Air pollution becomes Asia's migraine

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Air pollution has become a curse for millions of city-dwellers in Asia, posing a mounting risk to the very young and very old, pregnant women and people with heart and respiratory problems, say experts.

"The levels of pollution in parts of China, India and elsewhere in Asia are just astronomically high and the health impacts are dramatic," said Bob O'Keefe of the Health Effects Institute (HEI), a US not-for-profit research agency.

"This is a threat that was really under-estimated in the past," said O'Keefe.

This week, Singapore grappled with record levels of air pollution, unleashed by land fires in neighbouring Indonesia.

In January, pollution in Beijing went off the scale of an air-quality monitor at the US embassy, and the city's hospital admissions surged by 20 percent.

In August 2012, Hong Kong suffered its highest-recorded pollution, prompting the territory to urge vulnerable population groups to stay indoors.

HEI estimates, derived from an exceptionally detailed analysis called the Global Burden of Disease, say that some 3.2 million people around the world died prematurely from outdoor air pollution in 2010.

China and India together accounted for some 2.5 million of these deaths, sharing the tally roughly equally.

The death toll in China has risen by a third over 20 years, but worse pollution is only part of the reason. As China becomes more prosperous, its citizens are attaining greater ages, reaching 70 or 80 years or beyond—when people become more vulnerable to heart and respiratory stress from air pollution.

A study published last August in the journal Nature Climate Change estimated that forest and land fires in Southeast Asia kill an additional 15,000 people annually from air pollution during the El Nino weather phenomenon, when drier soil often causes blazes to go out of control. (There is no El Nino at present.)

An investigation by US researchers, published in February, found that among three million births recorded in nine countries in North and South America, Europe, Asia and Australia, there was a clear link between worse air pollution and lower birth weight.

Low birth weight—when a newborn weighs less than 2.5 kilos (5.5 pounds)—is associated with ill health, premature death and cognitive problems in later life.

Health experts point to two main dangers from air pollution.

One concerns particulate matter (PM)—the sooty specks emitted from fossil fuels, forest fires and land clearances.

Cathryn Tonne, at the London School of Hygiene and Tropical Medicine, points the finger at so-called PM2.5—particles measuring 2.5 micrometres across or less, or 30 times smaller than a human hair.

Mainly generated by the burning of coal and oil for power stations, and diesel and petrol for transport, these are many times more perilous than PM10 particles, which are 10 micrometres across, Tonne and colleagues found in research into heart deaths in England and Wales.

"We found that for every 10 microgrammes per cubic metre in PM2.5, there was a 20-percent increase in the death rate," Tonne said.

By way of comparison, the WHO has a recommended maximum of 10 microgrammes of PM2.5 per cubic metre as an annual exposure—and a maximum over a 24-hour period of 25 microgrammes per cubic metre.

In the United States, the annual PM2.5 limit is a recommended 12 microgrammes per cubic metre, and in the European Union (EU), it is 25 microgrammes.

In Beijing's smog scare in January, though, levels reached a whopping 993 microgrammes per cubic metre... almost 40 times the WHO's advised safety limit.

The other big danger from air pollution is ozone, a triple molecule of oxygen that in the stratosphere is a vital shield against DNA-damaging sunlight, but at ground level—where it is typically created by a reaction between nitrogen oxides in traffic fumes and sunlight—it is an irritant for the airways.

Short-term spikes in ground-level ozone have long been linked to heart attacks and severe asthma.

But research conducted in the US, published in 2009, suggests that cumulative exposure is also a big risk factor. The probability of dying from respiratory disease rose by as much as 50 percent as a result of long-exposure to high concentrations of ozone.