

Indoor Air Quality: WHO assessments

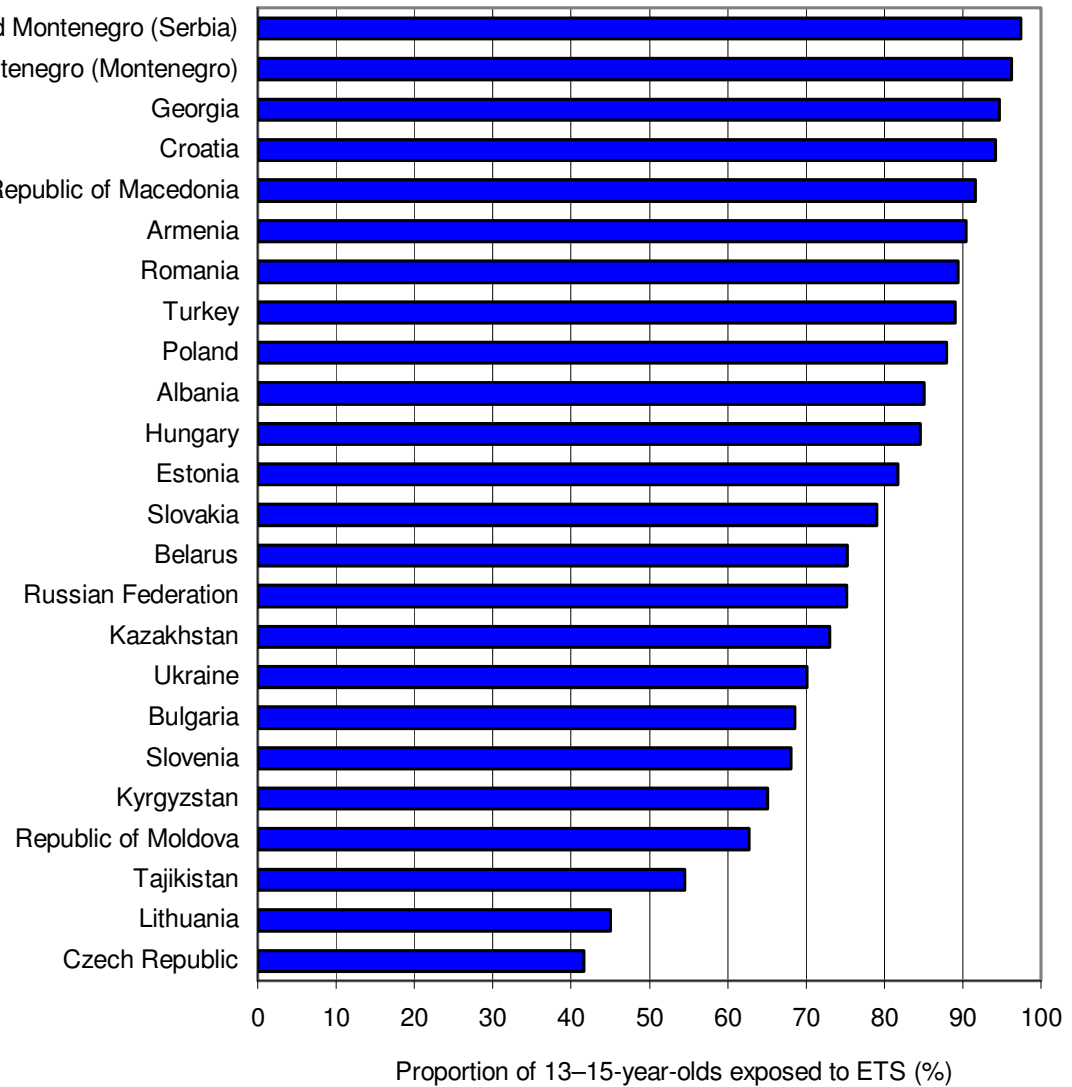
Dr. Michal Krzyzanowski
Regional Adviser, Air Quality and Health
WHO Regional Office for Europe

WHO European Centre for Environment and Health, Bonn Office

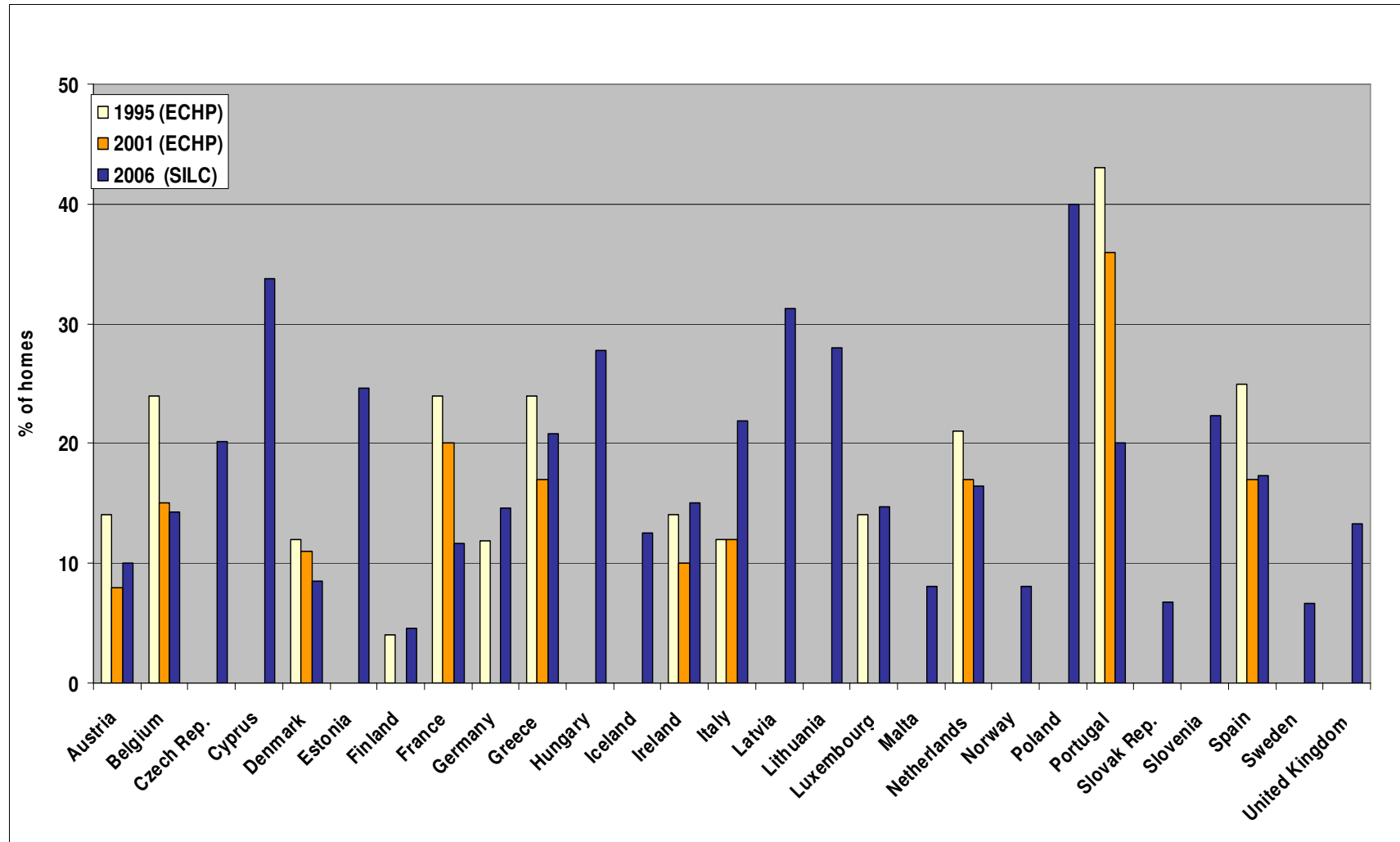
<http://www.euro.who.int/air>

Children's exposure to environmental tobacco smoke at home

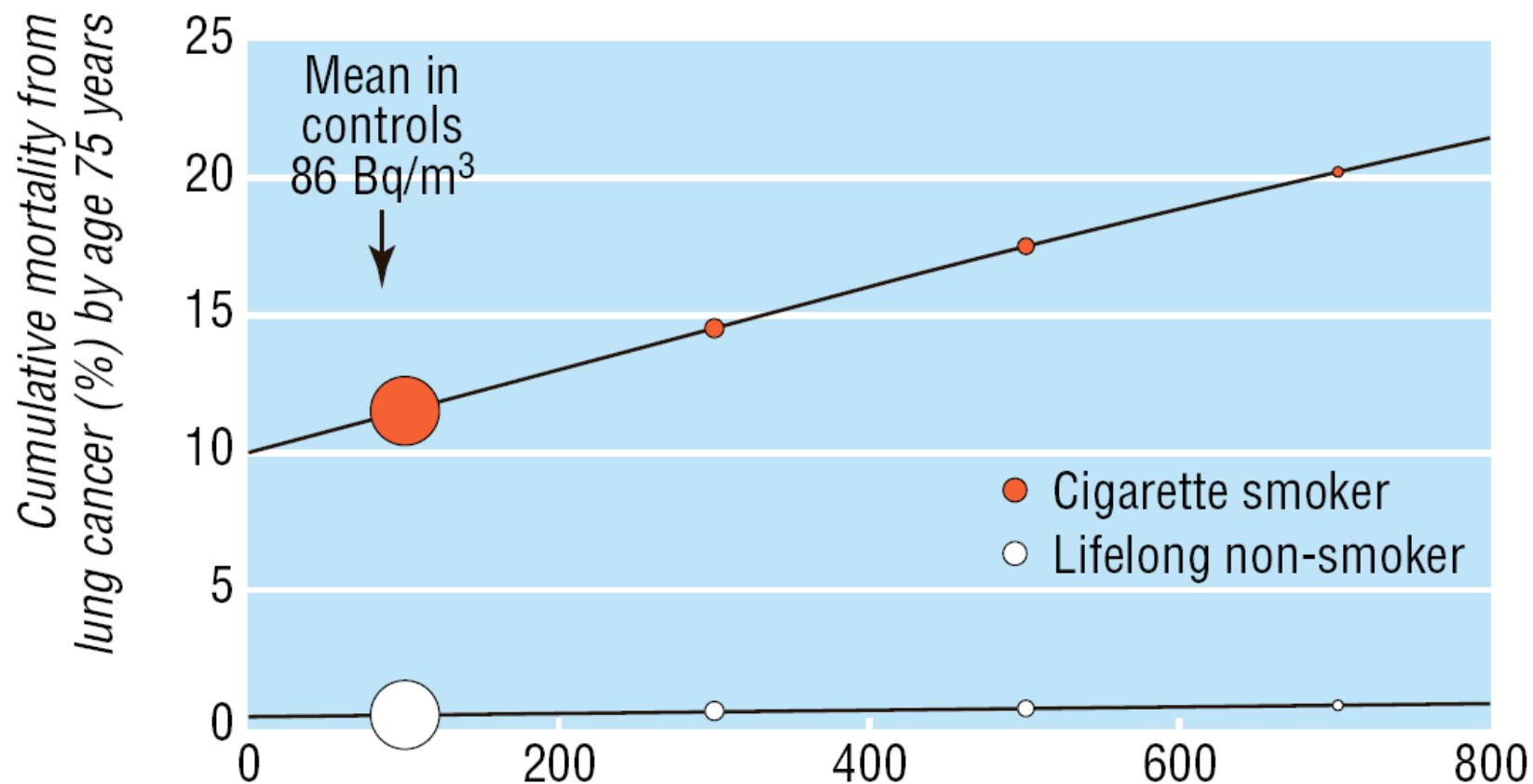
Over 50%
children
exposed to
ETS in their
home 😞



Homes with dampness problems in European countries



Cumulative absolute risk of death from lung cancer by age 75 years vs Rn concentration at home



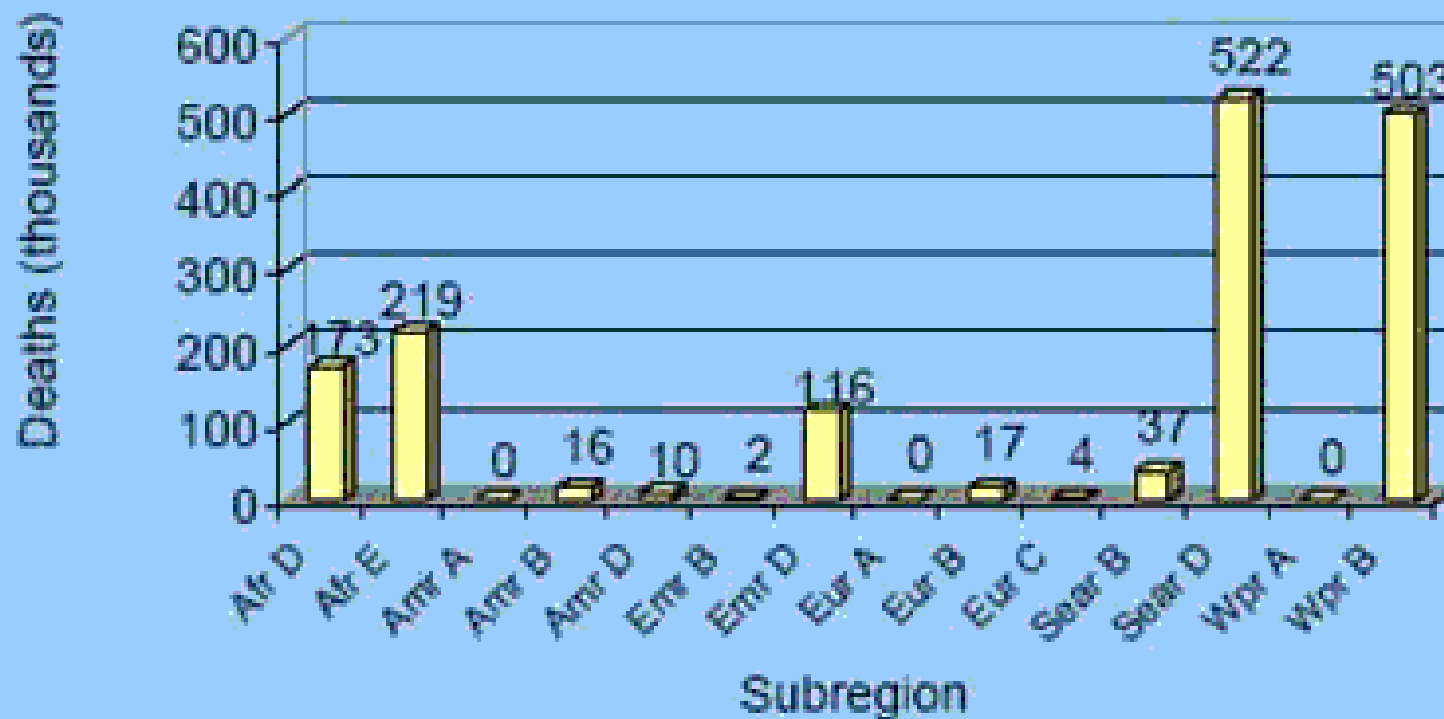
Radon in the home accounts for about 9% of deaths from lung cancer and about 2% of all deaths from cancer in Europe

Usual radon (Bq/m^3)

Source: Darby et al, *BMJ* 2005⁴

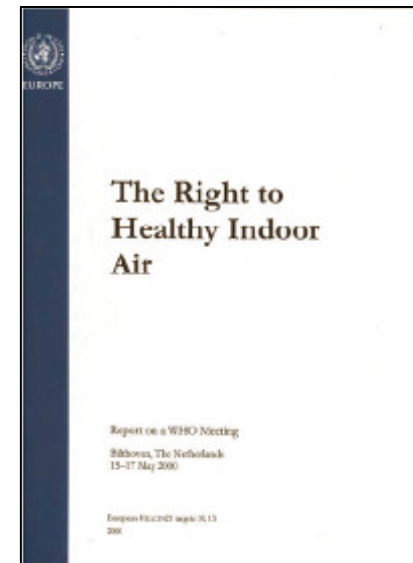
Burden of disease related to indoor air pollution from indoor combustion of solid fuels

Attributable mortality for indoor smoke from solid fuel use by WHO subregion, 2000



The Right to Healthy Indoor Air (WHO 2000)

Principle 6: Under the principle of accountability, all relevant organizations should establish explicit criteria for evaluating and assessing building air quality and its impact on the health of the population and on the environment.



<http://www.euro.who.int/document/e69828.pdf>

WHO Indoor air quality guidelines

Selected chemicals

- Formaldehyde
- Naphtalene
- Benzene
- NO₂
- CO
- Particulate matter
- Halogenated compounds
- PAH
- Radon

*WG to recommend the
Guidelines: 30 March –
3 Apr 2009*

Biological agents

- Dampness and mould
- Allergens (from house dust mites, pets)

(WHO clearance on-going)

Indoor combustion



Children's Environment And Health Action Plan for Europe

4th Ministerial Conference on Environment
and Health, Budapest 2004



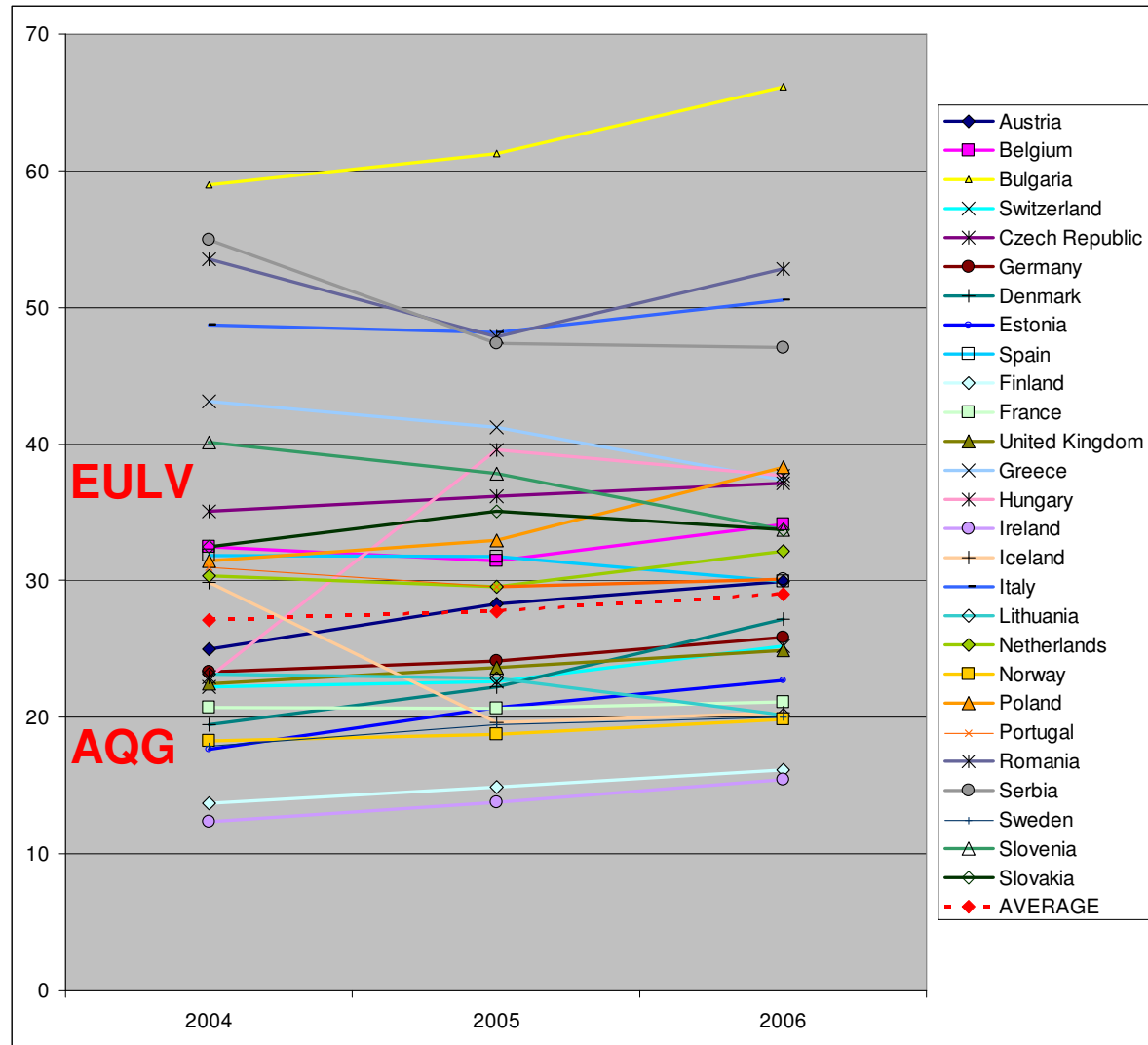
Children's Environment And Health Action Plan for Europe

Exposure to air pollution (PM10)

➤ PM10 level > AQG for 90% children in WHO/Euro

➤ No improvement in urban AQ in the current decade

➤ No data on PM10 for ca 75% of urban population of the WHO/ Euro



Conclusions – WHO strategy

- **Reduce health burden of major indoor exposures with well established evidence on health impacts (ETS, combustion products, dampness / mould, Rn...)**
- **Formulate WHO IAQ Guidelines based on systematic review of evidence**
- **Promote research on IAQ and health to complete the evidence basis for risk reduction**
- **Promote reduction of outdoor air pollution**

Meta-analysis of studies on risk of respirators symptoms and presence of dampness or mould at home (Fisk et al 2007)

Outcome	Subjects	# of Studies	Odds Ratio (95% CI)	% increase of outcome prevalence in homes with dampness/mould*
Upper respiratory tract symptoms	All	13	1.70 (1.44-2.00)	52
Cough	All	18	1.67 (1.49-1.86)	50
	Adults	6	1.52 (1.18-1.96)	--
	Children	12	1.75 (1.56-1.96)	--
Wheeze	All	22	1.50 (1.38-1.64)	44
	Adults	5	1.39 (1.04-1.85)	--
	Children	17	1.53 (1.39-1.68)	--
Current asthma	All	10	1.56 (1.30-1.86)	50
Ever-diagnosed asthma	All	8	1.37 (1.23-1.53)	33
Asthma development	All	4	1.34 (0.86-2.10)	30

* visible dampness, mould, or mould odour