

‘Ik zag overal hoe milieuvervuiling al van bij de eerste ademtocht diepe sporen nalaat.’

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BORGERHOFF  
& LAMBERIGTS



Universiteit  
Antwerpen



DAAN VAN  
BRUSSELEN

DAAN VAN BRUSSELEN

# DAGBOEK VAN EEN KINDERARTS ZONDER GRENZEN

Over milieu  
en gezondheid  
van kinderen

DAGBOEK VAN EEN  
KINDERARTS ZONDER GRENZEN

WE PUBLISH WWW.BORGERHOFF-LAMBERIGTS.BE



# Take home

## Growing evidence:

'EARLY LIFE EXPOSURE' to pollution = harmful for children (and adults)

## Evidence supports:

- **Modal Shift**

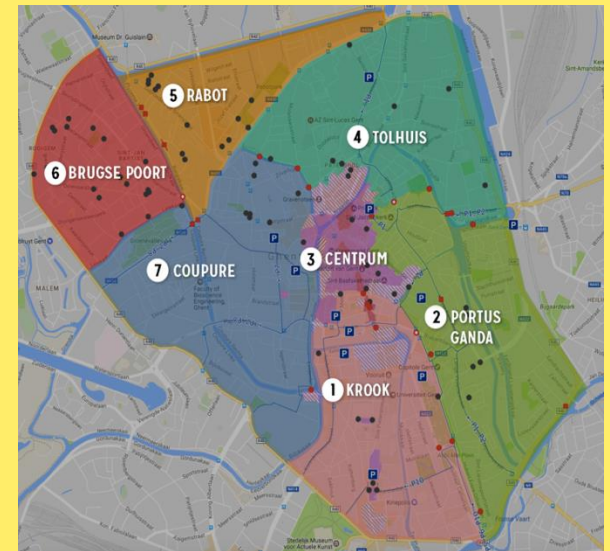


- **Road pricing**

- **Low Emission Zones ? (esp. no diesel)**

- **Electric transition ?**

- **Circulation Plan**









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© Associated Newspapers / Rex Fea





## ENVIRONMENTAL IMPACTS ON HEALTH

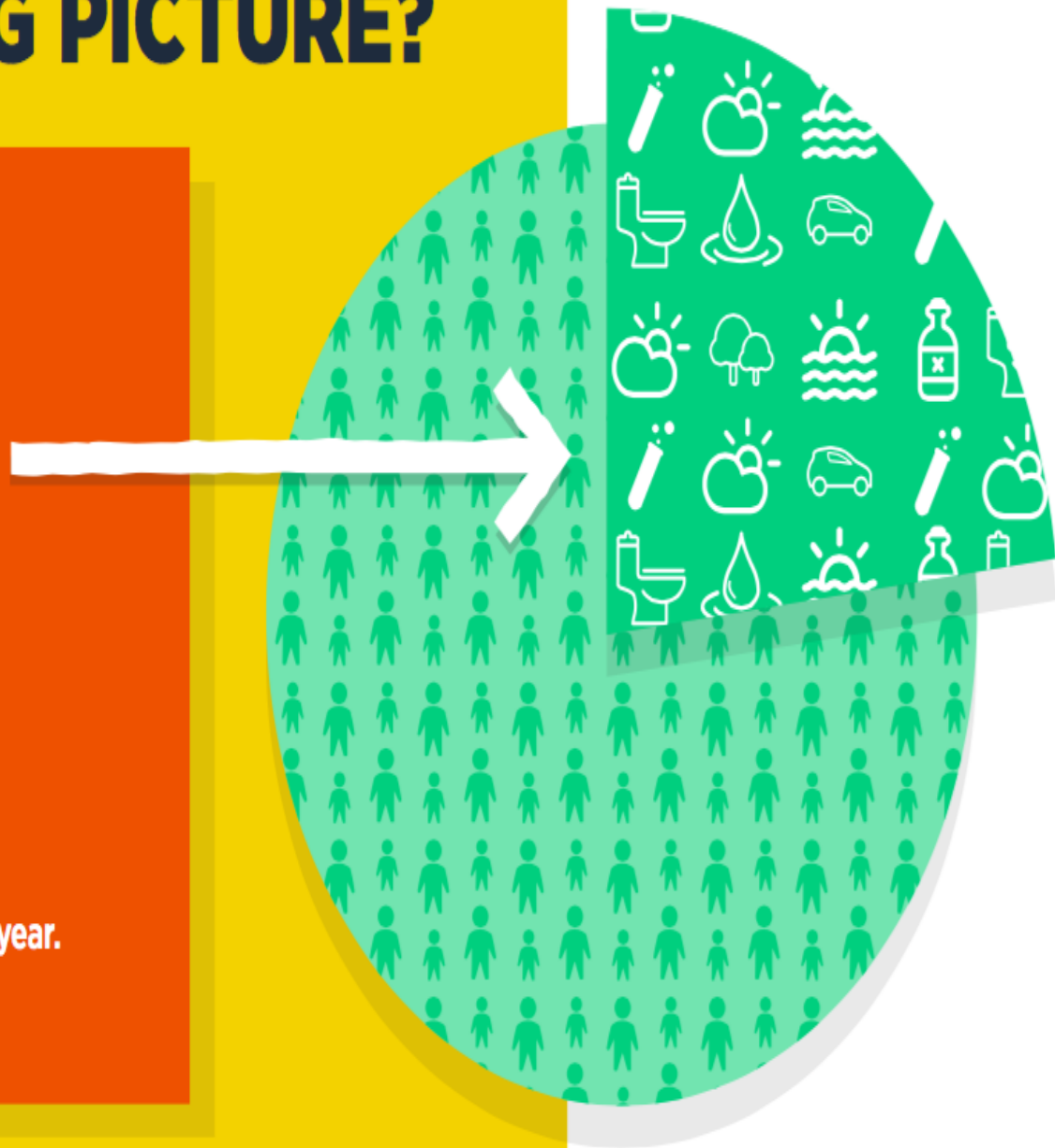
# WHAT IS THE BIG PICTURE?

**FACT:**

**23%**

of all global deaths are linked  
to the environment.

That's roughly **12.6 million deaths** a year.



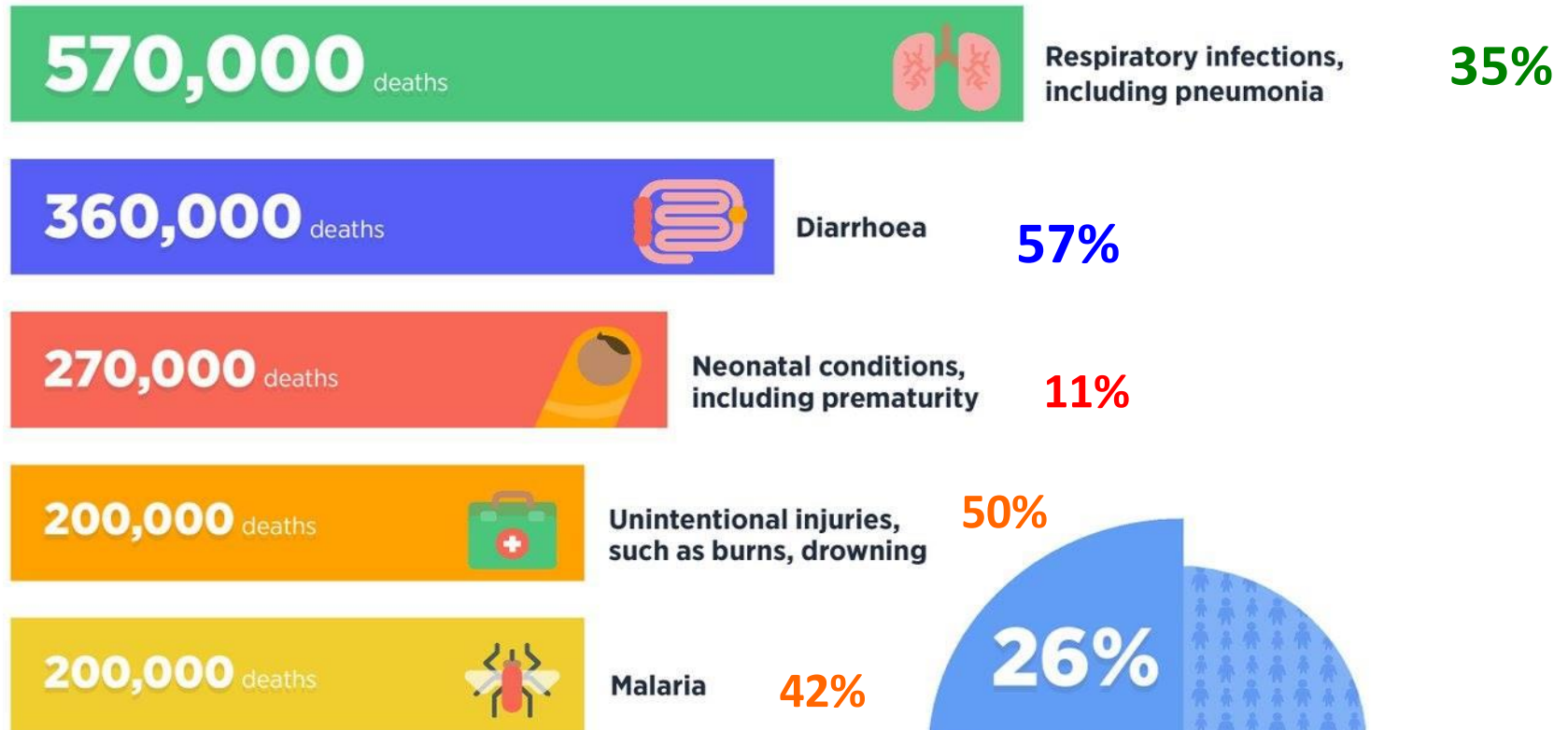






# PROTECTING CHILDREN FROM THE ENVIRONMENT

## Each year 1.7 million deaths of children under 5 are linked to the environment.



“  
Air pollution causes 1  
in 9 deaths. It is the  
biggest environmental  
health crisis we face.”

**BREATHELIFE**  
Clean air. Healthy future.



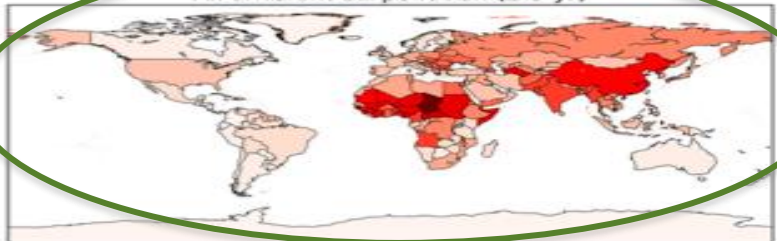
World Health  
Organization



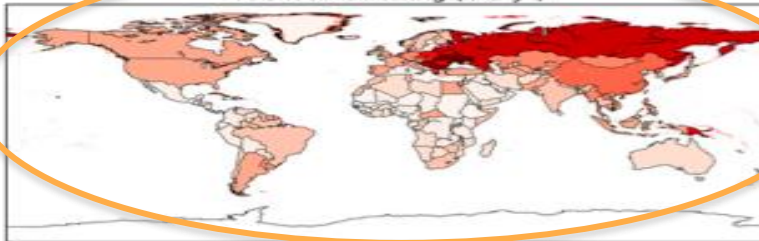
CLIMATE &  
CLEAN AIR  
COALITION  
TO REDUCE SHORT-LIVED  
CLIMATE POLLUTANTS

# 'Air pollution': life years lost

All ambient air pollution (2.9 yr)



Tobacco smoking (2.2 yr)



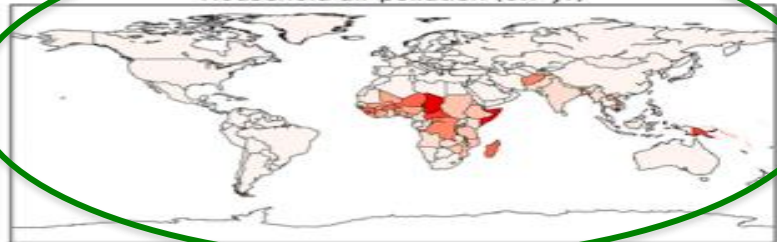
Ambient fossil fuel related air pollution (1.1 yr)



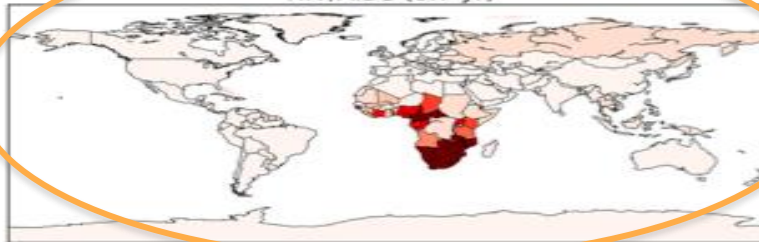
Ambient residential air pollution (0.8 yr)



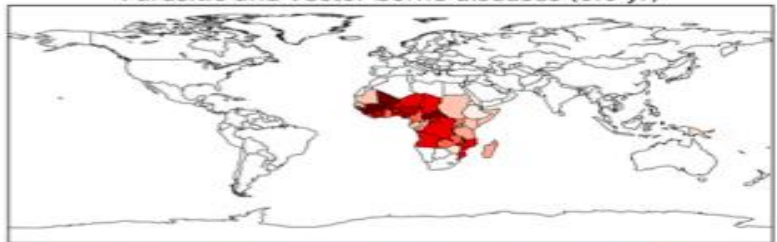
Household air pollution (0.7 yr)



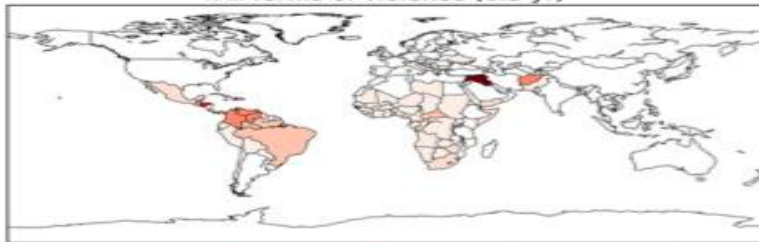
HIV/AIDS (0.7 yr)



Parasitic and vector-borne diseases (0.6 yr)



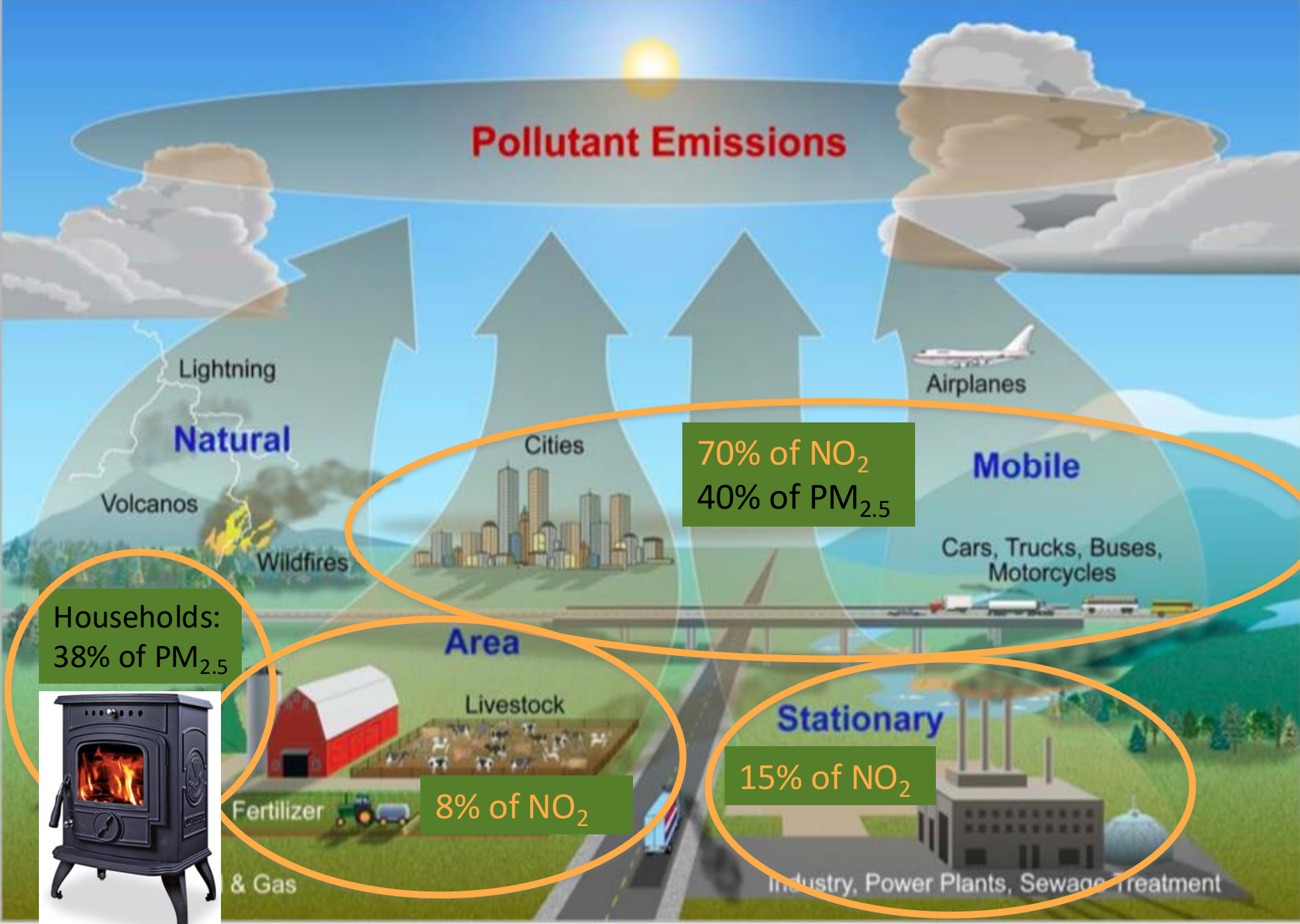
All forms of violence (0.3 yr)



0.5 1.0 1.5 2.0 2.5 3.0 3.5 4.0 4.5 5.0 5.5 6.0 6.5  
Loss of life expectancy (years)

0.5 1.0 1.5 2.0 2.5 3.0 3.5 4.0 4.5 5.0 5.5 6.0 6.5  
Loss of life expectancy (years)

# Pollutant Emissions



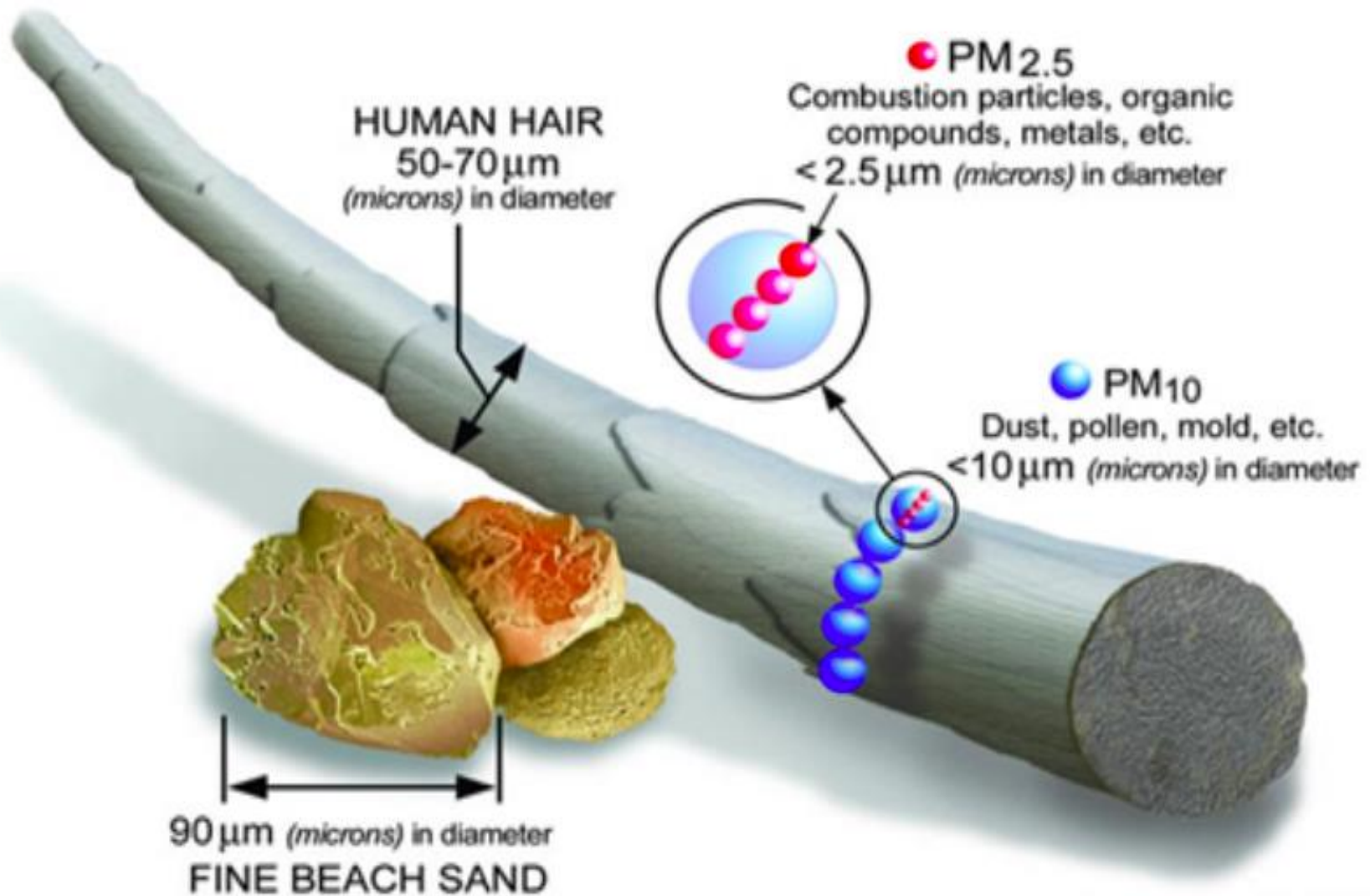


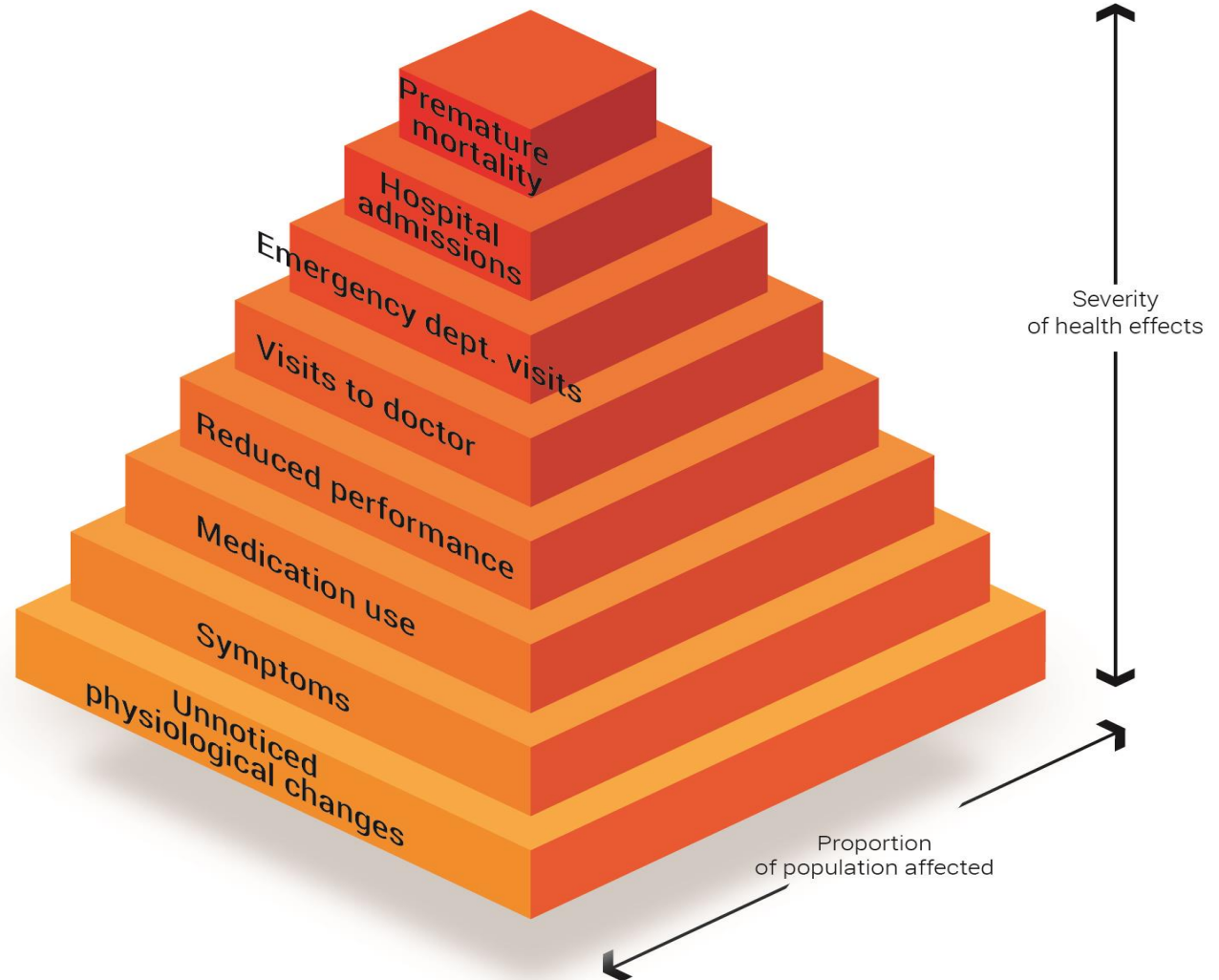
Image courtesy of the U.S. EPA



RINGLAND



# 21 deaths avoided every year



# Ringland health impact assessment

	500m radius of ring road	1500m radius of ring road
Population exposed	108,225	351,556
Annual number of deaths avoided	12.5 (95% CI 4.2–24.9)	21.1 (95% CI 7–41)
Annual number of deaths avoided per 100,000 inhabitants	11.5 (95% CI 3.9–23)	6 (95% CI 2–12)
Annual total number of life years gained	1009.7 (+- 336.6)	1710.4 (+-570.1)
Annual number of myocardial infarctions avoided	0.3 (95% CI 0–0.7)	0.5 (95% CI 0–1.13)
Annual number of lung cancer deaths avoided	0.05 (95% CI 0.02–0.07)	0.1 (95% CI 0.04–0.12)



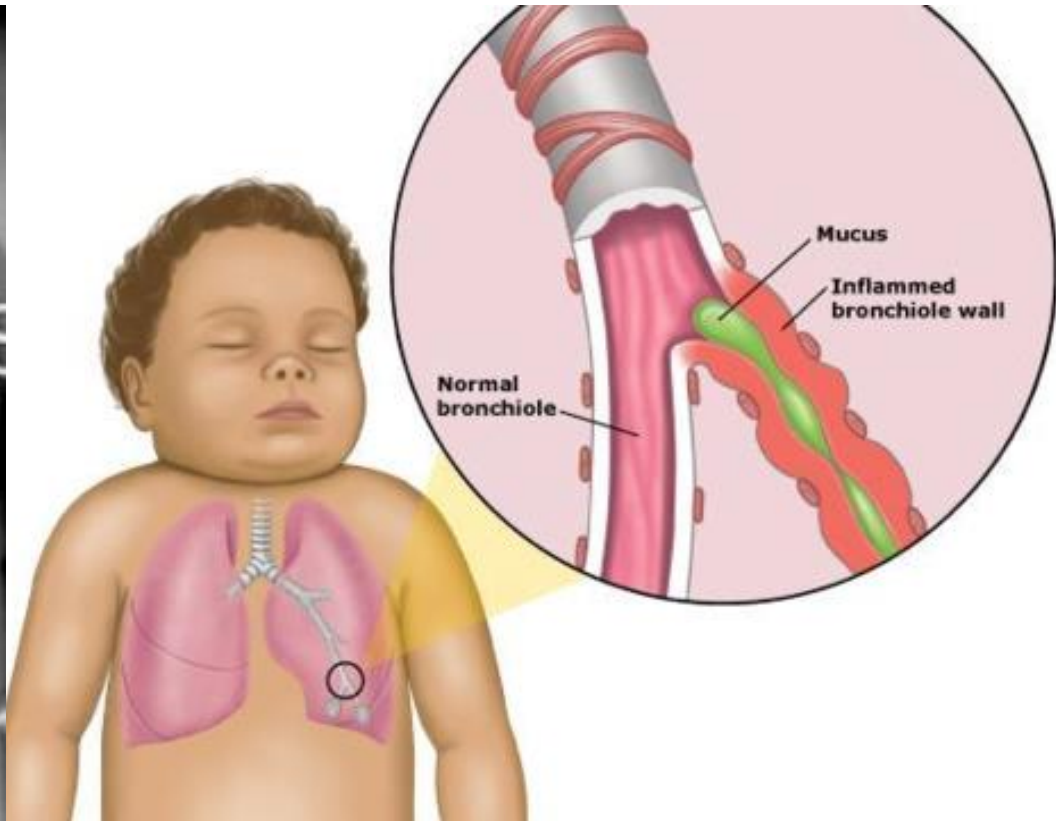
**Akkoord Oosterweel**

**Historische doorbraak na 21 jaar**





# (RSV)-bronchiolitis



# PM<sub>10</sub>

**Table 6. Adjusted Odds Ratios (aOR) to be hospitalized for bronchiolitis for an interquartile range (IQR) increase of PM<sub>10</sub>, retained in a multivariable logistic regression model with average PM<sub>10</sub> levels in the 31 days before admission at home (N cases = 118; N controls = 79) and in daycare (N cases = 68; N controls = 36).\***

	GENERAL MODEL *			TIME-ADJUSTED MODEL **		
	aOR (95%CI) average at home	aOR (95%CI) average daycare	aOR (95%CI) Composite ***	aOR (95%CI) average at home	aOR (95%CI) average daycare	aOR (95%CI) Composite ***
PM <sub>10</sub>	2.17 (1.23–3.85) p=0.008	2.58 (1.26–5.26) p=0.009	2.21 (1.25–3.92) p=0.006	2.69 (0.94–7.69) p=0.065	5.13 (1.24–21.28) p=0.024	2.92 (0.99–8.62) p=0.051

Nagelkerke R<sup>2</sup> for the general model = 0,24 (at home) and 0,19 (in daycare).

Nagelkerke R<sup>2</sup> for the time-adjusted model = 0,25 (at home) and 0,19 (in daycare).

JE MAG DE LIVING DOEN,  
DE SLAAPKAMERS, DE BADKAMER  
en IN DE TUIN HET FIJN STOF





**Individualized motorized traffic  
=  
one of society's largest problems**





**Vancouver rule**

**=**

**3 – 30 – 300**





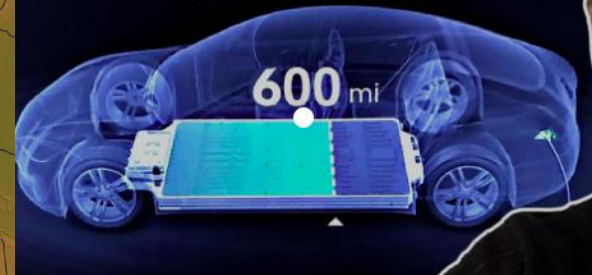




# African 'Copperbelt'



**TESLA BATTERY  
EXPLAINED**



**Lubumbashi  
(Katanga)**

12° 0'  
0''S

26° 0'  
0''E

28° 0'  
0''E



global witness

# Digging in corruption

**Fraud, abuse and exploitation in Katanga's copper and cobalt mines**



A Report by Global Witness July 2006

Recommendation pages 1-2



global witness

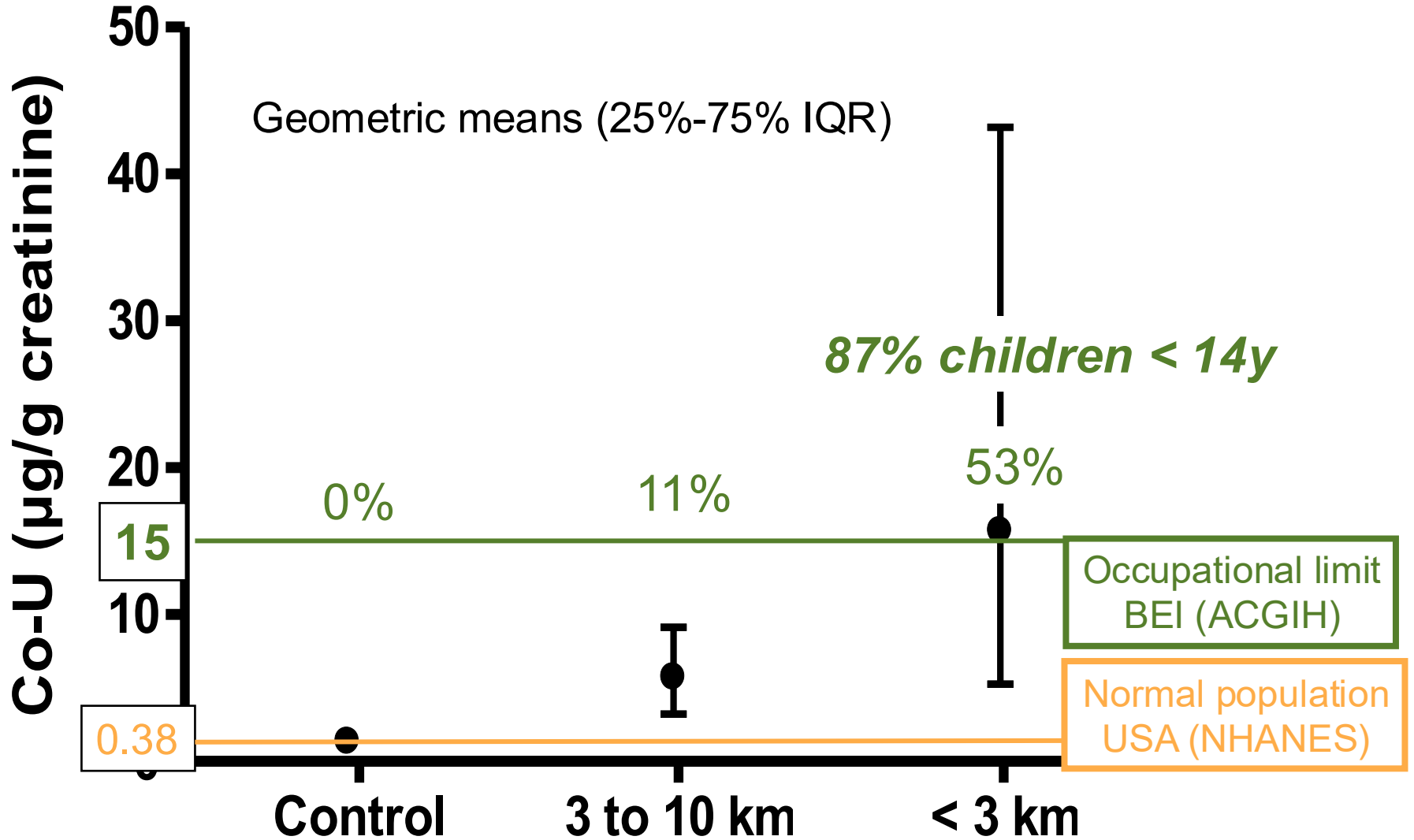
# Rush and Ruin

**The Devastating Mineral Trade in Southern Katanga, DRC**

A Report by Global Witness. September 2004



# Cobalt





MATERNITE

24  
/  
24



1  
\$





	Adjusted odds ratio (95% CI)	p value
Mining exposure father*	5.5 (1.2–25.0)	0.025
Mother with paid job	2.8 (1.2–6.9)	0.020
Vitamins during pregnancy	0.2 (0.1–0.5)	0.0010
Doubling of manganese in cord blood	1.7 (1.1–2.7)	0.026
Doubling of zinc in cord blood	1.6 (0.9–2.8)	0.086

N=118. Nagelkerke  $R^2=0.36$ . All possible explanatory variables with a bivariate p value  $<0.2$ , except those mentioned in this table, were eliminated from the logistic regression during the stepwise process and thus not retained in the final model. \*Mining-related jobs include diggers, ore smelters, metallurgical workers, or people selling or transporting minerals.

**Table 4: Adjusted odds ratios of variables retained in a multivariable logistic regression model (not including placentas)**

	Adjusted odds ratio (95% CI)	p value
Vitamins during pregnancy	0.1 (0.02–0.5)	0.0076
Doubling of manganese at foetal side of placenta	3.3 (1.2–8.0)	0.021
Doubling of zinc in cord blood	5.3 (1.6–16.6)	0.0049

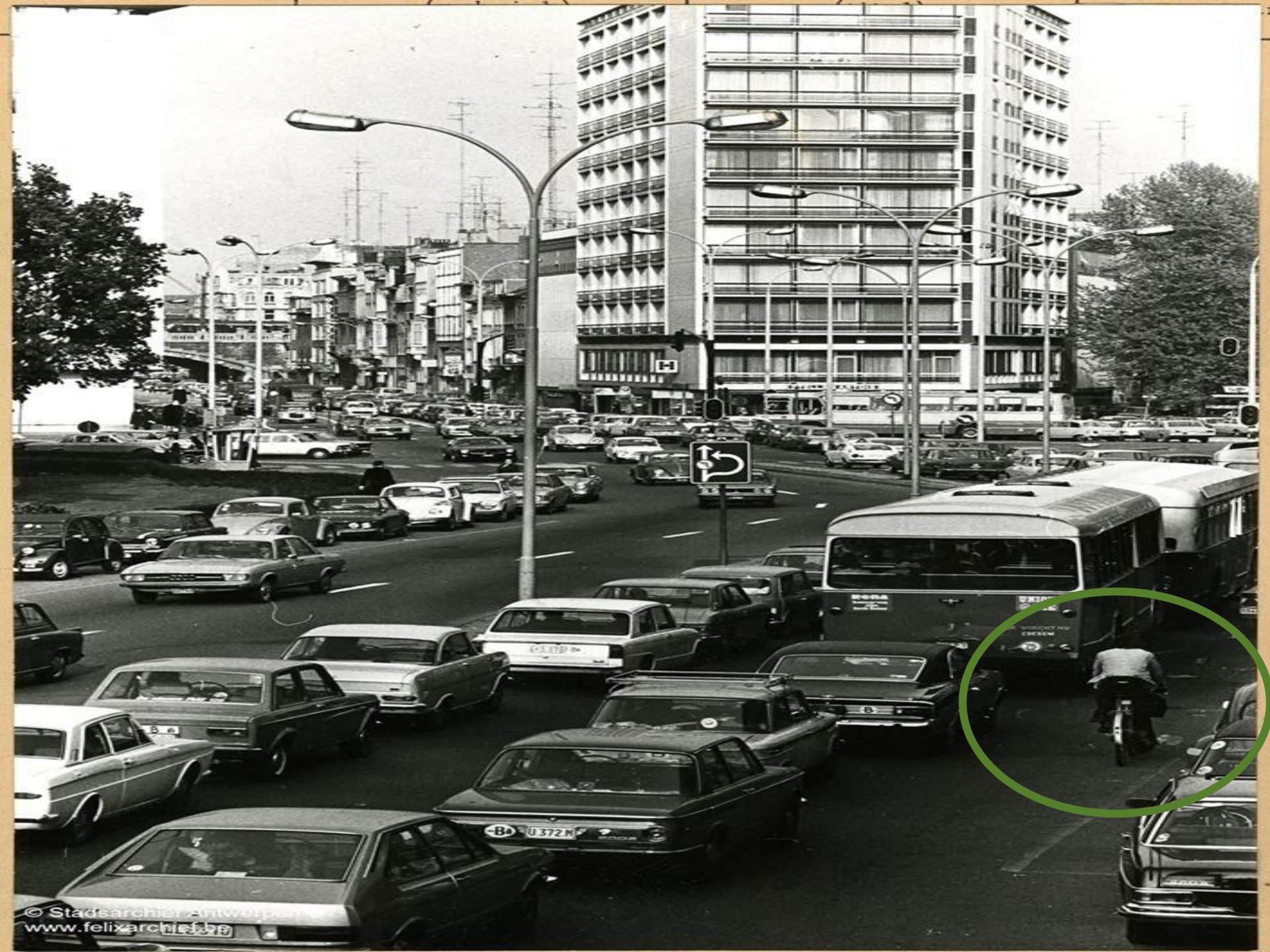
N=62. Nagelkerke  $R^2=0.54$ . All possible explanatory variables with a bivariate p-value  $<0.2$ , except those mentioned in this table, were eliminated from the logistic regression during the stepwise process and thus not retained in the final model.

**Table 5: Adjusted odds ratios of variables retained in a multivariable logistic regression model including placentas**

## Pollution causing birth defects in children of DRC cobalt miners - study

Researchers link exposure to mining pollutants to greatly increased risk of conditions such as spina bifida and limb abnormalities





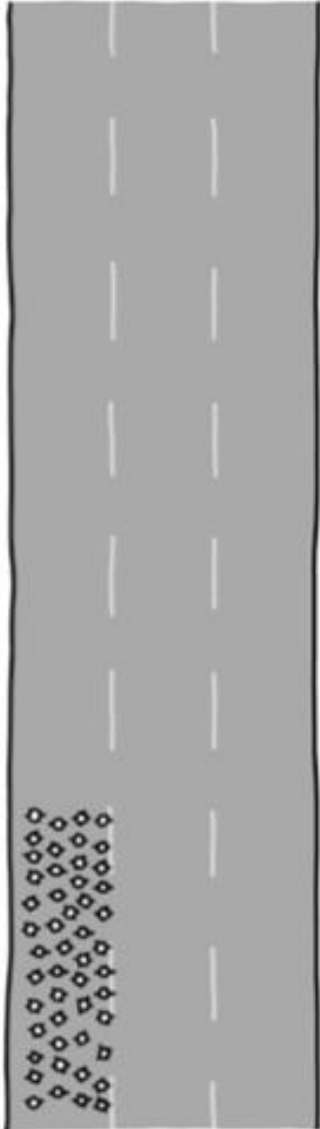


**The car, my freedom?**

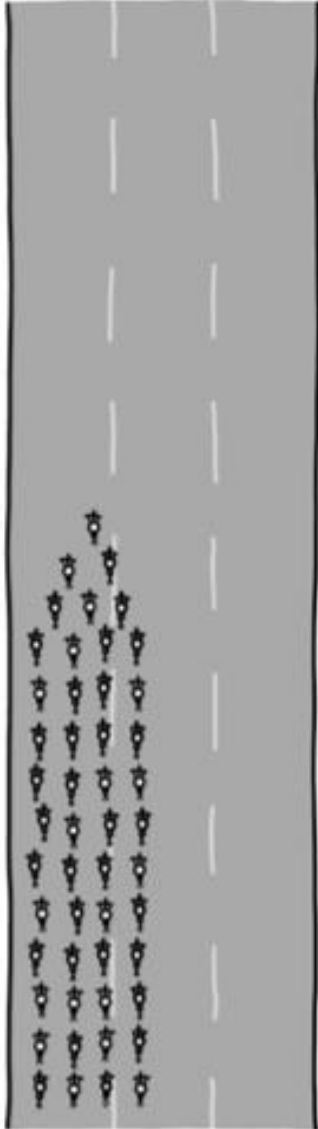


# ROAD SPACE COMPARISON

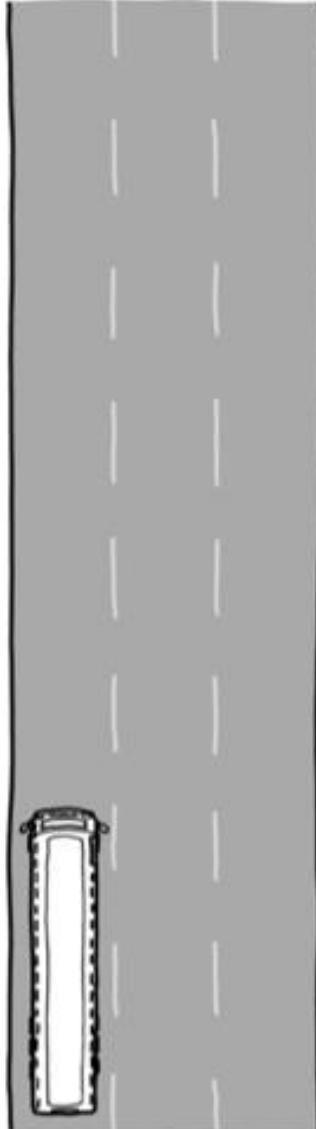
50 PEOPLE  
WALKING



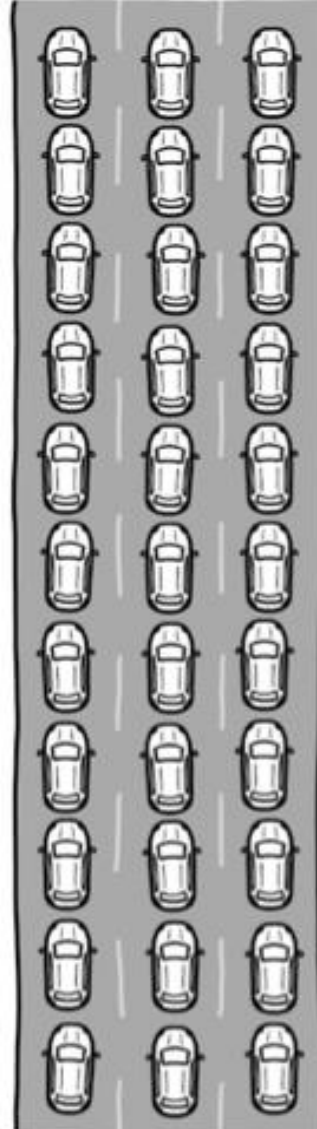
50 PEOPLE  
RIDING BIKES



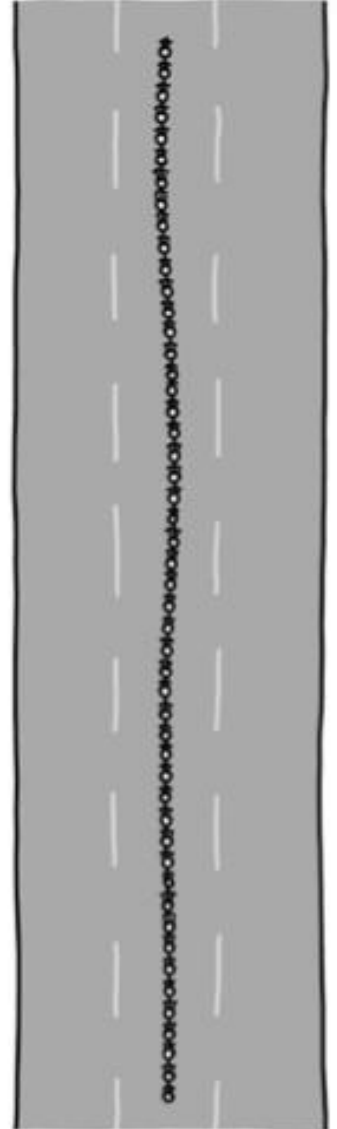
50 PEOPLE  
RIDING A BUS



50 PEOPLE  
IN 33 CARS



50 PEOPLE ON ONE  
TANDEM BICYCLE





1900



2016



2021



# PROTECTING **CHILDREN** FROM THE ENVIRONMENT

**Environmental exposures start in the womb, and can have effects throughout life.**

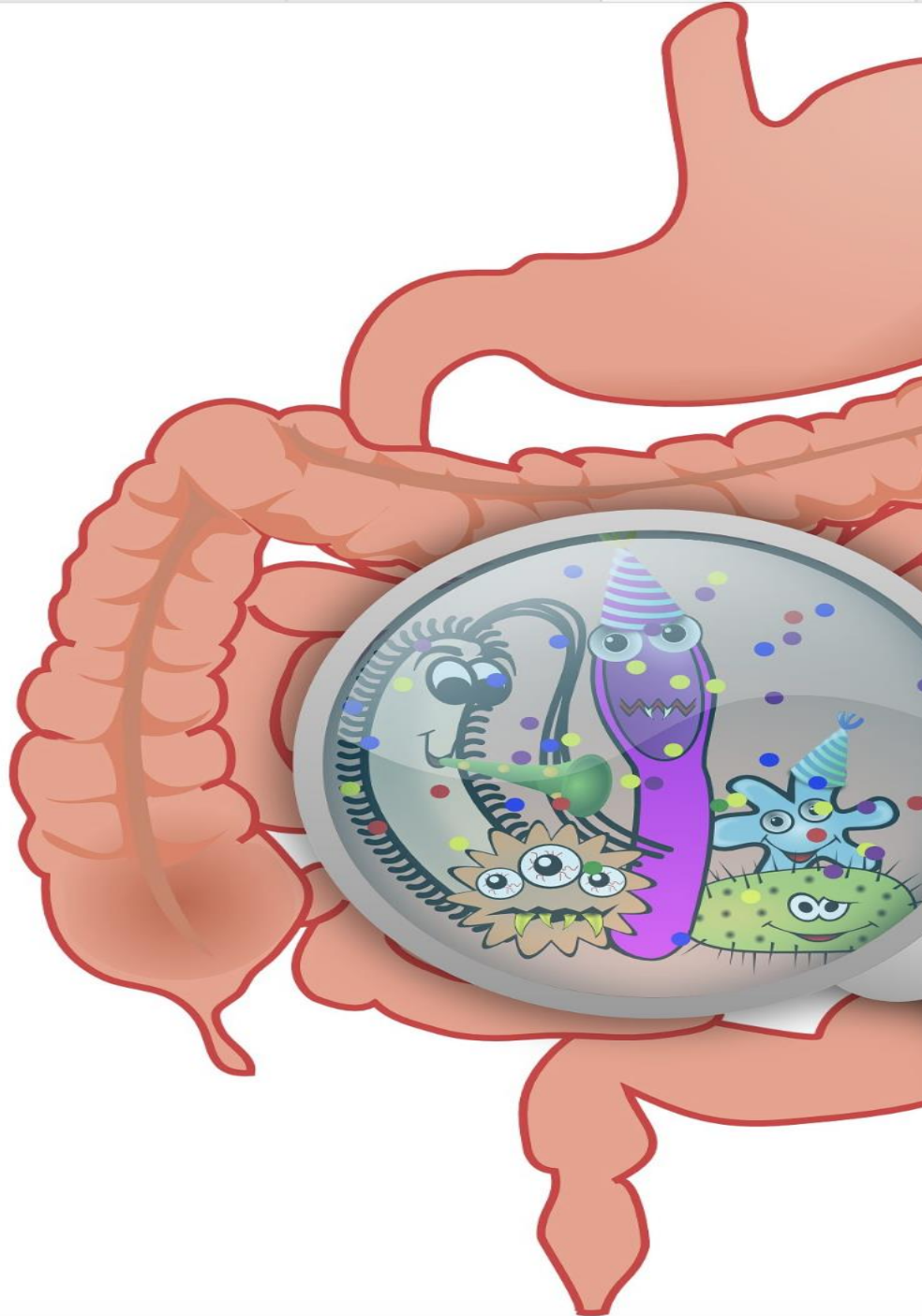


**World Health  
Organization**

**Children, including adolescents, are exposed to a variety of hazards from the environments in which they live, learn and play.**







NEWS | HEALTH

## Pesticides may wreak havoc on the gut microbiome

Disruption of intestinal ecosystem could contribute to diabetes and other health issues, scientists say

8 APR 2026 • 11:00 AM ET • BY [SANKET JAIN](#)



The rising use of pesticides—applied here on sugarcane in India’s Maharashtra state—may explain the global increase of type 2 diabetes in nonobese people. [s.](#)

JAIN/SCIENCE









**Think global, Act local !**

# Take Home

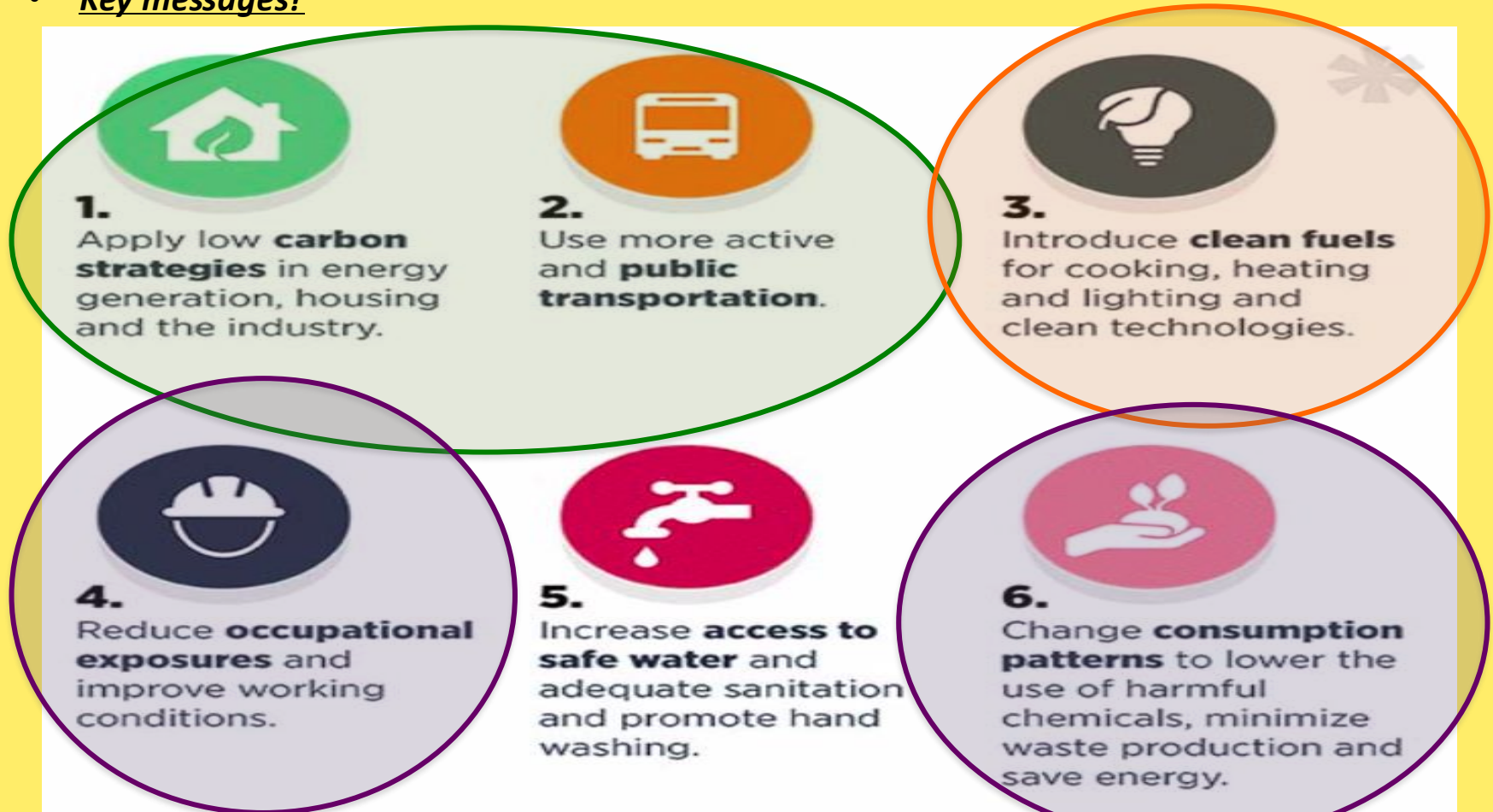
- What was known ?

79% of chronic conditions avoided by healthy life (diet + no smoking + exercise)

- Growing evidence:

Keeping ENVIRONMENT HEALTHY keeps us HEALTHY = 'CO-BENEFIT'

- Key messages?





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