to Perform Human Biomonitoring on an European Scale) and its Life + pilot survey (DEMOCOPHES) 2009-2013

- EXPOsOMICs 2013-2018
- HELIX (The Human Early Life Exposome) 2013-2018
- HEALS (Health and Environment-wide Associations based on Large Population Surveys)
- 2013-2019

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Major limitations of HBM

1. HBM alone cannot provide information about source and time of exposure
2. HBM data need to be combined with other data and tools

1. Costs and time

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Priorities for availability of comparable, high quality data

1. Network and infrastructure
2. Prioritisation schemes (Env. Stressors)
3. Harmonisation of Protocols (Guidance, Training)
4. Quality assurance systems
5. Method development (Biomarker, Analysis, HBGV)
6. Sample/data storage and sharing/exchange

Added value of synergies?

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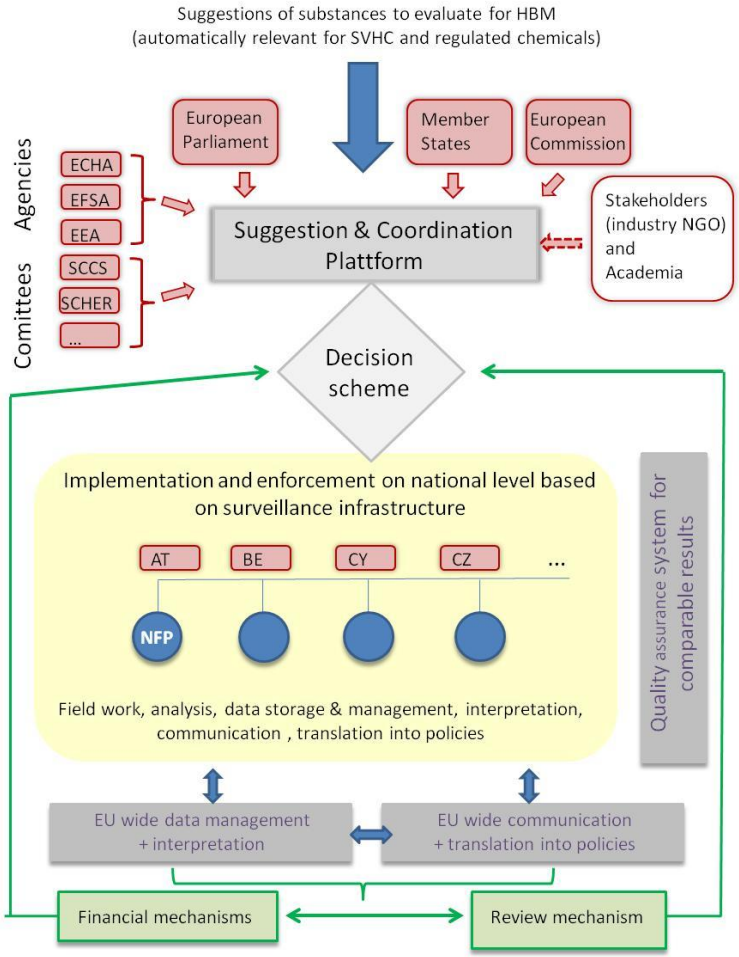
Infrastructural concept



1. EU Platform for guiding tasks
2. MS infrastructures for surveillance
3. Prioritisation and review scheme
4. Research funding for further developments

Policy recommendations and cost implications for a more sustainable framework for European human biomonitoring surveys. A. Joas et al. / Environmental Research 141 (2015) 42–57

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Potential Synergies – HBM – HES - Disease Registries

Common features (reduced efforts)	Single features (added value)
Prepresentative Stratification	Clinical parameter
Recruitment/ Interview	Health status
Anthropometric measurements	Disease incidence/prevalence
Biological sample	Environmental risks
Geographical allocation	Environmental data
Socio-economic/ lifestyle classification	Health based guidance values
Age, gender, ethnicity	Chemical analysis
QS/QA, Training	
Data management/storage/exchange	
Interpretation/Communication	

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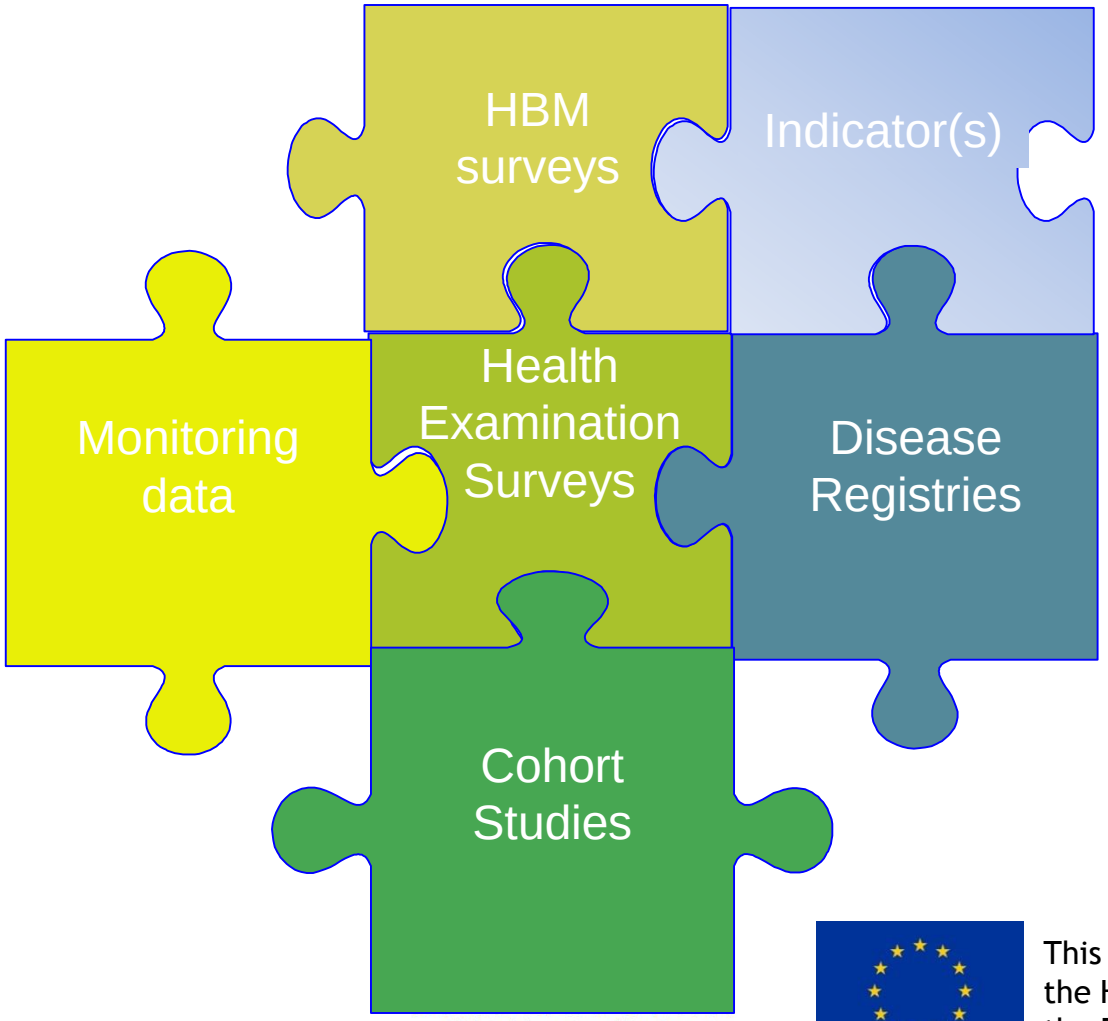
Added value of synergies!



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The next steps

- BRIDGE health WP6 – blue print for optimized use of environmental health information (HBM data) in health information and health policies
- Joint Member State Action (Horizon 2020) for integrated long-term surveillance system to feed into HIS

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Thank you very much for your attention!

For questions please contact

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