Hazard assessment of selected nanomaterials and approaches for risk assessment at the workplace

Tasks of Work Package 6
Assessment of the potential health risks of nanomaterials using exposure and risk assessments with regard to
- Chemical safety
- Occupational health and safety
- Consumer protection

Indicators for risk estimation are volatility/dustiness, exposure level, absorption rate, internal dose and mobility as well as toxicological relevance of in vitro and in vivo data.

Hazard assessment – Procedure
- Systematic literature search / literature observation:
  Literature databases (e.g. TOXCENTER, EMBASE), disseminated REACH dossiers (ECHA website), popular scientific journals
- Evaluation:
  Selection of relevant publications, NanoGEM data, identification of regulatory relevant „key studies”
- Documentation:
  Compilation of basic data sets → Hazard assessment

Risk assessment of nanomaterials at the workplace
Example: GBP* nanomaterials
Nanomaterials as „inert“ respirable dusts:
A common mode of action (inflammatory response)

Risk assessment according to the Easy-to-use Control Scheme for Hazardous Substances at the Workplace (EMKG) by the Federal Institute for Occupational Safety and Health (BAuA)
Assumptions:
1) common mode of action – additive effect
2) „real“ dust mixture at the work place (e.g. 50% nano-GBP / 50% micro-GBP)

Derivation of the control approach

Discussion
Hazard assessments of nanosilver and selected nano metal oxides have been carried out within the framework of chemicals’ legislation on the basis of published data and in the light of nanoGEM-internal results. An exemplary risk assessment for GBP nanomaterials at the workplace has been performed using a control banding approach.