

SO₂, NO_x, particulate matter (PM₁₀) – LCP Directive

World Health Organisation 2005

Guidelines

SO₂: **20 $\mu\text{g}/\text{m}^3$ 24-hour mean**
500 $\mu\text{g}/\text{m}^3$ 10-minute mean

Increase in all-age daily
mortality rate: relation with
PM10?

Change in pulmonary
function: respiratory effects-
asthmatic

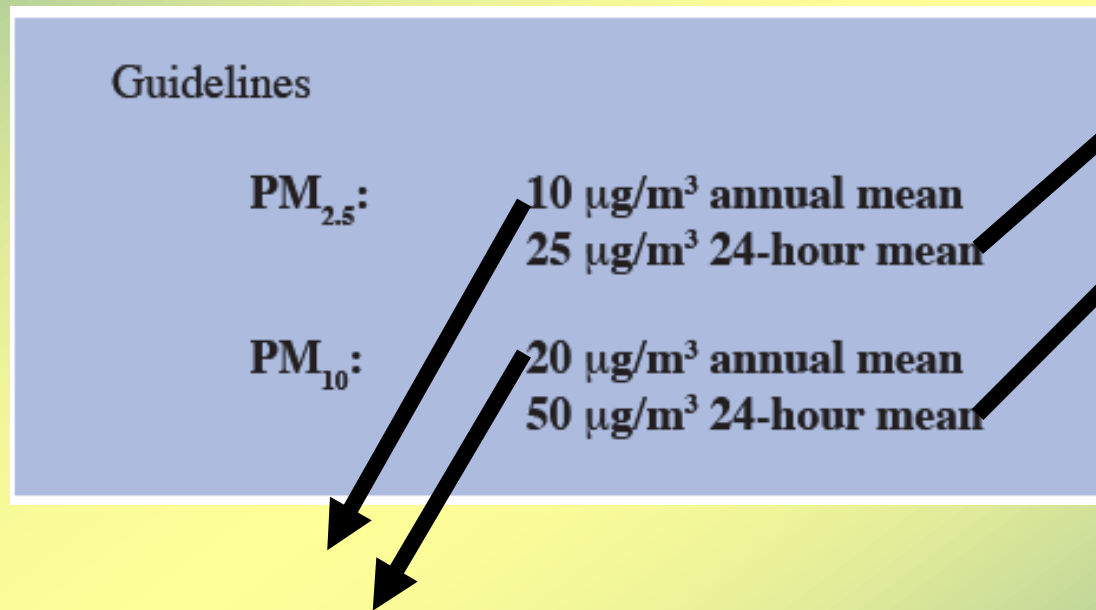
World Health Organisation 2005

Guidelines	
NO ₂ :	40 µg/m ³ annual mean
	200 µg/m ³ 1-hour mean

Reduced lung function
growth in children –
also related to other
combustion products ?

Direct effect
pulmonary function in
asthmatics

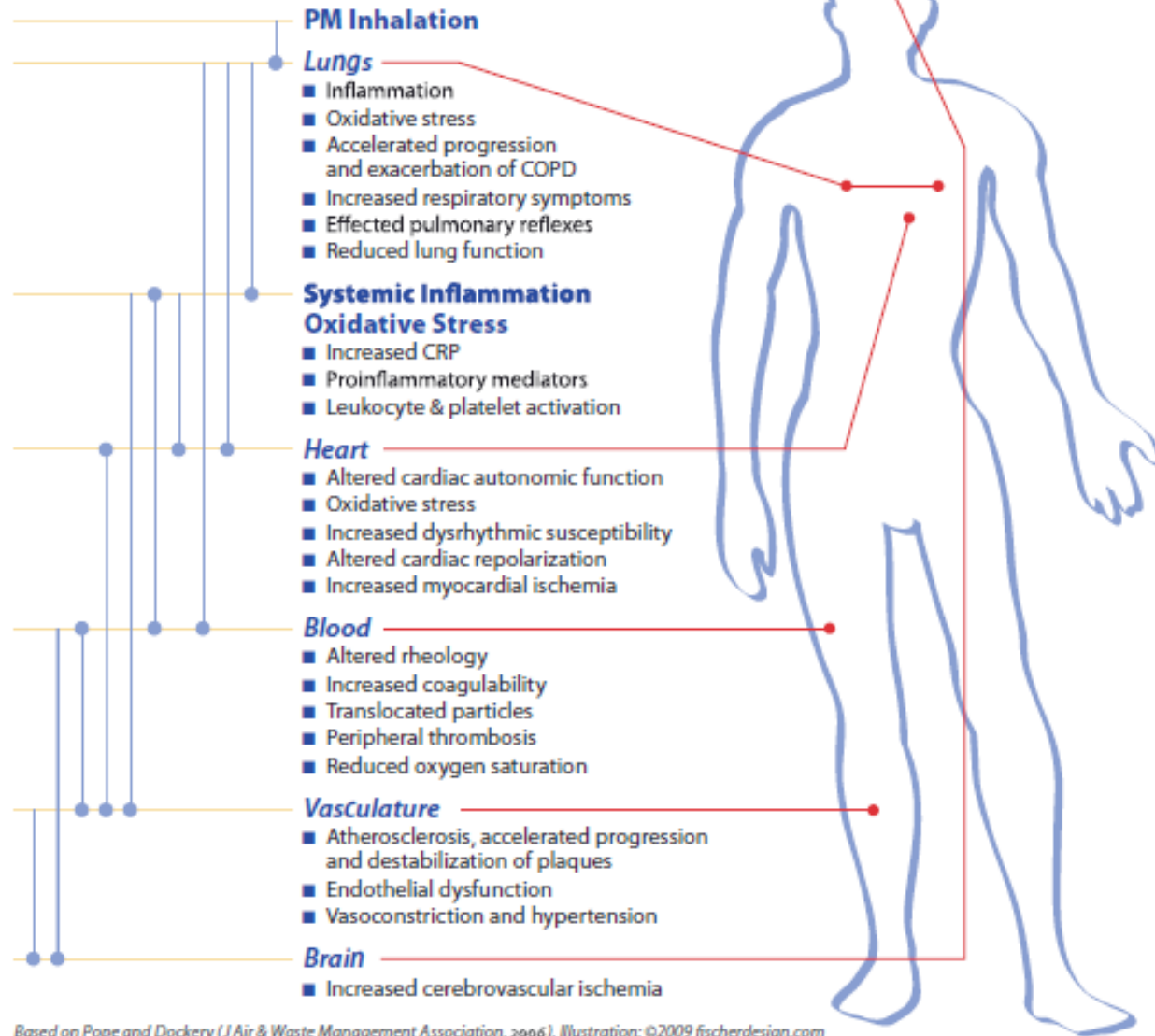
World Health Organisation 2005



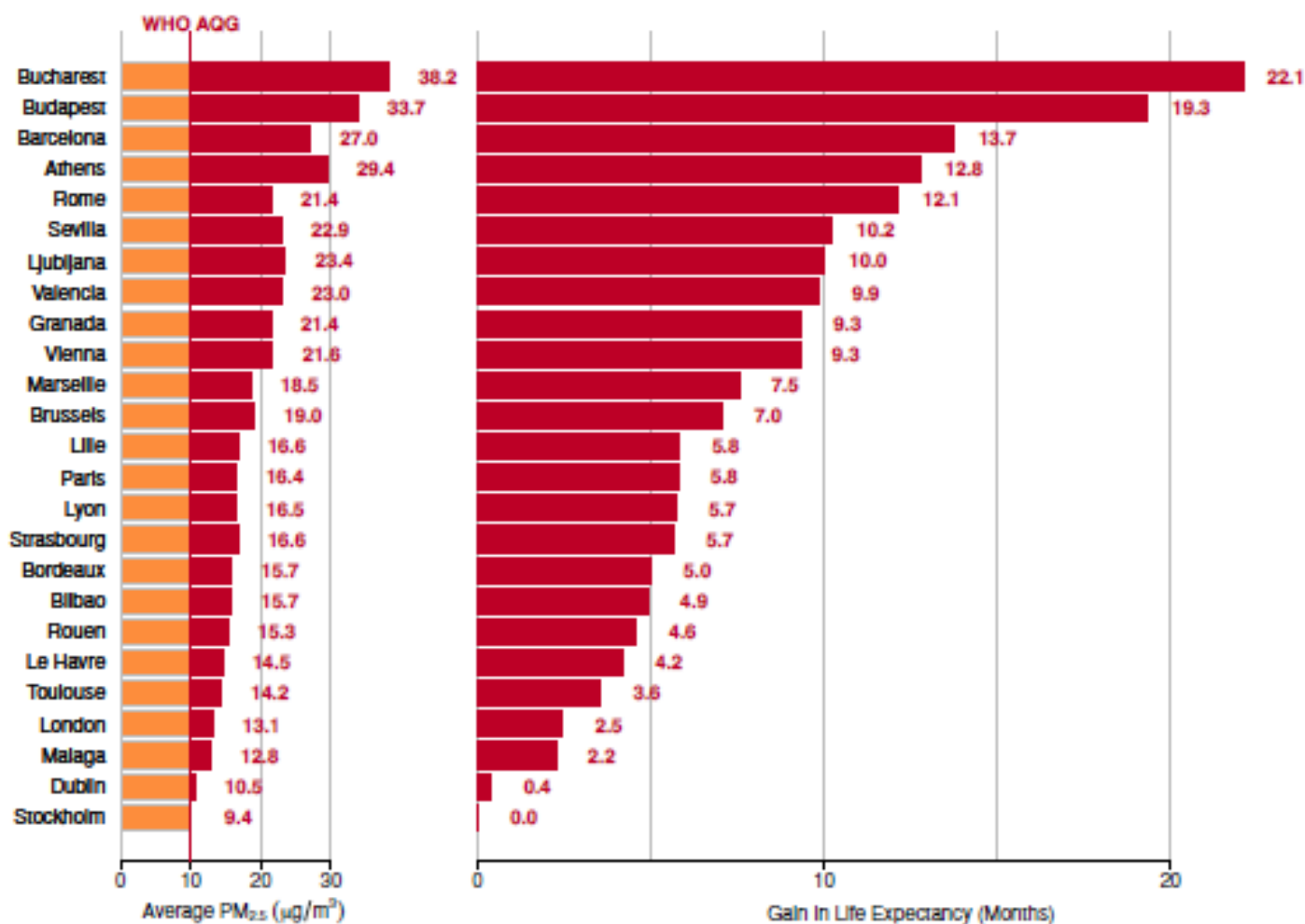
Increase in daily
mortality

Total cardio-
pulmonary and lung
cancer mortality

How inhalation of particulate matter may affect our health



Predicted average gain in life expectancy (months) for persons 30 years of age and older in 25 Aphekom cities for a decrease in average annual level of PM_{2.5} to 10µg/m³ (WHO's Air Quality Guideline)



Aphekom study 2008 – 2011(www.aphekom.org)

KEY APHEKOM NUMBERS

- 60 scientists
- 3 years
- 25 cities
- 12 countries
- 39 million inhabitants

KEY APHEKOM NUMBERS

Exceeding WHO Air Quality Guidelines on PM_{2.5} in 25 European cities with 39 million inhabitants results annually in:

- 19,000 deaths
- 16,000 of them from cardiovascular diseases
- €31.6 billion in health and related costs

KEY APHEKOM NUMBERS

- Living near busy roads could be responsible for some 15-30% of all new cases of asthma in children; and of chronic obstructive pulmonary disease and coronary heart disease in adults 65 years of age and older
- The associated economic burden could total €300 million every year

KEY APHEKOM NUMBERS

In 20 cities where sulphur in fuels was reduced by EU legislation:

- 2,200 premature deaths from ambient SO₂ prevented
- Some €192 million saved