

**WORKSHOP ON CHILDREN'S ENVIRONMENTAL HEALTH
IN CENTRAL ASIA AND THE MIDDLE EAST:
*CAPACITY BUILDING AND NETWORKING AMONG SELECTED COUNTRIES***

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CHILDREN'S HEALTH AND THE ENVIRONMENT

TRAINING AND RESEARCH ACTIVITIES PROMOTED BY WHO

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CHILDREN'S HEALTH AND THE ENVIRONMENT

WHO - Tools and mechanisms available to promote CEH

- National Profiles on the status of CEH
- **Training Package for the Health Sector**
- CEH Indicators
- Promoting Environmental History: *"Green page"*
- EH components into the IMCI
- Guidelines for setting up CEH Centres
- Technical assistance to countries
- Collaborative research

Longitudinal cohort studies on CEH

WHO Informal Consultations (*co-sponsors: NIH, USEPA, CDC*)

Oct 2003 (Glion, Switzerland)

Are LTS feasible in developing countries?

July 2004 (PAHO, USA 2004)

What are the key issues for harmonized international work ?

Nov 2004 (Cuernavaca, Mexico)

Need for "core" hypotheses

Aug 2005 (Bangkok, Thailand)

Set of measurements required and a "matrix"

Longitudinal cohort studies on CEH

Prospective cohort study of Thai children

PREGNANCY TO YEAR 1

Pregnant women	4215
New borns	4245 (30 Twins)
Stillbirth	24 (6.8 per 1000)
Perinatal Death	14 (4.0 per 1000)
Paternal Deaths	40 (7.6 per 1000)
Maternal Deaths	3 (0.7 per 1000)
Child hospitalization	10.5%



Ms S. Mar-Lan and her daughter Oratai, recruited in Nan, Thailand, 2003

Longitudinal cohort studies on CEH

Core hypothesis on:

1. RESPIRATORY EFFECTS
2. PREGNANCY OUTCOME
3. NEURODEVELOPMENT
4. GROWTH AND DEVELOPMENT
5. *INJURIES*
6. BIRTH DEFECTS
7. CHILDHOOD CANCER

Longitudinal cohort studies on CEH

Current examples of hypotheses

- 1. Environmental exposures early in pregnancy are associated with birth defects and other adverse pregnancy outcomes.**
- 2. Chemical and physical environmental factors have an impact on sexual maturation, in both boys and girls.**
- 3. Exposure to air pollutants early in life is associated with increased risk of acute lower respiratory illness.**
- 4. Exposure to indoor air pollution is associated with otitis media.**
- 5. Prenatal exposures are associated with an increased risk of childhood cancer.**
- 6. Prenatal and early childhood exposures to neurotoxins, including heavy metals and environmental chemicals, can have an adverse impact on neurodevelopment.**

Longitudinal cohort studies on CEH

SPECIMENS FOR COLLECTION

Blood (maternal, paternal, child, cord)

Amniotic fluid

Placenta

Meconium

Urine (maternal, child)

Semen

Hair

Nails

Buccal swabs

Vaginal/cervical swabs

Saliva

Tooth

Stools

Other

ENVIRONMENTAL

TIMING OF SAMPLE COLLECTION

Enrolment, 2nd and 3rd trimester

Birth, 3-6-12 months, yearly

Other

TECHNIQUES (standard and "omics")

STORAGE

*Biomarkers of exposure,
outcome and susceptibility*

A matrix for sampling and data collection

<i>Time Point</i>	<i>Antenatal</i>	<i>Birth</i>	<i>Week 6</i>	<i>Month 6-9</i>	<i>Year 1</i>	<i>Year 2</i>	<i>Year 3</i>	<i>Year 4</i>	<i>Year 5</i>
<i>Visit</i>	1	2	3	4	5	6	7	8	9
Biological Samples X = Essential X = Optional									
Cord blood (or cord slice)		X							
Placenta		X							
Meconium		X							
Breast Milk			X						
Maternal Blood Sample	X								
Child Blood Sample			X	X	X	X	X	X	X
Child Faecal Sample			X	X	X	X	X	X	X
Maternal Urine	X								
Child Urine			X	X	X	X	X	X	X
Hair			X	X	X	X	X	X	X
Teeth									X
Environmental Questionnaires & Measures									
Environmental Questionnaire	X		X	X	X	X	X	X	X
Outdoor Air Quality	X				X	X	X	X	X
Water Quality	X				X	X	X	X	X
Indoor Air Quality	X				X	X	X	X	X

Longitudinal cohort studies on CEH

Other need/issues identified

- Terminology/definitions
- Environmental "history"
- Informatics' support
- Capacity building
- Biostatistics
- Funding: seed, bilateral and main
- Ethical aspects
- Community involvement/incentives

NEXT STEPS (2006-7):

- White paper (publication)
- Guidelines
- Hypotheses
- Measurements
- Specialized WG
- Harmonized protocols



International collaboration on LTCS will enable to:

- Identify critical environmental health issues
- Compare data across countries
- Transfer knowledge and technologies
- Share resources
- Provide a large cohort on "rare" diseases
- ***WORK MORE EFFECTIVELY TOWARDS PREVENTION OF EXPOSURE & PROMOTION OF SAFER ENVIRONMENTS FOR CHILDREN...and ALL***

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