Coordinating and Harmonizing Long Term Cohort Studies of Children's Environmental Health

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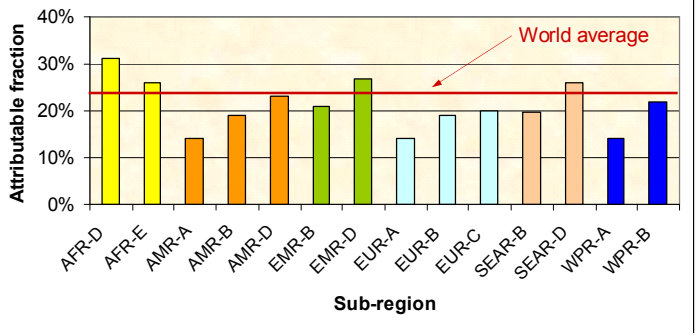
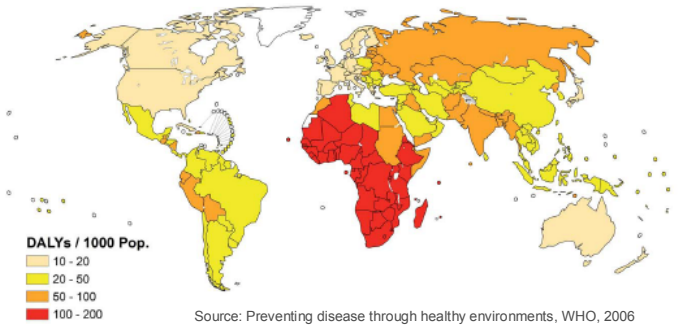
How much disease could be prevented by modifying the environment ?

Current evidence - best conservative estimate 24%



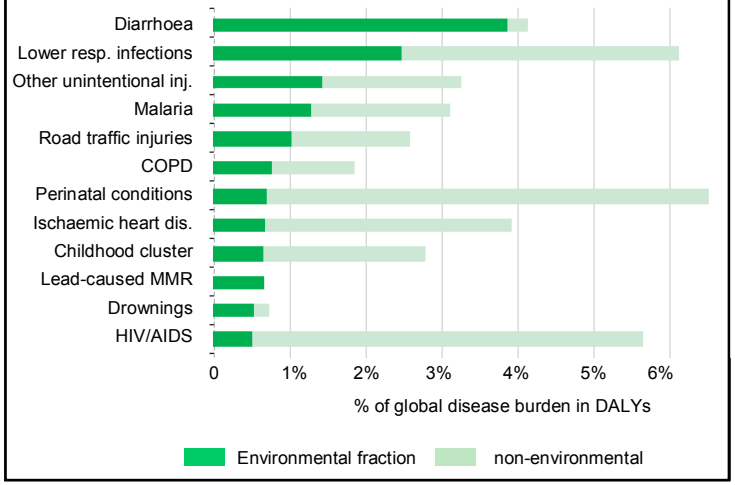
Source: Preventing disease through healthy environments, WHO, 2006

FIGURE 6 ENVIRONMENTAL DISEASE BURDEN IN DALYS PER 1000 PEOPLE, BY WHO SUBREGION (2002) [a]



Source: Preventing disease through healthy environments, WHO, 2006

Diseases with largest environmental contributions (I)



Diseases with largest environmental contributions (II)

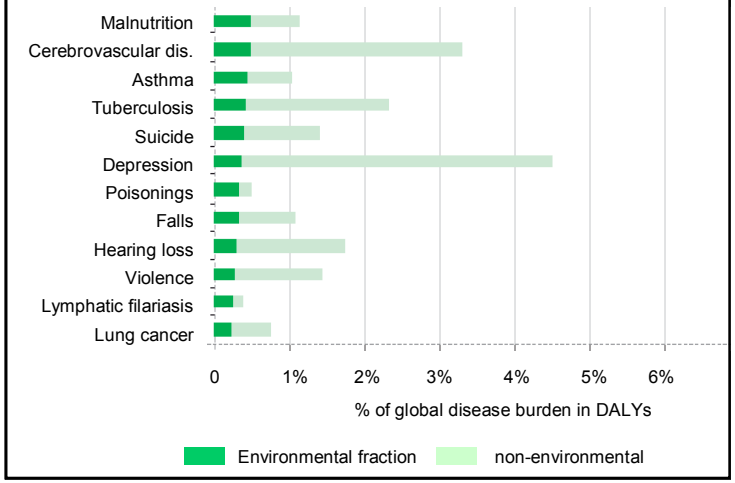
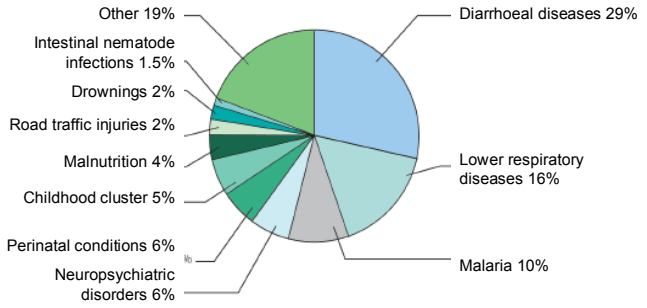


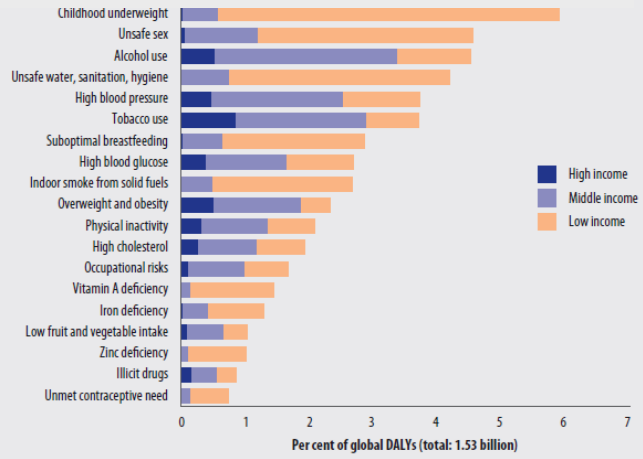
FIGURE 9 MAIN DISEASES CONTRIBUTING TO THE ENVIRONMENTAL BURDEN OF DISEASE, AMONG CHILDREN 0–14 YEARS [a]



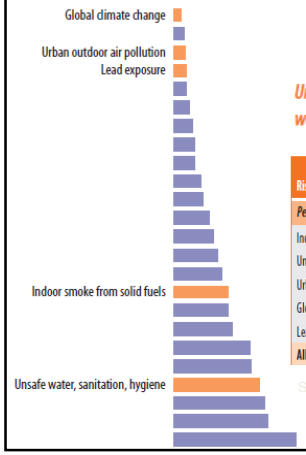
Source: Preventing disease through healthy environments, WHO, 2006

Percent of DALYs attributable to 19 risk factors, 2004

Source: Global Health Risks, WHO, 2009



Environmental risks to health



Unhealthy and unsafe environments cause 1 in 4 child deaths worldwide.

Risk	World	Low and middle income	High income
Percentage of deaths			
Indoor smoke from solid fuels	3.3	3.9	0.0
Unsafe water, sanitation, hygiene	3.2	3.8	0.1
Urban outdoor air pollution	2.0	1.9	2.5
Global climate change	0.2	0.3	0.0
Lead exposure	0.2	0.3	0.0
All five risks	**8.7**	**9.6**	**2.6**

Source: Global Health Risks, WHO, 2009

NEED TO KNOW ABOUT EMERGING ISSUES

New or "re-emerging" threats to children's health and development

WHO

WHO

Ozone depletion

- ❖ Radiation
- ❖ Persistent organic pollutants
- ❖ Endocrine disruption
- ❖ Obesity
- ❖ Others…

Environmentally-related illnesses have high social and economic costs

WHO

- Increased medical expenses
- Sickness, disability and death
- Sick days away from school
- Productivity lost by parents away from work
- Personal agony of families and communities
- Reduced long-term productivity of the country

Longitudinal cohort studies

- Identify causal relationships
- Can determine factors relating to many different outcomes (therefore cost-efficient)
- Minimise recall bias

Guide to Undertaking a Birth Cohort Study

A six-year WHO effort guided by Professor Jean Golding at University of Bristol in the UK

- WHO consultation in Montreux, Switzerland in Oct 2003
- WHO consultation in Washington, DC in August 2004
- WHO consultation in Cuernavaca, Mexico in November 2004
- WHO consultation in Bangkok, Thailand in August 2005
- Final publication in July 2009

Why should we harmonize birth cohort studies?

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- Common protocols will enable data to be combined to look at rare diseases
- Even large cohorts (100,000 children) cannot study diseases occurring at 1 in 100,000 children
- Common protocols will allow comparison of results

Comparison of results

A finding in one area can be investigated in another

- if similar results, the findings are strengthened
- if different results, this may indicate an interacting environmental or genetic effect
- Need for set of "core" measurements
  - Specific questions and biological tests

Why should we harmonize birth cohort studies?

- Huge burden with regard to choice of protocols, biological and environmental measurements, experience in piloting and validation, reviewing the literature

Why should we harmonize birth cohort studies?

- Most experience in the industrialized countries
- Great need in low and middle income countries

Death and disability from environmental causes is preventable

- There is much we still do not understand about the effects of chemicals in the environment on child health and development
- Longitudinal cohort studies can help us to learn more
- Harmonized studies will be most efficient use of resources