Bundesanstalt für Arbeitsschutz
und Arbeitsmedizin

WHO fibres from nanomaterials – a brief look into history

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Hazardous Chemicals and Biological Agents

WHO fibres from nanomaterials and other advanced materials:
Do we have to tackle a new asbestos problem in OSH?

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Asbestos - Products and Exposure

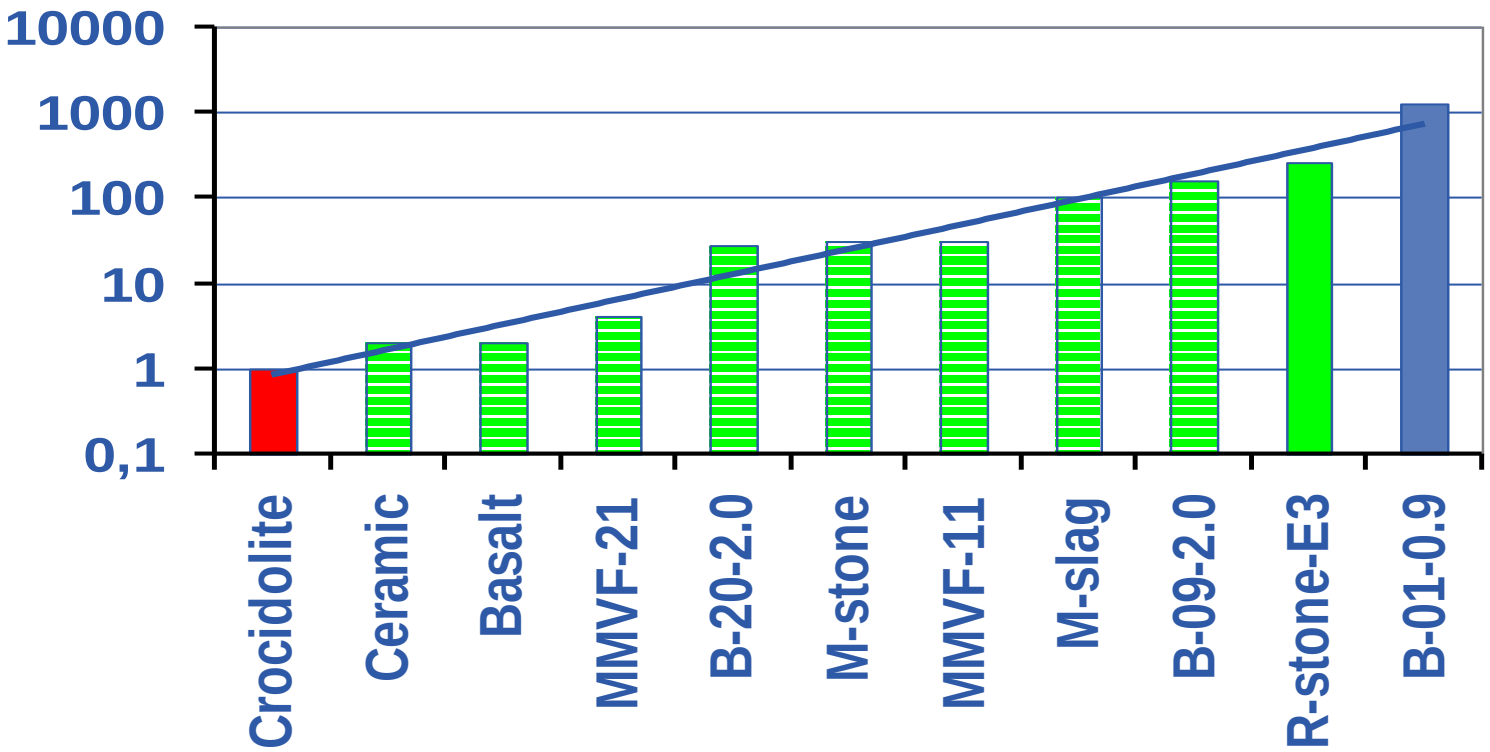
- More than 3.000 products were on the market in Germany

- Official number of exposed workers to asbestos in Germany

  around 565.000

- Still more than 1.500 fatalities per year

Carcinogenic potential of fibres



Fibre number x 10^7 in i. p.-test for 25 % tumour risk

Fibre principle

Fibres, which are sufficiently

- long
- thin and
- biopersistent

are carcinogenic

Pott, Stanton (1972)

Asbestos fibres are long, thin and biopersistent,
but other fibres as well (e. g. biopersistent mineral wool)

Product innovation can be supported by legislation

Legislation

OSH measures for biopersistent mineral wool

OSH classification scheme

Legal duty for substitution

Legal ban of biopersistent mineral wool

1980

1990

2000

Product Development

Bayer: experimental fibre B-O1-0.9

First biosoluble glass wool

First biosoluble stone wool

Biosoluble mineral wool all over EU

Overview on BAuA R+D activities

2001 – 2004 / 2006

Carcinogenicity of biopersistent fibres und granular dusts

Transferability of animal data to humans

2005 – 2009

Nano-particles, fine and ultrafine dusts at workplaces

since 2010

Impact of new technologies on safety and health at work: Nanomaterials and advanced materials

Categorization approach

R+D activities, scientific exchange, history of experience with fibres

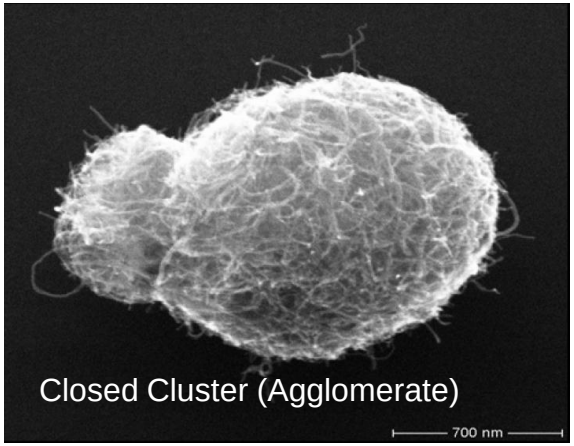
criterion “size” is related to particles entering the alveolae, not to any nano-definition

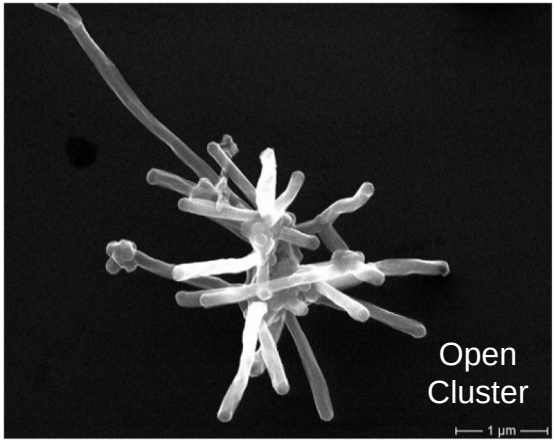
Categories

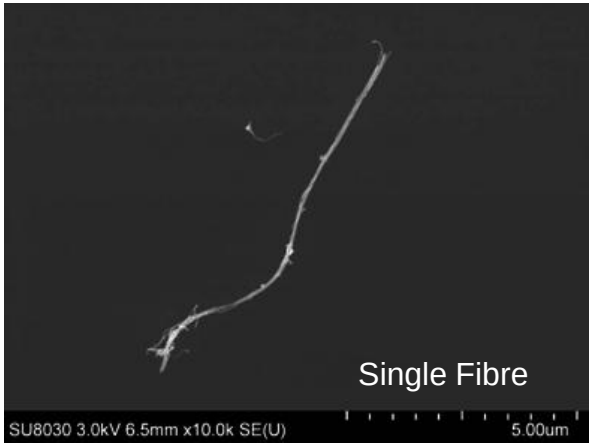
1. **soluble Nanomaterials (NM) and granular NM of specific toxicity**
2. **fibrous Nanomaterials**
3. **granular biopersistent Nanomaterials without known specific toxicity**

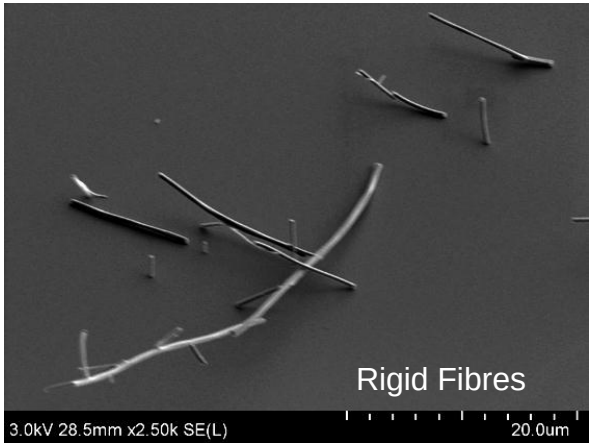
Morphological Characterization of Fibres – a must

- biodurability
- fibre principle
- rigidity









Images BAuA

Some of today‘s topics

- Refinement of the fibre principle
- Promoting safe material design
- Adequate governance approaches

Thank you for your attention

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