Comparative research of measurement methods used to quantify the effectiveness of personal protective equipment against dermal exposure

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Background and methods

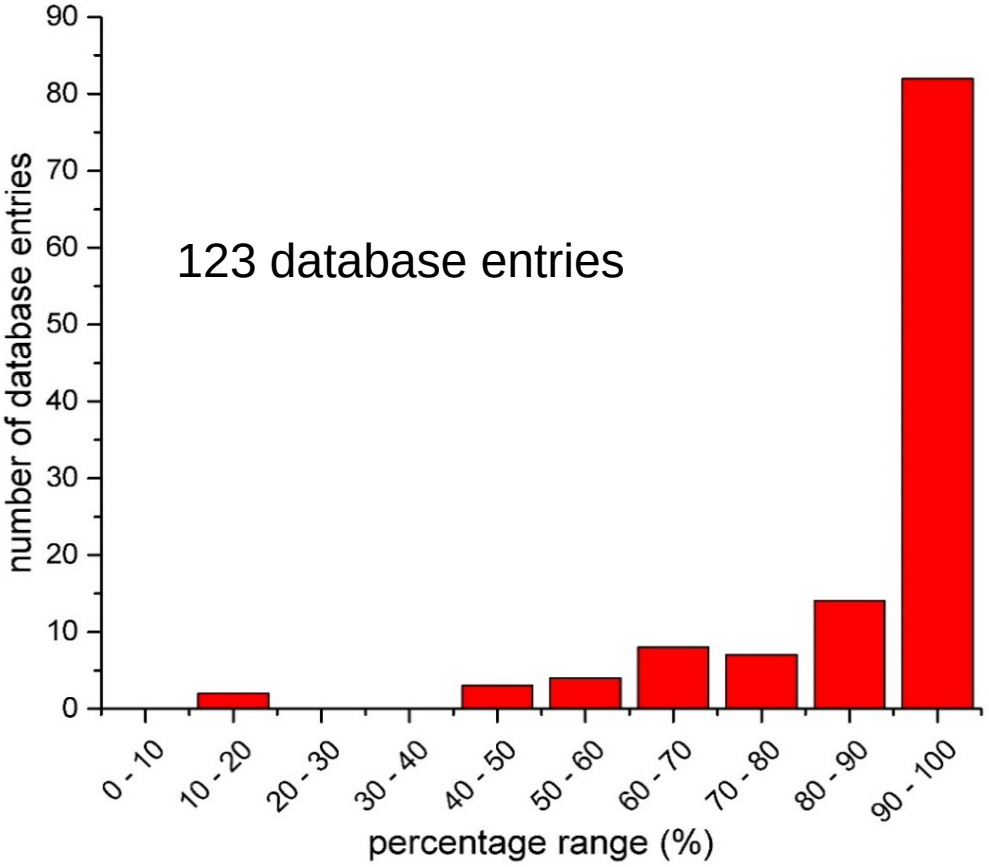
- PPE often used to reduce dermal exposure
- Default efficiency suggestions under REACH (ECETOC TRA) and for biocides (HEEG opinion 9 (default protection factors for protective clothing and gloves)
  → based only on limited experimental data

Project aims:

- gather quantitative efficiency data (dosimetry, biomonitoring)
  - Excel database
  - Information about methodological aspects and influencing factors

➡ Literature search + cross references resulted in **526 publications**

Example: Efficiencies of gloves (dosimetry)



High variability:
- Different baselines
- Different industry areas
- Different glove materials
- Different substances

But at the same time
– Database biased towards certain areas
– Key information often missing

Large range of efficiencies possible, but specific reasons for high or low values can rarely be identified

Results and conclusion

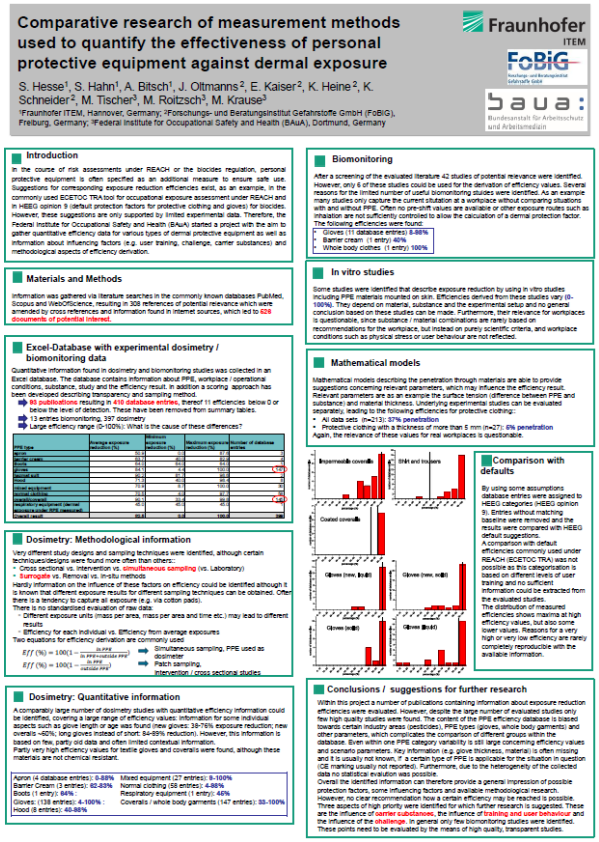
- No standardized methodology
- Only few high quality studies were found, especially for biomonitoring
- In vitro studies / penetration models exist, but have limited value concerning conclusions about workplace performance
- No statistical evaluation possible due to heterogeneity of the collected data

\+ Information about single aspects available;
general impression of PPE efficiencies

– no complete understanding; no comparison of PPE groups;
need for research in specific areas (e.g. user behaviour / training)

For the forthcoming final report please visit:
http://www.baua.de/en/Publications/Publications.html

Thank you very much for your attention!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Introduction

Materials and Methods

Excel-Database with experimental dosimetry / biomonitoring data

Dosimetry: Methodological information

Dosimetry: Quantitative information

Biomonitoring

In vitro studies

Mathematical models

Comparison with defaults

Conclusions / suggestions for further research

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