



CHILD HEALTH AND THE ENVIRONMENT: RESULTS FROM EU FRAMEWORK 5

German Environmental Survey for Children (GerES IV)
Kerstin Becker, Federal Environmental Agency, Berlin, Germany

Umwelt Bundes Amt
Für Mensch und Umwelt
Federal Environmental Agency


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Study design

Sample: 1,800 children aged 3 to 14 years

Representatively chosen from 150 sampling locations with regard to age, gender, community size and region (East-, West-Germany)



Random subsample of the „German Health Survey for Children and Adolescents (KiGGS)“ N=18,000

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Instruments

- Human biomonitoring (pollutants in blood and urine)
- Environmental Parameters (analysis of indoor air, house dust, tap water, noise)
- Questionnaires on living conditions, exposure-relevant behaviour and activities

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Criteria for selection of pollutants

- potential influence on children's health
- relevance for environmental policy
- widespread exposure of the general population
- reliable sampling procedures and analytical methods
- costs

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Analytes, human biomonitoring

Blood: Cd, Pb, Hg
persistent organochlorine compounds


Urine: As, Cd, Hg, Ni, U
nicotine, cotinine
PCP and other chlorophenols
PAH metabolites
pyrethroid metabolites
trialkylphosphates
stress hormones, creatinine

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Analytes, domestic environment


House dust: DDT, HCH, HCB, PCBs;
PCP, chlorpyrifos, phthalates,
flame retardants
(dust from vacuum cleaner bags)



Drinking water: lead, cadmium, copper,
nickel, uranium



Indoor air: VOC and carbonyl compounds
(passive sampling)



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Objective

- to generate representative data on the distribution of environmental pollutant concentrations in biological samples

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Description of the distributions

DDE in blood (µg/l)
[Limit of quantification 5ng/l]

	N	n<LOQ	P10	P50	P90	P95	P98	MAX	AM	GM	CI GM
total	587	2	0.09	0.22	0.83	1.11	1.93	5.05	0.370	0.241	0.224 0.259
region											
west	495	1	0.08	0.17	0.52	0.82	1.90	2.86	0.277	0.191	0.177 0.207
east	182	1	0.16	0.38	1.12	1.42	2.51	5.05	0.575	0.406	0.357 0.462
age											
< 6 years	71	0	0.13	0.38	2.20			2.56	0.585	0.398	0.238 0.665
6 - 8 years	43	1	0.11	0.25	1.02	1.27	2.91	5.05	0.474	0.290	0.246 0.341
9 - 11 years	219	0	0.09	0.21	0.73	1.05	1.74	3.78	0.339	0.231	0.207 0.258
12 - 14 years	214	1	0.08	0.20	0.66	1.03	1.81	2.30	0.320	0.217	0.193 0.244

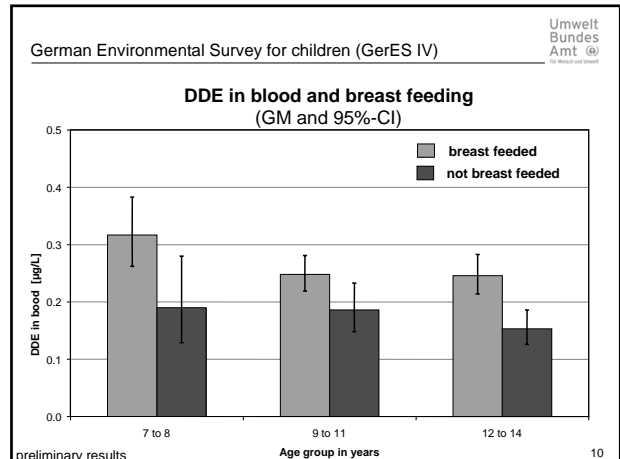
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Objective

- to identify and quantify contamination routes and other exposure relevant factors

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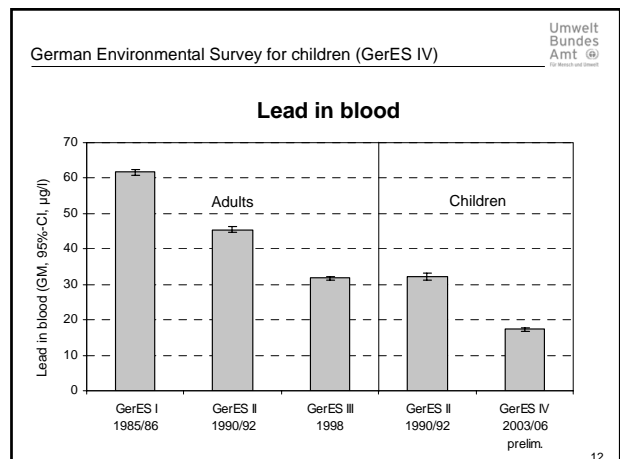


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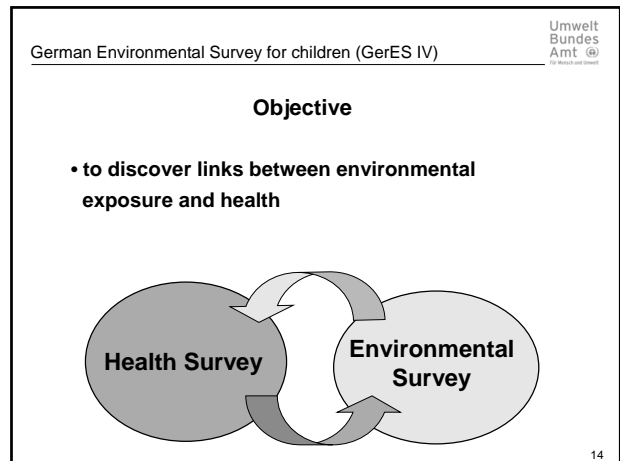
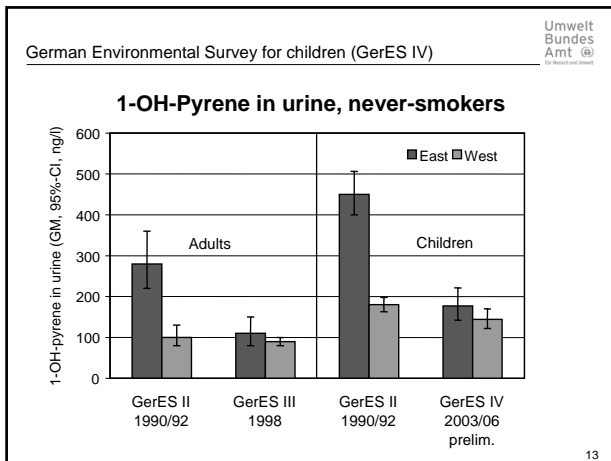
Objectives

- to indicate trends over time and regional differences
- to evaluate the success of environmental policy measures

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Health related modules (I)

Sensitisation due to indoor specific mould spores (nested case control study, N=600)

- specific IgE antibody concentrations in serum
- mould spores in indoor air and dust
- questionnaire data

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Health related modules (II)

Impact of noise on hearing, stress and sleep disturbances (N= 1050, aged 8 to 14)

- audiometry (screening)
- measurement of traffic noise in front of the bedroom
- stress hormones in urine
- questionnaire data (exposure)

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Health related modules (III)

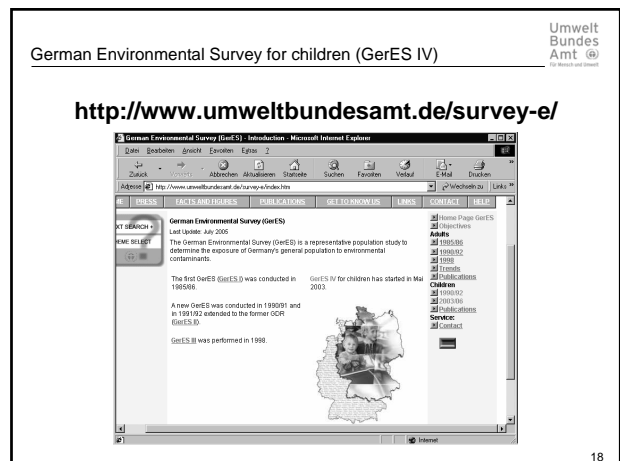
Irritation of eyes and the respiratory system due to formaldehyde and other aldehydes, or VOC in indoor air (N=600)

- questionnaire data (symptoms, exposure sources)
- formaldehyde, aldehydes and VOC in indoor air

Allergies due to nickel, chromium and scents (N=1800)

- questionnaire data (symptoms, exposure sources)

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Thank you for your attention !



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