

# Highs and Lows of Environmental Health

**30 million BC** Fossils of mosquitoes, found in Africa, illustrate that the vector for malaria was present well before *Homo sapiens*.

**3000–1500 BC** Stone water closets are built in the Palace of Knossos, Crete – the oldest example of flushing technology.

**2000 BC** Ancient Hindu source advises people to heat foul water by boiling and exposing it to sunlight.

**476 AD** Lead acetate is added as a sweetener to wine and food. This, along with lead leaching into drinking water from leaded pipes and vessels, hastens the decline of the Roman Empire.

**11th century** The Persian physician Ibn Sina (Avicenna) advises travellers to boil or strain drinking water.

**13th century** Holy Roman Emperor Frederic II (1194–1280) installs pour-flush toilets in his Castel del Monte, inspired by Arab technology.

**1589** In England, Sir John Harrington invents the water closet, but the invention is ignored until 1778, when Joseph Bramah begins marketing a patented closet.

**1690s** Paris is the first European city to build an extensive sewerage system.

**1775** Percival Pott notes an elevated incidence of scrotal cancer in small English boys assisting chimney sweeps, establishing the link between the work environment and cancer.

**1842** The British Royal Commission on Employment of Children in the Mines reports “cruel slaving revolting to humanity”, on finding children chained to carts and working 15-hour days.



**1843** In the USA, Oliver Wendell Holmes proclaims the importance of hand washing to control the spread of disease.

**1854** Louis Pasteur discovers that heat removes undesirable organisms. Today, pasteurization is used to prevent the spoilage of milk and milk products.

**1855** John Snow publishes *On the Mode of Communication of Cholera*, identifying dirty water supplies as the cause of cholera outbreaks in London.



**1900s** In Europe, mercury used in the felting process poisons hat workers, giving rise to the expression “mad as a hatter”.

**1908** The Swedish chemist Svante Arrhenius argues that the greenhouse effect from coal and petroleum use is warming the globe.

**1940s** Shortly after the Second World War, chloroquine is introduced as an effective prophylaxis and treatment against all forms of malaria.

**1950** Poza Rica killer smog, caused by gas fumes from an oil refinery, leaves 22 dead and hundreds hospitalized in Mexico.

**1959** Volvo introduces the three-point (“lap-and-shoulder”) seat belt, invented by the Swede Nils Bohlin.

**1962** Rachel Carson’s book *Silent Spring*, which issues grave warnings about pesticide use and predicts massive destruction of the planet’s ecosystems, launches the environmental movement in the USA.

**1970** The USA introduces the first protective child car seat.

**1970** Singapore bans smoking in buses, cinemas, theatres and other public places.

**1978** Rice oil contaminated with polychlorinated biphenyls (PCBs) causes Yucheng (“oil-disease”) in Taiwan, China. Children of affected women suffer developmental delays and behaviour problems.

**1982–98** China’s National Improved Stoves Programme provides more than half of rural households with more efficient, cleaner cooking technologies. 185 million improved stoves help prevent pneumonia and other respiratory infections – the biggest killer of Chinese children.

**1984** Methyl isocyanate gas leaks from a Union Carbide pesticide plant in Bhopal, India, killing 8000 people and maiming many more. Most of the victims lived in squatter settlements near the plant.

**1986** The Chernobyl nuclear reactor explodes. Radioactive materials severely contaminate large areas of Belarus and Ukraine and are spread by wind and rain all over Europe.

**1989** The United Nations Convention on the Rights of the Child is adopted.



**1990s** The installation of wells helps reduce child mortality in Bangladesh but exposes children to high levels of arsenic.

**1992** Agenda 21: the United Nations introduces a world programme of action on sustainable development, linking the environment, economy and society.

**1997** The Kyoto Protocol sets targets for developed countries to reduce their emissions of greenhouse gases to combat global warming.

# WHO Sub-Regions

The 192 Member States of the World Health Organization have been classified into five mortality strata according to their level of mortality in children under five years, and in males aged 15–59 years.

Mortality strata	Child mortality	Adult male mortality
A	very low	very low
B	low	low
C	low	high
D	high	high
E	high	very high

These strata have been applied to countries within the six WHO regions, producing 14 sub-regions.

<b>Africa</b> <b>Afr-D</b>	Africa with high child and high adult mortality	Algeria, Angola, Benin, Burkina Faso, Cameroon, Cape Verde, Chad, Comoros, Equatorial Guinea, Gabon, Gambia, Ghana, Guinea, Guinea-Bissau, Liberia, Madagascar, Mali, Mauritania, Mauritius, Niger, Nigeria, Sao Tome and Principe, Senegal, Seychelles, Sierra Leone, Togo
<b>Afr-E</b>	Africa with high child and very high adult mortality	Botswana, Burundi, Central African Republic, Congo, Côte d'Ivoire, Democratic Republic of the Congo, Eritrea, Ethiopia, Kenya, Lesotho, Malawi, Mozambique, Namibia, Rwanda, South Africa, Swaziland, Uganda, United Republic of Tanzania, Zambia, Zimbabwe
<b>The Americas</b> <b>Amr-A</b>	Americas with very low child and very low adult mortality	Canada, Cuba, United States of America
<b>Amr-B</b>	Americas with low child and low adult mortality	Antigua and Barbuda, Argentina, Bahamas, Barbados, Belize, Brazil, Chile, Colombia, Costa Rica, Dominica, Dominican Republic, El Salvador, Grenada, Guyana, Honduras, Jamaica, Mexico, Panama, Paraguay, Saint Kitts and Nevis, Saint Lucia, Saint Vincent and the Grenadines, Suriname, Trinidad and Tobago, Uruguay, Venezuela (Bolivarian Republic of)
<b>Amr-D</b>	Americas with high child and high adult mortality	Bolivia, Ecuador, Guatemala, Haiti, Nicaragua, Peru
<b>South-East Asia</b> <b>Sear-B</b>	South-East Asia with low child and low adult mortality	Indonesia, Sri Lanka, Thailand
<b>Sear-D</b>	South-East Asia with high child and high adult mortality	Bangladesh, Bhutan, Democratic People's Republic of Korea, India, Maldives, Myanmar, Nepal, Timor-Leste
<b>Europe</b> <b>Eur-A</b>	Europe with very low child and very low adult mortality	Andorra, Austria, Belgium, Croatia, Cyprus, Czech Republic, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Israel, Italy, Luxembourg, Malta, Monaco, Netherlands, Norway, Portugal, San Marino, Slovenia, Spain, Sweden, Switzerland, United Kingdom
<b>Eur-B</b>	Europe with low child and low adult mortality	Albania, Armenia, Azerbaijan, Bosnia and Herzegovina, Bulgaria, Georgia, Kyrgyzstan, Poland, Romania, Slovakia, Tajikistan, The former Yugoslav Republic of Macedonia, Serbia and Montenegro, Turkey, Turkmenistan, Uzbekistan
<b>Eur-C</b>	Europe with low child and high adult mortality	Belarus, Estonia, Hungary, Kazakhstan, Latvia, Lithuania, Republic of Moldova, Russian Federation, Ukraine
<b>Eastern Mediterranean</b> <b>Emr-B</b>	Eastern Mediterranean with low child and low adult mortality	Bahrain, Iran (Islamic Republic of), Jordan, Kuwait, Lebanon, Libyan Arab Jamahiriya, Oman, Qatar, Saudi Arabia, Syrian Arab Republic, Tunisia, United Arab Emirates
<b>Emr-D</b>	Eastern Mediterranean with high child and high adult mortality	Afghanistan, Djibouti, Egypt*, Iraq, Morocco, Pakistan, Somalia, Sudan, Yemen
<b>Western Pacific</b> <b>Wpr-A</b>	Western Pacific with very low child and very low adult mortality	Australia, Brunei Darussalam, Japan, New Zealand, Singapore
<b>Wpr-B</b>	Western Pacific with low child and low adult mortality	Cambodia**, China, Cook Islands, Fiji, Kiribati, Lao People's Democratic Republic**, Malaysia, Marshall Islands, Micronesia (Federated States of), Mongolia, Nauru, Niue, Palau, Papua New Guinea**, Philippines, Republic of Korea, Samoa, Solomon Islands, Tonga, Tuvalu, Vanuatu, Viet Nam

\* Following improvements in child mortality over recent years, Egypt meets criteria for inclusion in sub-region Emr-B with low child and low adult mortality. Egypt has been included in Emr-D for the presentation of sub-regional totals for mortality and burden to ensure comparability with previous editions of The World Health Report and other WHO publications.

\*\* Although Cambodia, the Lao People's Democratic Republic, and Papua New Guinea meet criteria for high child mortality, they have been included in the Wpr-B sub-region with other developing countries of the Western Pacific Region for reporting purposes.