New or increasing occupational exposure to chemical and biological agents

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Emerging occupational health risks

• Risk
  – Complexity: chemical mixtures
  – Ambiguity: nanotechnologies and nanomaterials
  – Uncertainty: endocrine disruptors, low doses

• Research → Risk assessment → Decision
  – Take into account knowledge and uncertainties
    • Research on methods for risk assessment (i.e. chemical mixtures)
  – Qualify and quantify dimensions of the risk
    → recommendations
    • Research on exposure assessment
OE to chemical and biological agents

• CMR and sensitising substances
  – Bio-metrology for occupational exposure (development of appropriate biomarkers)
  – Exposure factors (variability in exposure measurements)

• Research on substitution
  – CMR

• Burden of diseases
  – Cancers attributed to occupational factors
  – Long term health effects of chemical agents
    • Cancer and respiratory diseases: diesel exhausts, asphalt products, pesticides…
Endocrine disruptors: French strategy

- Prioritization of substances

- Research: specific program
  - To improve knowledge on occupational exposure to products containing endocrine disruptors or reprotoxic substances
  - Vulnerable populations ➔ Prevention

- Expert assessment: recommendations for risk management (i.e. Bisphenol A)
  - REACH, CLP regulation
  - OEL (atmospheric, biological)
  - Substitution
Nanomaterials: uncertainties and needs

- Definition and common terminology
- Standard protocols for toxicological testing
- Development and standardization of techniques and measurement instruments
- Calibration protocols and certified reference materials to validate testing instruments
- Relevant and complete exposure scenarios...
>3,400 declarations

- June 30th 2013: End of the declaration for year 2012
  - > 930 registrants,
  - > 90 importers to France

Public Report (November 2013) provided by Anses:
  - Name of the substances declared
  - Use of the substance

https://www.r-nano.fr/
  (FR/ENG)
French compulsory declaration

• The information to be declared
  – Identity of the declarant
  – Identity of the substance at the nano-scale:
    Chemical composition, distribution, size, aggregation,
    agglomeration, shape, crystalline state, specific
    surface, surface charge, surface chemistry, coating
  – Quantity
  – Uses
  – Identity of professional users.
Nano-safety

OSH: Use of Good Practices

Anses’ Recommendations

STOP* – strategy

Confinement, filtration etc.

Medical follow up and training

Exposure measurement

Transportation

Hazardous substances

Labelling as « Nano-object »

Recording, archiving, traceability

Valorisation chain, standardisation

Dustiness and aerosol formation

• high

• low

STOP* – substitution, technical, organizational, personal
A risk assessment in a context of uncertainty

Anses (2010)

“Control Banding”

Qualitative assessment of the chemical risk

Uncertainties
- New materials
- Toxicological mechanisms
- Health and environmental effects
- Hazard and exposure characterisation

Quantitative assessment of the chemical risk

Known factors
- Hazard type
- Dose-response relationships
- Amounts handled
- Exposure routes

Progressive transition
Biological agents

• To document hazard by new methods: detection techniques including quantitative approaches, molecular tools, indicators

• To document the actual worker exposure to bioaerosols and different biological agents

• To determine the impacts of emissions from processes used in the development of recovery of waste and by-products
Thank you for your attention

http://www.anses.fr