



Atmospheric Issues

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AIR QUALITY

WHO ENVIRONMENTAL HEALTH CONCERNS IN EUROPE

A World Health Organisation Conference in Budapest last month (June 23-25) highlighted the main environmental health concerns for children in Europe. These have been identified as injuries, unsafe water and indoor and outdoor air pollution. A study which has been published in the medical journal 'The Lancet' suggests that 34% of deaths among Europeans from birth to the age of 19 are attributable to these four factors.

The leading cause of death is accidents of which road traffic accidents account for a high percentage in western countries. Fire, drowning and poisoning are frequent causes in other parts of the continent. Around 2 million people in European countries do not have access to clean water and are at risk from water borne diseases.

Outdoor air pollution is thought to kill up to 13,000 children aged under 4 each year across Europe (includes central Asian countries such as Kyrgyzstan). Indoor air pollution however is estimated to kill more than 50,000 under-fours annually throughout Europe, mainly from the use of solid fuels in homes. It is thought that switching from solid to liquid or gaseous fuels could save many thousands of lives each year.

Source: www.news.bbc.co.uk/ (18th June 2004)

AIR QUALITY EXPERT GROUP REPORT ON NO₂

A comprehensive report has been published by the UK Air Quality Expert Group on nitrogen dioxide. The report looks at NO₂ as a pollutant and is little changed from the draft version released one year ago. The key conclusions in the report include:

- widespread exceedences of the 40µg/m³ NO₂ annual mean remain;
- if traffic rises more than expected then some exceedences of NO₂ targets will remain or get worse;
- strong evidence suggests that heavy diesel vehicles emit a lot of NO_x
- the current projections for future urban NO₂ concentrations may be optimistic, particularly if ozone concentrations continue to rise;
- NO₂ should not be considered in isolation from other pollutants.

The full report and a summary are available on the Defra website. www.defra.gov.uk/environment/airquality/ageg/index.htm

Source: www.defra.gov.uk, Air Quality Management, May 2004.

AMERICAN HEART ASSOCIATION LINKS AIR POLLUTION TO HEART DISEASE

The American Heart Association has for the first time confirmed that they believe there is a link between heart disease and air pollution. In their own journal they name particulate

matter pollution and second hand tobacco smoke as the most damaging air pollutants to the heart. "The increase in relative risk for heart disease due to air pollution for an individual is small compared with the impact of the established cardiovascular risk factors such as high blood pressure or high cholesterol," said DR Robert D Brook, lead author of the statement. "However, this is a serious public health problem due to the enormous number of people affected and because exposure to air pollution occurs over an entire lifetime," he said.

The organisation has also made a strong recommendation to ban smoking in public places, to help eliminate second hand smoke in workplaces, restaurants and bars.

Source: www.edie.net/ 4th June 2004

GLOBAL WARMING MAY INCREASE ASTHMA

Global warming could lead to an increased rate of asthma amongst children, researchers from the University of Ulm in Germany suggest.

Publishing results from a major study of almost 670,000 children in the July issue of journal Occupational and Environmental Medicine, the researchers have found a clear link between indoor humidity and asthma rates in Western Europe. Every 10% increase in indoor humidity was associated with a 2.7% increase in the prevalence of asthma symptoms.

The study also found that places where average outdoor humidity dropped below 50% for at least one month a year had lower rates of asthma. Warmer temperatures caused by climate change are expected to drive up humidity levels, especially in cities. Experts believe summers in the city will get stickier because of the "urban heat island" effect caused by asphalt and concrete trapping heat at night.

The scientists found that temperature, altitude, humidity and latitude all influenced the prevalence of asthma and eczema. Just

how humidity affects asthma rates remains unclear, the authors caution, although increased exposure to dust mites and higher amounts of mould could be factors. House dust mites, which can trigger asthma attacks, thrive in moist air, and humidity encourages mould which can irritate the airways.

Information was collected between 1992 and 1996 from children aged six to seven, and 12 to 13, from more than 50 countries. The research formed part of a major worldwide investigation, called the International Study of Asthma and Allergies in Childhood (ISAAC).

Source: <http://news.scotsman.com> (June 22nd 2004); <http://www.sciam.com/> (June 22nd 2004)

AUGUST 2003 BLACKOUT IN CANADA & US CLEANED THE AIR

Skies were bluer and the air was healthier over much of the eastern United States during the blackout that hit the northeast and south-eastern Canada last August, researchers at the University of Maryland have reported in Geophysical Research Letters.

Atmospheric measurements taken by the scientists on the 15th August 2003, 24 hours after many power plants had shut down, found a 90% reduction in sulphur dioxide, a gas that leads to haze and acid rain, and a 50% reduction in smog, or ground-level ozone. The amount of light-scattering particles in the air also dropped by 70%, whilst visibility increased by 20 miles.

Fossil fuel fired power plants account for more than half of electrical energy production in the United States, and for about 22% of the nitrogen oxides and about 69% of the sulphur dioxide emissions, the scientists said.

In summertime, under a high pressure system, westerly winds carry power plant emissions from Ohio, West Virginia and Pennsylvania to form severe smog and haze

in the north-eastern US composed of ground-level ozone, or smog, and sulphate-dominated fine particles.

During the August episode, the improvement in air quality was so great that it was not only measurable, but it could actually be seen as a much clearer less hazy sky.

Source: <http://www.ens-newswire.com/> (June 10th 2004)

CLIMATE CHANGE

NEW ANTARCTIC ICE CORE REVEALS CLIMATE SECRETS

Global climate patterns stretching back 740,000 years have been confirmed by a three-kilometre-long ice core drilled from the Antarctic, scientists on the European Project for Ice Coring in Antarctica (EPICA) have reported in the journal *Nature*.

Dome C contains 800,000 years worth of snowfall, allowing EPICA to obtain a climate record two times longer than its nearest rival, the Vostok ice core.

Analysing the composition of air bubbles trapped in the ice core allows scientists to determine past concentrations of atmospheric gases, specifically greenhouse gases, which have been shown from previous research to correlate closely with global temperatures. Oxygen and hydrogen isotope analysis of the ice also allows a record of palaeotemperature to be constructed.

Analysis of the ice proves our planet has experienced eight ice ages during that period, punctuated by rather brief warm spells called interglacials usually lasting 10,000 years - one of which we enjoy today. These cycles are influenced by small changes in the way the Earth orbits the Sun, including the elliptical shape of the

orbit and the angle of tilt of the Earth's axis.

Since our current interglacial period has already lasted 10,000 years we might wonder whether a new ice age should be imminent. The EPICA team, however, has noticed the much longer interglacial period of 400,000 years ago closely matches our own - because the shape of the Earth's orbit was roughly the same then as it is now. Consequently, EPICA believe that our current warm period will last another 15,000 years or so.

Initial tests on gas trapped in the ice core also show that current carbon dioxide levels are higher than they have been in 440,000 years, due to man-made emissions from the burning of fossil fuels. It is not yet possible to predict how human-induced global warming will influence the Earth's natural ice age cycles.

Source: <http://www.theglobeandmail.com>, (June 10th 2004); <http://news.bbc.co.uk> (June 10th 2004)

BRITAIN A TORNADO HOTSPOT

Tornadoes are five times more likely to hit Britain than the United States, research has revealed. Dr Joseph Holden and Amy Wright, geographers at the University of Leeds, have discovered that Britain is in fact a tornado hotspot - receiving more of them per unit area than the US or Europe.

Writing in the Quarterly Journal of the Royal Meteorological Society, the researchers claim that at least 100 tornadoes strike Britain each year, more than three times as many as had been thought. Most tornadoes are not reported because they remain unseen - but calculations by the scientists showed that the correct weather conditions to create a tornado occur frequently in the UK.

A tornado is defined as a fast-moving rotating column of air, usually with a

funnel-shaped cloud that extends to the ground. In the UK, the definition requires the funnel cloud to reach the land.

Between 20 and 30 tornadoes are sighted in the United Kingdom each year. But by modelling the pattern of winds and rain needed to create one, Dr Holden said that there were many more which occurred but went unnoticed, because they are mild compared with the "twisters" in the US. Instead they may take place without any witnesses.

Whilst UK tornadoes are much smaller than their US counterparts, they can sometimes cause significant damage: the town of Selsey in West Sussex was hit twice in January 1998 and October 2000, causing millions of pounds worth of damage.

The tornado risk could also be rising because of global warming, which climatologists believe will make Britain stormier. Dr Holden said that while the risk might increase, the size of British tornadoes would probably stay the same: the UK generally has smaller tornadoes than the US because "we don't have the vast wide tracts of open land needed to build up the really big ones".

Source: <http://news.independent.co.uk> (June 11th 2004)

A BUG'S LIFE

An insect that normally inhabits warm countries has been found living and breeding in the UK, entomologists from the Natural History Museum have said.

The green vegetable bug (*Nezara viridula*), which attacks a broad range of crops, is usually seen in the Mediterranean, Middle East, Australia, North America and Africa. Its arrival in Britain is believed to be a clear sign of climate change.

Similar to the UK's native green shield bug (*Palomena prasina*), but narrower and paler in colour with no brown markings, the bug is sometimes known as the "stink" bug, because of the foul odour it emits when threatened.

They are regular stowaways to the UK, arriving with shipments of imported vegetables but, until recently, they have not been able to withstand Britain's cold climate. Now three healthy colonies have been found in London - two in the Queen's Park area and one in Kings Cross. The actual number of colonies now resident and breeding is likely to be far higher.

Source: <http://news.bbc.co.uk> (June 17th 2004)

SUSTAINABLE DEVELOPMENT

BANANA ENERGY

Australian scientists have discovered what sportsmen and women around the world have known for years: bananas are a great source of instant energy.

An Australian government-funded study is investigating the possibility of harnessing bruised or spoilt bananas - deemed not worth selling to consumers - to provide energy for 500 homes.

The idea is that bananas would be combined with bacteria to produce methane. Pipes would take the gas to a turbine which could be plugged into the main electricity grid.

Ethanol from sugar cane has already been tested for commercial energy use and the husks of Australia's native Macadamia nuts have been used as fuel to make electricity.

Source: <http://www.reuters.com/> (June 2nd 2004)