The Public Health Role of Poison Centres
- Signals from Human Cases
- Examples of Collaboration between PCs and Public Health Authorities

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Overview

- Public Health and Poisons Centres in Germany
- National Committee „Assessment of Poisonings“
- Toxicological Networking „Collaboration with PCs“
- Signals of Risk from Human Cases
- Example „Magic Nano“
- Example “Lamp Oil and Grill-Lighters”
- Example „POR COZ“—Rust Remover
- Questions

Germany and the Reunification 1989

The splitted former Capital Berlin

A Challenge for German Public Health, especially for the Government and the Poison Centres

The „Boom“ of Poison Centres

Poison Centres in Germany-West

Poison Centres in Germany East
National Committee for the Assessment of Poisonings

The National Committee for the Assessment of Poisonings was established at the Federal Institute for Chemical Assessment (BfR) in 1964 and has been meeting ever since. It was established in 1964 within the former German health authority (Bundesgesundheitsamt), installed on the American model as a Federal Administration (BfR) committee (National Toxicological Committee for Poison Control in Berlin) and was entitled to give advice on the control of poisons and the prevention of poisoning.

The Committee has always been more than a German perspective. We had and have members and guests from Austria, Switzerland, the Netherlands and France.

History Committee „Assessment of Poisonings“

1964: established within the former German BGA, modelled on the US FDA committee "National Clearing House for Poison Control Centers", together with Centre for Documentation and Assessment of Poisonings, the contemporary BfR-DocCentre.

During 45 years, about 70 meetings, with more than 170 experts: Professors holding chairs of pharmacology and toxicology, head physicians of poison centres, industrial toxicologists, staff members of consumer organizations, associations and ministries and numerous invited experts.

1995: a set of information sheets for the diagnosis and treatment of poisonings had been compiled in cooperation with the German industrial associations.

1996: converted into an electronic database. Information on substances and therapies, more than 300,000 formulations were included.

The Committee had always more than the German perspective. We had and have members and guests from Austria, Switzerland, the Netherlands and France.

Committee’s Public Health and Regulatory Issues

Suggested by the Committee, or with its support, numerous position papers were prepared and important legislative procedures were initiated:

- § 16 Chemicals Act
- § 5 d Cosmetics Regulation
- § 10 Detergents and Cleaning Agents Act

The Committee has initiated many research projects:

- Studies on risks from cleaners containing hypochlorite, from corrosive automatic dishwasher detergents, impregnation or so-called “nano” sprays, poisonous plants and mushrooms, the Projects EVA (Standardized Case Collection) and the TDI (Data Exchange and Categories for Formulations).

The Committee was involved in the introduction of ISO and EU standards:

- On child-resistant fastenings, for chemical toys, child-proof burners and the P-element.

Supported by the Committee, important measures could be suggested and scientifically substantiated:

- The restriction of methanol in consumer products, changes to different formulations, the introduction of warnings on products containing corrosive agents such as dishwasher detergents, the restriction of the use of halogenated hydrocarbons, and last but not least, based on scientific investigations for the R-phrase 65, the successive EU-ban on dangerous lamp oils and grill lighter fluids.

Future work will consist in establishing a national monitoring on poisoning incidents in collaboration with the German PCs and the Society of Clinical Toxicology (Kliniktox e.V.) and scientific criteria to assess human cases of poisoning.
### National Monitoring/Assessment of Poisonings (BfR-DocCentre)

**Assessment**
- Risk Identification
- Human Case Collection
- Publications

**Output**
- Human Case Database: ca. 5,000/yr
- Product Database: ca. 86,000
- Case Database: ca. 300,000

### BfR Annual Reports (German and English)

- **Cases of Poisoning:** Reported by Physicians

### Examples BfR-Toxicovigilance: „Rapid Communications“

<table>
<thead>
<tr>
<th>Year</th>
<th>Product</th>
<th>Toxicologically Relevant Substance</th>
<th>Human Reaction</th>
<th>Outcome</th>
<th>Prognosis to § 16e (if applicable)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2011</td>
<td>Soap</td>
<td>NaN/NaN</td>
<td>NaN/NaN</td>
<td>NaN</td>
<td>NaN/NaN</td>
</tr>
<tr>
<td>2014</td>
<td>Chemicals</td>
<td>NaN/NaN</td>
<td>NaN/NaN</td>
<td>NaN</td>
<td>NaN/NaN</td>
</tr>
<tr>
<td>2015</td>
<td>Biocides</td>
<td>NaN/NaN</td>
<td>NaN/NaN</td>
<td>NaN</td>
<td>NaN/NaN</td>
</tr>
<tr>
<td>2016</td>
<td>Detergents</td>
<td>NaN/NaN</td>
<td>NaN/NaN</td>
<td>NaN</td>
<td>NaN/NaN</td>
</tr>
<tr>
<td>2017</td>
<td>Detergents</td>
<td>NaN/NaN</td>
<td>NaN/NaN</td>
<td>NaN</td>
<td>NaN/NaN</td>
</tr>
<tr>
<td>2018</td>
<td>Detergents</td>
<td>NaN/NaN</td>
<td>NaN/NaN</td>
<td>NaN</td>
<td>NaN/NaN</td>
</tr>
</tbody>
</table>

### Generating of Signals (Theory Human Behavior)

**Signal-Generating of Cases of Poisonings**

- **Cases of Poisoning (No/Day)**
- **Random Noise**

### Generating of Signals (Theory)

- **Curve with Spikes**
- **Discrimination Method**

**The Principle:** Separate the Signal(s) (e.g., Music/Pictures) from Random Noise
Examples of Signal Detection from Poisonings

„Magic Nano Sprays“ (Case Series for Two Weeks in 2006)

Case Series with Waterproofing Sprays

<table>
<thead>
<tr>
<th>Year</th>
<th>Country</th>
<th>Products / Formulations</th>
<th>Cases</th>
<th>Symptoms</th>
</tr>
</thead>
<tbody>
<tr>
<td>1979 - 83</td>
<td>Germany</td>
<td>Leather impregnation sprays: Different formulations with fluorocarbon-polymer</td>
<td>224</td>
<td>Acute respiratory diseases</td>
</tr>
<tr>
<td>1992</td>
<td>USA</td>
<td>Leather, suede and hemic impregnation sprays: Isobutane, ethyleactate, n-heptane, fluorokarbitol compounds</td>
<td>157</td>
<td>Acute respiratory diseases</td>
</tr>
<tr>
<td>1993</td>
<td>USA</td>
<td>Leather, suede and hemic impregnation sprays: Isobutane, ethyleactate, n-heptane, fluorokarbitol compounds</td>
<td>38</td>
<td>Acute respiratory diseases</td>
</tr>
<tr>
<td>2002 - 03</td>
<td>Netherlands</td>
<td>Impregnation sprays: Mixture of solvents, especially a higher amount of n-heptane, propellents (propane, butane a.o.) and fluorocarbone materials</td>
<td>99</td>
<td>Acute respiratory diseases</td>
</tr>
<tr>
<td>2002-03</td>
<td>Switzerland</td>
<td>Waterproofing Sprays: Butane, propane. Mixture of solvents, ethyleactate, isopropanol, n-hexane, n-heptane, fluorocarbon-polymer materials</td>
<td>128-200</td>
<td>Acute respiratory diseases</td>
</tr>
</tbody>
</table>

„Magic Nano“: The Introduction of a new Product Line

<table>
<thead>
<tr>
<th>Year</th>
<th>Country</th>
<th>Products / Formulations</th>
<th>Cases</th>
<th>Symptoms</th>
</tr>
</thead>
</table>

March 27th 2006: Signals of “Magic Nano” Spray Incidents

BR Survey: 154 Reports “Magic Nano“ Sprays (within 2 Weeks!)

<table>
<thead>
<tr>
<th>Symptoms and Signs (PS5)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tradename</td>
</tr>
<tr>
<td>„Magic Nano“</td>
</tr>
<tr>
<td>„Brand 1“</td>
</tr>
<tr>
<td>„Brand 2“</td>
</tr>
<tr>
<td>Sum Cases</td>
</tr>
</tbody>
</table>

Symptoms: Dyspnoia, Coughing, Weakness, Fever, Pneumonia, Lung Edema
Crisis Management and Risk Communication

- 27.03.2006 (a.m.): PC Erfurt reported the first “Magic-Nano Spray Case” with Symptoms of the Lungs
- 28.03.2006 (p.m.): 10 Cases (already Lungedemas)

Action Part BfR:
- Crisis Management (REWE Company) based on the PC Cases
- Communications with the German Ministries (RAPEX)
- Clarification of the Formula/Press releases/Research

Action Part PCs: PC Göttingen/Others:
- Communication with PCs, Governments of the Länder
- Alert via the WHO INTOX-Mailing List
- First Press Releases

“Magic Nano” Problem: Cases but Nobody knows the Formula!

Mother Company

T-Market

Whole Formulation Level

Kleinnann Supplier

Physical Formulation

Chemical Formulation

Nano Technology Bureau

Safety Data Sheet

Solvent Producer

Bottler

Anticorr. Producer

Distributor

Substance

Producer

“Nano” Compound Producer

6 Weeks later: No Nano-particles inside!

Paraffinic Lamp Oils and Grill-Lighters (Case Series)

Problem: No sharp Increase!

Classification/Labelling of Paraffines and Petroleumdistillates (1980)

Assessment: “Harmless - Not Poisonous!”

LD₅₀ Mouse orally: 22 g/Kg BW

Classification: None

R u. S–Phrases: None

Regulation: None

Spectrogram:

C₈ – C₁₆

Results from Animal Data

Before the getting Human Signals!

The lovely Lamp Oils: Non Dangerous Preparations?

Chemical Compounds: Paraffines/Petroleumdistillates!

5 dead Children between 1990-2006!

250-300 partly severe Pneumonias per Year between 1992-1998

2000: More than 120 Children were hospitalized!

Lamp Oils: The most dangerous “Household Chemical” for Children!

Monitoring and Measures in Germany since 1989

Ban for Lamp Oils
- EU (Perfumed/Coloured) 06/2000
- Additional Measures!

Substitutes EU-Market

BfR-ESPED Study

DIN/CEN

Measures

Press Releases

Labels

Calls

2000: More than 120 Children were hospitalized!

Lamp Oils: The most dangerous “Household Chemical” for Children!
In the period of the study, only 7 cases with substitutes were documented in Germany, which showed no potential human risk!

Total: 765 accidents with lamp oils in German children's hospitals

**Appropriate Classification/Labelling of Paraffines/Petroleum Distillates**

- Human signals 1993-2006:
  - After ca. 8,000 ingestions with ca. 2,000 pneumonias, 5 fatalities in Germany in children!

- Assessment: Danger of aspiration!
- LD orally child: 0.8 g (1 case in Erfurt!)
- Classification: Harmful (!)
- R & S-phrases: R-65
- Regulation: EU 2014: Ban for all paraffinic lamp oils/grill-lighters

**Example „POR CÖZ“ (Case Series 1999-2010)**

- Trend (no per day)
- Incidence
- January 15th 2010 Accident!

**The Severe POR CÖZ Accident (Report PC Erfurt)**

- Clinical History

  - Accident: 15 January 2010
  - Patient: Female, 2 years 11 months
  - Exposure: Oral ingestion of 1-2 sips, POR COC (scale & rust dissolvent, nitric acid 25%)

- Diagnoses:
  - Severe oesophageal and gastroduodenal nitric acid-corrosion
  - Gastrointestinal bleeding
  - Perforation of the stomach
  - Severe aspiration and pneumonia (right)
  - Partial resection of the stomach
  - Temporary fistula of the stomach

- Clinical Course:
  - Intensive care treatment, operations, clinical treatment for 8 weeks, late sequelae, gastrointestinal strictures

**POR CÖZ Retrospective Case Reports from German PCs**

- EU report to ban the nitric acid risk for consumers

- Collection of cases

- Severe case

**Increase of Grill-Lighter Cases in Germany**

- BfR-extrapolation on basis of 4 German PCs out of 9 PCs

- Pneumonias ca. 20%
- Uncoloured liquids!
BfR-Survey: 134 validated POR CÖZ Poisonings in Germany since 1999

- Result:
  - EU-Decision to ban Nitric-Acid from Household-Products

First Case Series
Second Case Series

Signal
Severe Case

Estimated Number of unreported Cases? From other Surveys ca.10-fold

Summary and Conclusions

- Yes, we can „work together“! PCs and Authorities
- On the Experience of the German National Committee „Assessment of Poisonings“ the Toxicological Networking „Collaboration with PCs“ is very effective!
- Signals of Risk from Human Cases are not very easy to detect. They need „Expert judgement“, the very best to discuss the Signals with „Experts“ in Clinical Toxicology
- Examples „Magic Nano“ and „POR CÖZ“ shows, that Case Series sometimes need very rapid and unconventional Intervention to protect Humans
- Example “Lamp Oil and Grill-Lighters” shows, that there “often” might be a Discrepancy between Animal and Human Data. We should be aware!

Questions?