Assessment of prenatal exposure using human biomonitoring:

the project component 3

2015-2017

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Is a global mercury monitoring feasible?

Yes

- Capacities for mercury HBM for reliable assessment of exposure exist or can be built in countries with different level of economic development
- Scientific/Technical/Methodological basis is created
- Applicable for general population and hot spots
- Provide data allowing identification of population groups at risk globally

Selection of biological matrix

Biological matrix

Selection of sample matrices and biomarkers for human biomonitoring surveys of prenatal exposure to mercury

Report prepared by Prof. Milena Horvat and Dr. Janja Snoj Tratnik, Jožef Stefan Institute, Ljubljana, Slovenia in collaboration with WHO Europe.

Justification for the selection of biomarkers of prenatal exposure to organic and inorganic mercury

- Scalp hair
- Cord blood
- Urine

All forms of mercury

All non-invasive

Survey design

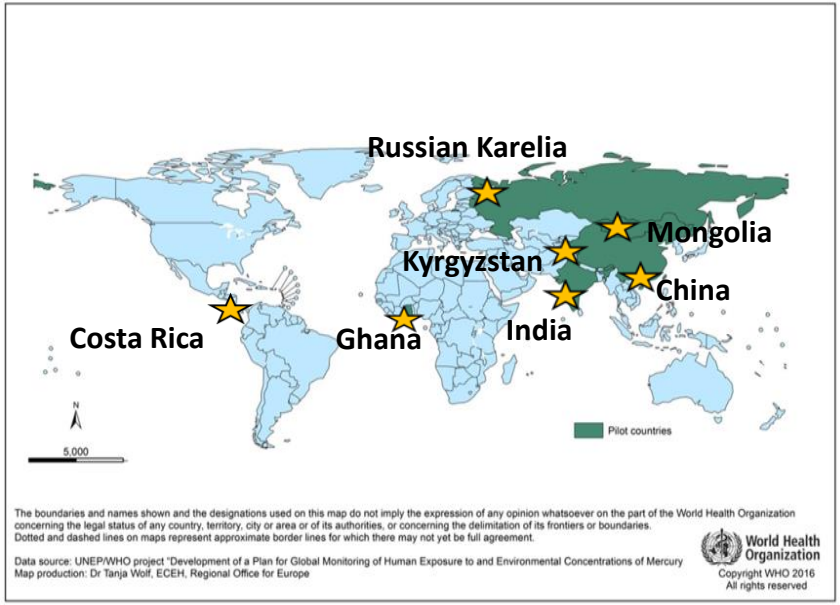
Prenatal exposure

250 women just delivered a child

Maternity hospitals

Harmonized approach to biomonitoring of human exposure to mercury:
International technical experts workshop
UNEP/WHO project "Development of a Plan for Global Monitoring of Human Exposure to and Environmental Concentrations of Mercury"
Bonn, Germany, 26 June 2015

Pilot survey: Selection of countries



Target populations in the pilot surveys
Seafood consumers –Ghana, India
Freshwaters fish consumers – the Russian Federation
Consumers of locally produced rise in contaminated areas - China
ASGM - Mongolia
Mercury primary mining - Kyrgyzstan
Industrial activities - India

Training of the national survey laboratory analysist (Slovenia, JSI, Feb 2016)

Capacity building is critical for GMM

Pilot surveys

Preparation

- Proficiency test (freeze-drying samples of cord blood)
- Procurement of consumables
- Revision of SOPs, survey protocol
- Subcontracting countries

Pilot surveys:

- ethical approval (local/national),
- Training (for field staff),
- adaptation of WHO documents,
- Sampling (250 samples; three matrices;
  the epidemiological questionnaire)
- Mercury analysis
- Data analysis
- Database creation

Follow up

- Communication of results

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Challenges: Laboratory performance evaluation

Mirror analysis (20 samples of each matrix) from China, India, Kyrgyzstan, Mongolia – National Center for Minamata Disease, Japan;
Intercounty comparison – Japan-China; China-Russian Federation

Selection of laboratories at the stage of selection of pilot countries

- Seven national laboratories in all pilot countries

Training of laboratory analysist in Jozef Stefan Institute, Slovenia

- Six laboratories were presented

Proficiency test (organized by Jozef Stefan Institute, Slovenia

- Three countries confirmed credibility in the first round

Four countries performed the mercury analysis at the national level

Shipment to and analysis in RECETOX, Czech Republic (2 countries)

Trouble-shooting visit an invited expert – confirmation of credibility

Workplace in Jozef Stefan Institute for the national analysts who performed analysis

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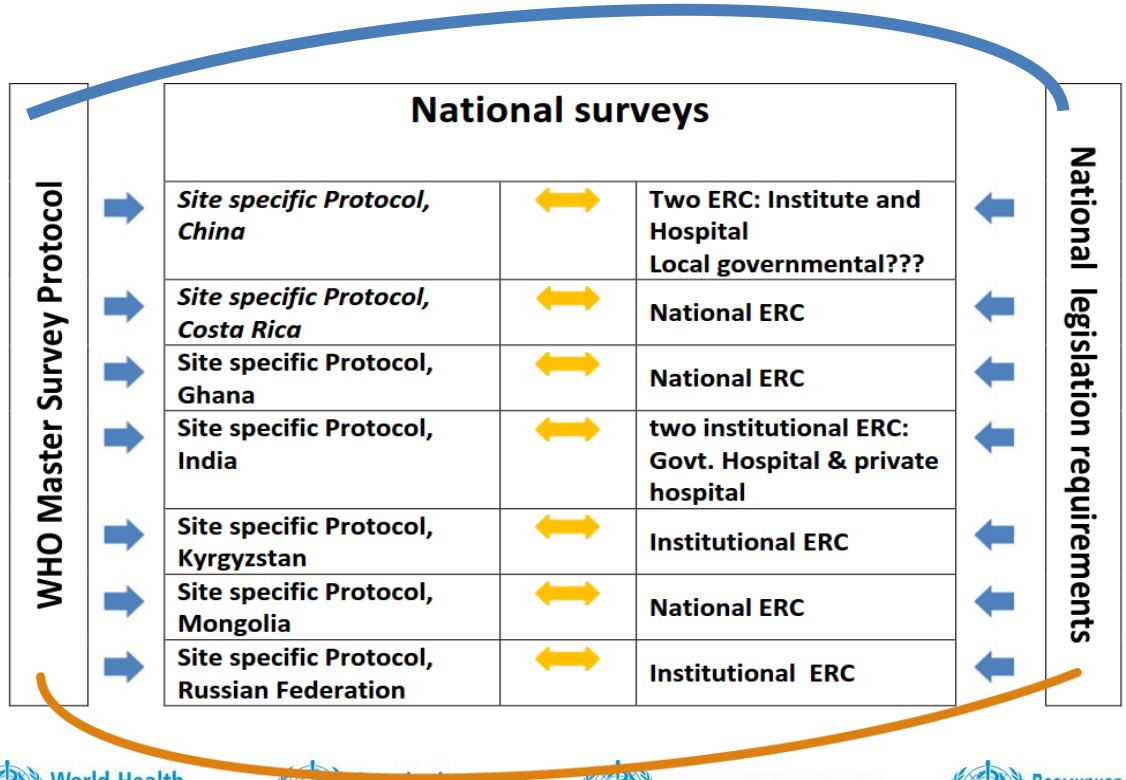
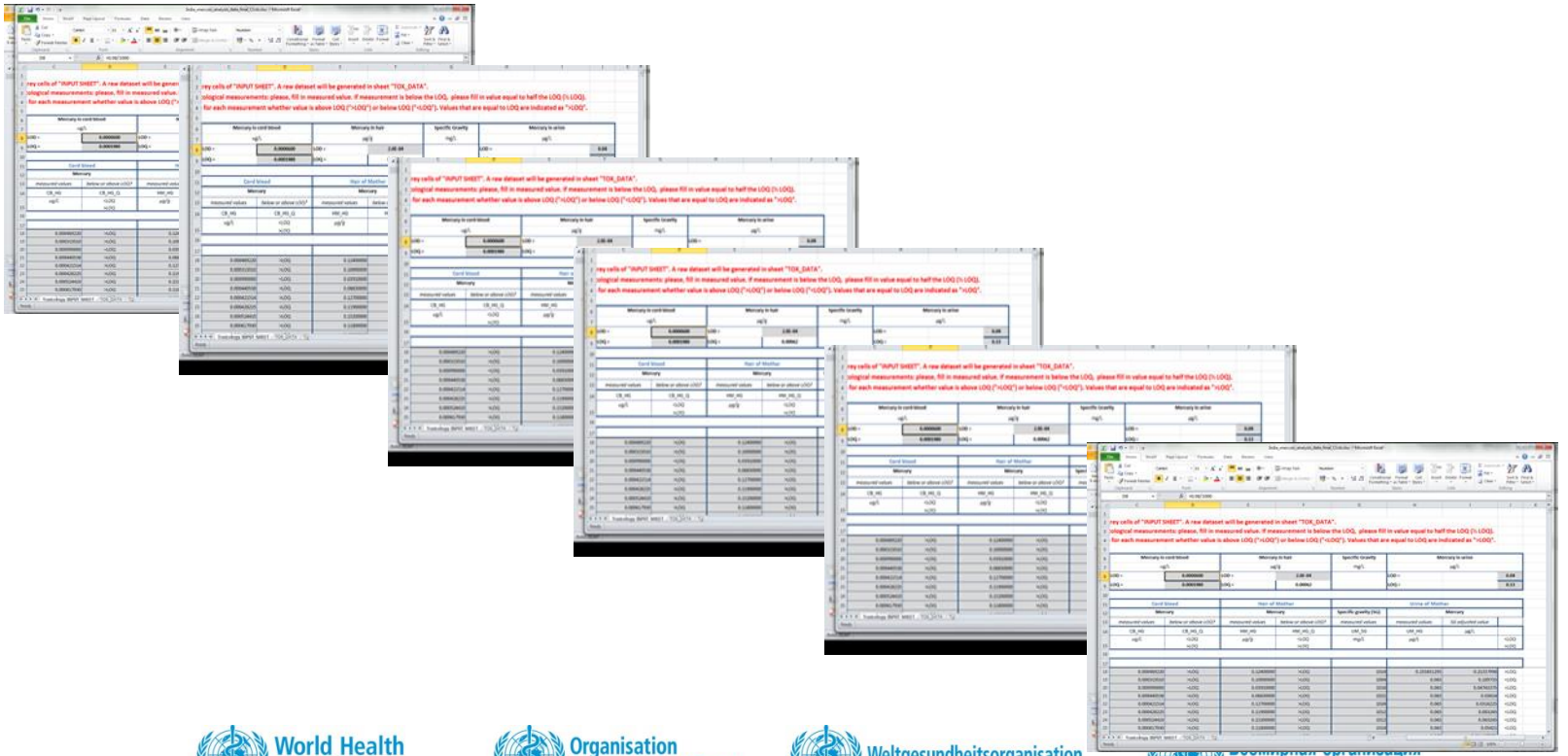
Challenges: ethics approval



Database



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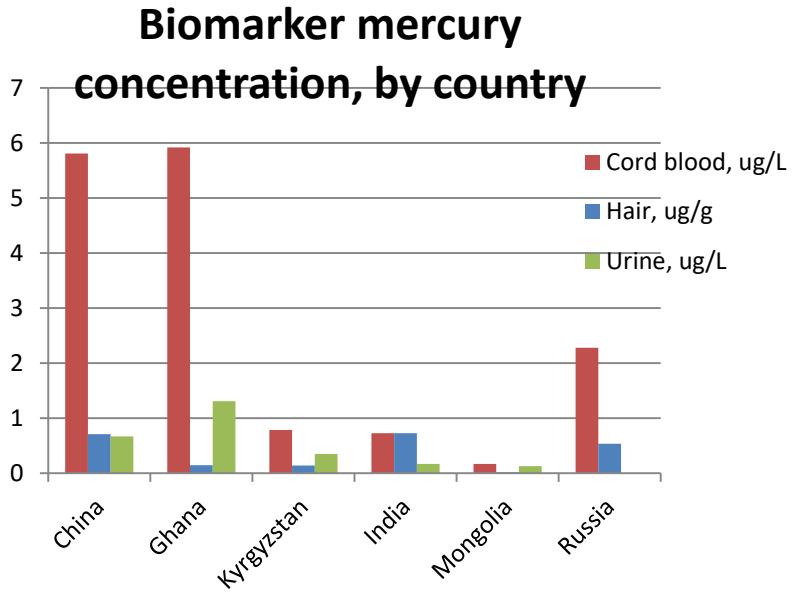
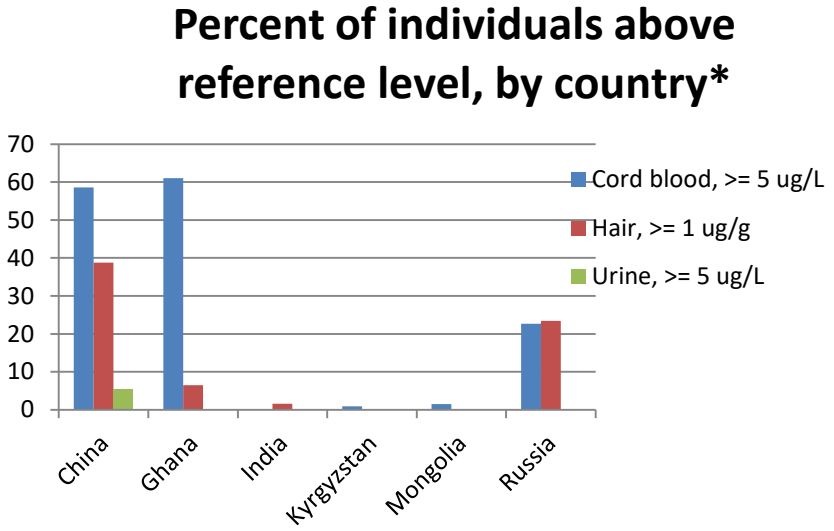
Mercury concentration





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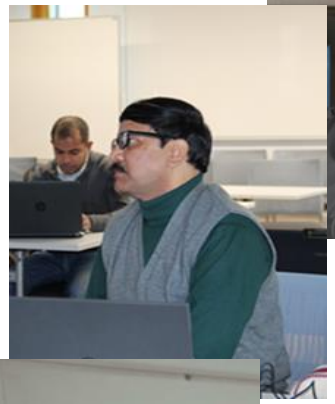
The survey national coordinators







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THANK YOU

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