Moisture control as a policy aim to improve IAQ

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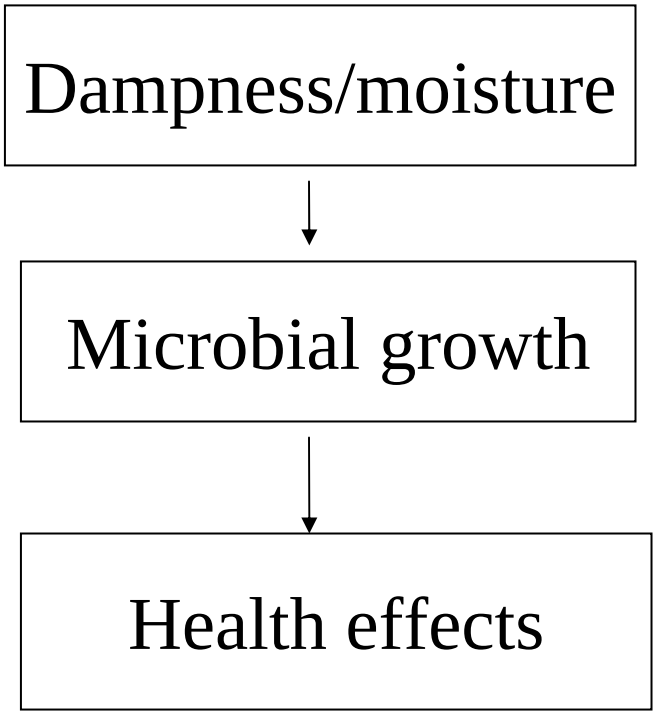
Moisture - mould - health



Health effects…

- Respiratory symptoms; wheezing, cough
- Asthma
- Allergy
- Other: inflammatory, neurological, immunotoxic (less thoroughly documented)

Why is building moisture/mould harmful to health?

- Mould/microbial growth needs water
  - dampness, moisture
- Microbes produce toxic substances while growing on building materials
- Not all mould equally toxic, but the simplest policy is to treat all mould as potentially toxic
- Dampness and moisture cause also chemical emissions

Exposure assessment?

- No simple way to quantify the exposure
- Concentrations of microbes in indoor air…
  - no extensive databases available
  - methodological limitations
  - critical exposures may include microbial metabolites
- So far, ”presence of dampness/moisture” most feasible

Prevention of exposure and health effects I

- Prevention of mould = control of moisture
  - prevent condensation, capillary rise*
  - adequate ventilation*
  - robust structures*, **
  - good maintenance**
  - moisture-resistant materials***

* *Building codes*

** *Directive on IAQ*

*** *Voluntary labelling*

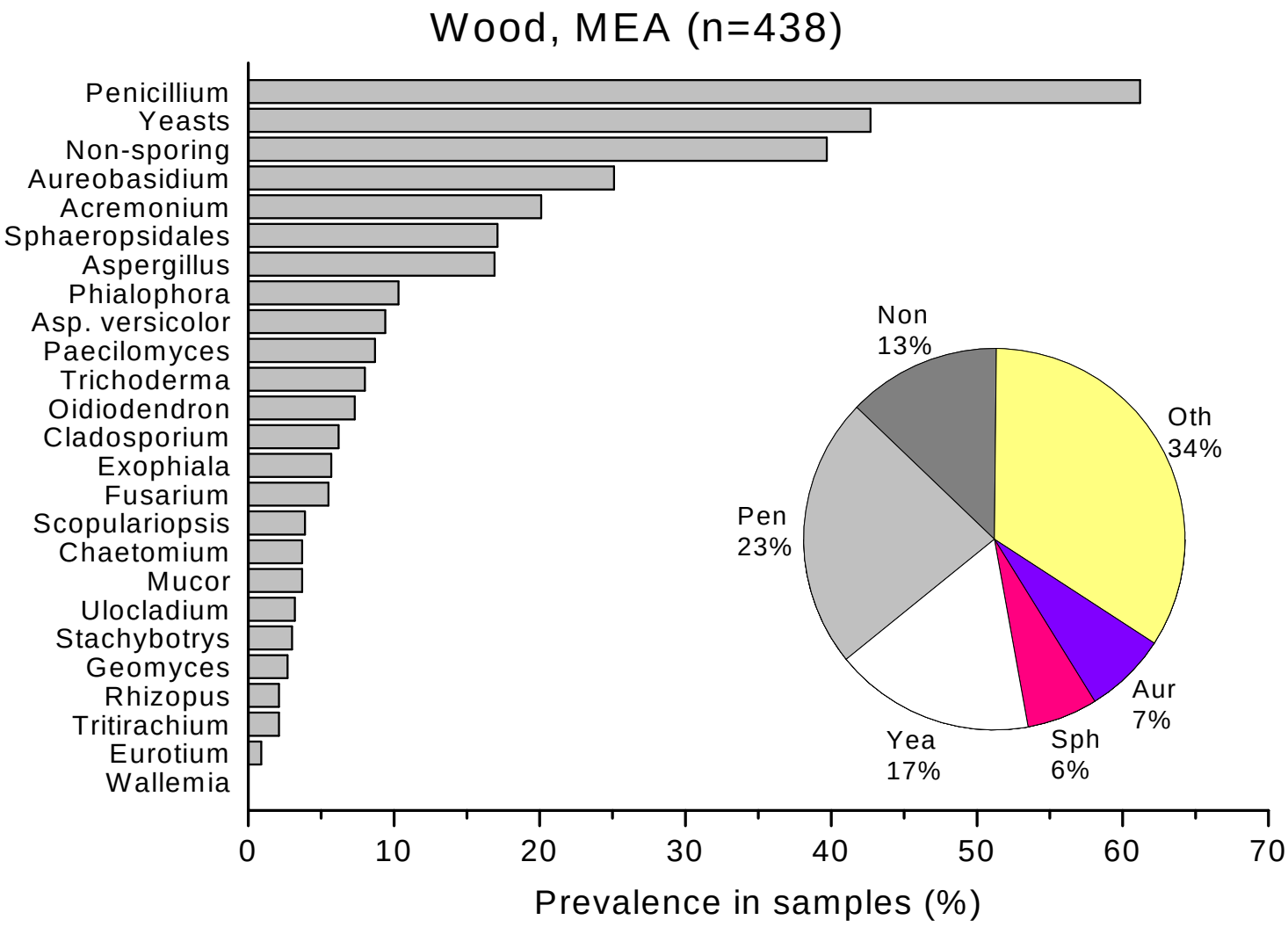
Prevention of exposure and health effects II

- Remediate mould damage when needed
  - remove any existing mould
  - mould may be harmful even if dry/dead

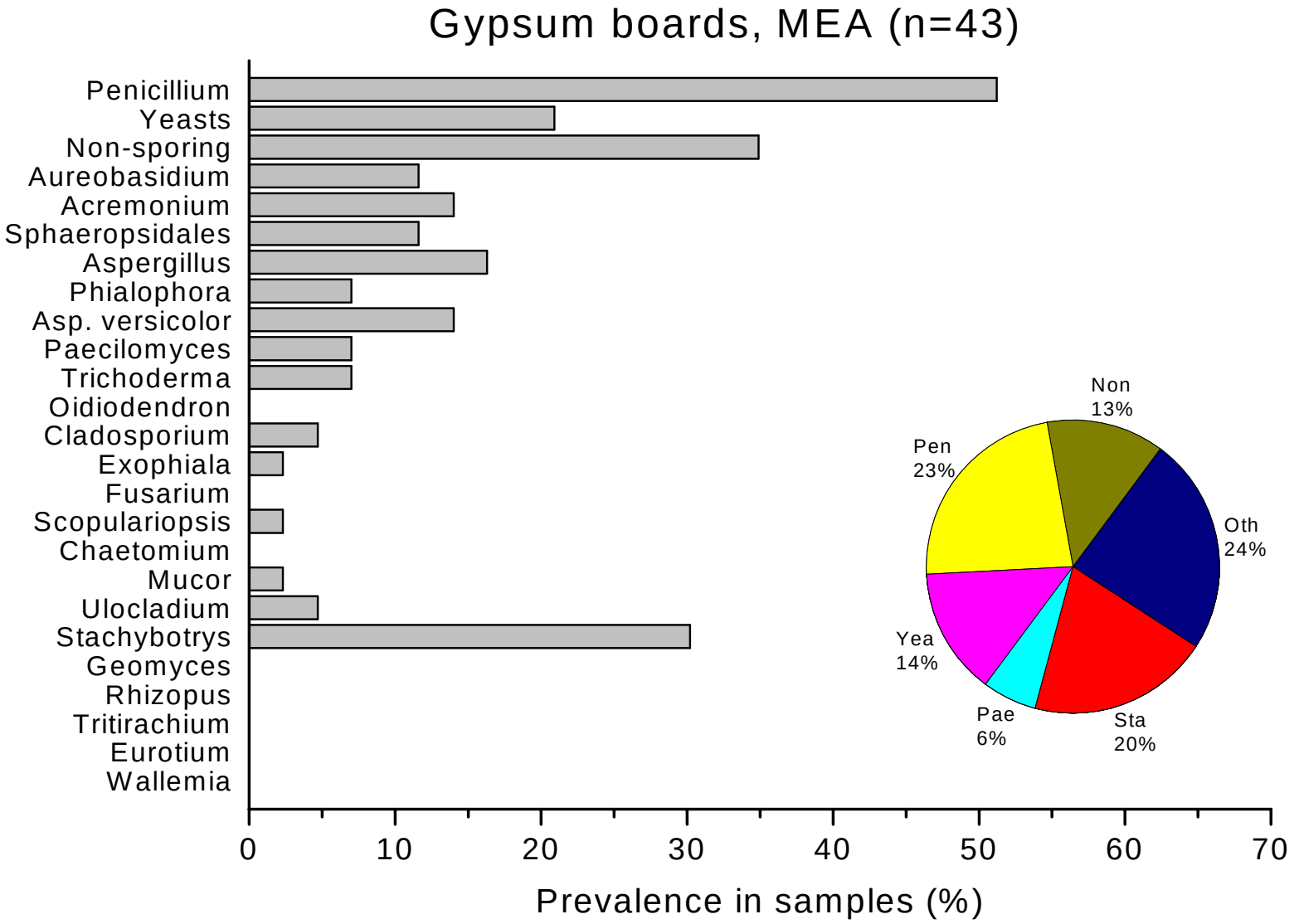
Where comes the development of good practices?

Not all mould is the same

- Some mould species more harmful than others
- Building material has a role in toxin production
- Know the microbiological behavior of your materials!
- Develop mould-resistant, ”microbial-friendly” materials

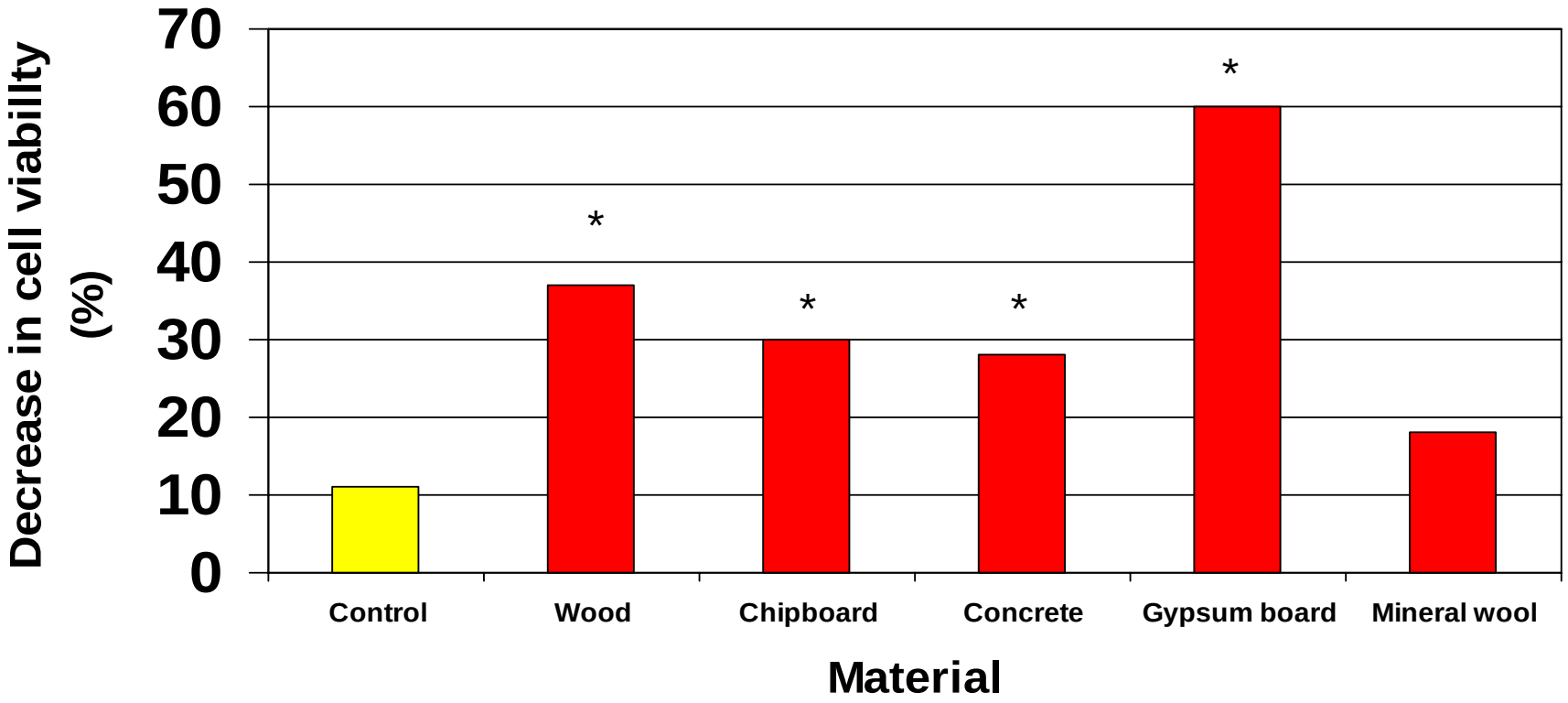


Hyvärinen 2002



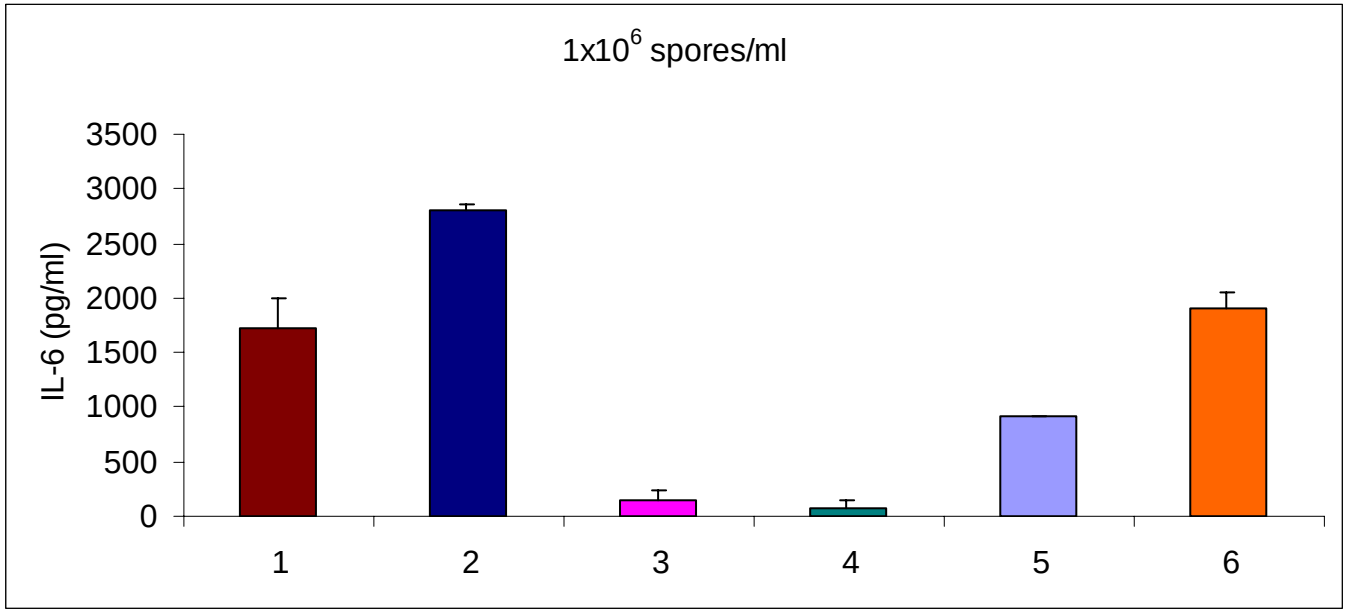
Hyvärinen 2002

Importance of material to microbe's toxicity



Cytotoxicity induced by *Streptomyces anulatus* grown on different building materials. Roponen *et al.* Indoor Air 2001;11:179-184

Inflammation potential (IL-6 production) of *Aspergillus versicolor* spores grown on six different plasterboards



Murtoniemi et al. *Inhalation Toxicol*. 2001; 13(3):233-247

Future vision

- Prevention of dampness and moisture a generally good practice in construction and maintenance
- Prevention of mould everybody's interest
- Remediation of mould damage is routine
- Microbiological behavior of materials an important characteristics in product development