Germany’s contribution to the work of the International Birth Cohort Group

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GERMANY – A DIVIDED COUNTRY AFTER WW II

- Federal Republic of Germany (West Germany, BRD)
- German Democratic Republic (East Germany, DDR)
- Reunification in 1990
IN COMPARISON: EAST AND WEST

- In **West** Germany, environmental policy started in the late 60s/early 70ies triggered by serious air and water pollution due to industrial activities.
- In **East** Germany, environmental problems were ignored until reunification in 1990. Officially, the environment was perfectly protected.
- As of 1982 (Ministerratsbeschluss), all official environmental data was considered a state secret.

FACTS VS. FICTION

- Only 3% of the **rivers** and only 1% of the **lakes** were ecologically intact.
- The main river **Elbe** was „ecologically dead“.
- **Drinking water** was heavily polluted.
- **Sewage** was mostly untreated or not properly treated.
- There were 13.000 **waste sites**: 10.000 of them considered „wild“.
  - Per capita **SO₂ emissions** were the highest in the world. One single power plant (Jänschwalde) emitted as much SO₂ as Denmark and Norway combined.
........were huge and clearly visible, but only poorly investigated - if at all.

Result: Environmental groups were a major force in the citizen’s movement that brought the GDR down.
...AND HOW DIFFERENT IT LOOKS TODAY!

“SILBERSEE” IN BITTERFELD

Then:

Now:

Source: A. Kreuss, 2009
AVERAGE LIFE EXPECTANCY IN GERMANY

Source: RKI, 2009

GERMAN ENVIRONMENTAL SPECIMEN BANK – A FEDERAL CRYO-REPOSITORY

Run by Fraunhofer-IBMT on behalf of the Federal Environment Agency
German Environmental Survey (GerES)

<table>
<thead>
<tr>
<th>Survey</th>
<th>Period</th>
<th>Sample size</th>
</tr>
</thead>
<tbody>
<tr>
<td>GerES I</td>
<td>1985 - 1986</td>
<td>2,700 adults</td>
</tr>
<tr>
<td>GerES II</td>
<td>1990 - 1992</td>
<td>4,000 adults, 730 children</td>
</tr>
<tr>
<td>GerES III</td>
<td>1997 - 1999</td>
<td>4,800 adults</td>
</tr>
<tr>
<td>GerES IV</td>
<td>2003 - 2006</td>
<td>1,790 children</td>
</tr>
<tr>
<td>GerES V</td>
<td>2013 -</td>
<td>2,800 children</td>
</tr>
</tbody>
</table>

INTERNAL EXPOSURE TIME TRENDS: PHTALATES AND DINCH

DPHP: Sum of LOQ/2 = 0.35
DINCH: Sum of LOQ/2 = 0.125
TRACKING DOWN NEW CHEMICALS

- No HBM method for DINCH up to now - as well as for many other modern chemicals with relevance for the general population
- Project: Cooperation between German MoE and German Chemical Industry Association (VCI) 2010 – 2020 to develop new HBM methods
- 20 chemicals chosen so far
- 8 methods developed so far

HBM METHODS DEVELOPED SO FAR

<table>
<thead>
<tr>
<th>Substance</th>
<th>Use</th>
<th>Finished</th>
</tr>
</thead>
<tbody>
<tr>
<td>DINCH: 1,2-cyclohexanedicarboxylic acid diisononyl ester</td>
<td>Plasticizer and phthalate substitute used e. g. in toys, food contact materials and medical devices</td>
<td>Finished Oct. 2011; Accepted by the German Research Foundation (DFG)</td>
</tr>
<tr>
<td>DHP: Di(2-Propyl Heptyl) phthalate</td>
<td>Plasticizer, mainly used for technical applications (PVC and other vinyl chloride polymers); new phthalate</td>
<td>Finished Oct. 2011; Accepted by the German Research Foundation (DFG)</td>
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<tr>
<td>NMP: N-methyl-2-pyrrolidone</td>
<td>Solvent</td>
<td>Finished Sept. 2013</td>
</tr>
<tr>
<td>TEP: N-ethyl-2-pyrrolidone</td>
<td>Solvent</td>
<td>Finished Sept. 2013</td>
</tr>
<tr>
<td>4-methylbenzaldehyde</td>
<td>Tenside production</td>
<td>Finished June 2013</td>
</tr>
<tr>
<td>4-ethylcyclohexan</td>
<td>Antioxidant stabilizer in technical oils</td>
<td>Finished June 2013</td>
</tr>
<tr>
<td>2-MBT: Mercaptobenzothiazole</td>
<td>Vulcanization accelerator (rubber production)</td>
<td>Finished June 2013</td>
</tr>
<tr>
<td>MDI: Methylenediphenyldiisocyanate</td>
<td>Production of polyurethane, special plastics, adhesives</td>
<td>Finished December 2012</td>
</tr>
</tbody>
</table>
NEW POPULATION REPRESENTATIVE DATA AND TIME TRENDS

5th Environmental Survey

- 167 sampling locations
- Children and adolescence aged 3 to 17 years
- Field work 2014-2016
- Close co-operation with the health survey KIGGS of the Robert Koch-Institut
- Population representative with regard to age, gender, community size
- Humanbiomonitoring, ambient monitoring, questionnaires levels, sources, measures
- Follow up of well known chemicals of concern
- First investigation of "new" chemicals of concern with methods developed in the framework of our cooperation with the German Chemical Industry Association

A WORTHWHILE EFFORT

- Japanese initiative to create International Birth Cohort Group
- Birth cohort studies are extremely valuable and extremely difficult to do well
- Group members and their cohorts are benefitting from exchange
- Comparable data as goal
THANK YOU VERY MUCH FOR YOUR KIND ATTENTION!