METEOROLOGY AND HEALTH - Abstracts

Aerosols and Health

Rob Kinnersley, Environment Agency

The adverse impact of ambient aerosols on human health goes hand-in-hand with their climatic impact to make them important determinants of our fate. Epidemiological studies have repeatedly shown their influence on rates of illness and death through lung and heart disease, and they are responsible for bringing forward hundreds of thousands of deaths around the world each year. We are only now beginning to fully understand the mechanisms underlying these observations. It seems that both size and composition of these particles play a crucial role in their toxicity. Our growing understanding of their behaviour is leading to ideas about how we might develop metrics and standards which may come to offer better protection to the population.

Pollution levels plummet in clean air fight (but...)

Ian Longley, University of Manchester

The title of this talk relates to a recent front story of the Manchester Evening News that implied that pollution levels in Manchester city centre were falling. Here is the text from that article:

LEVELS of dangerous smog gases in the air of Greater Manchester have been dramatically cut in just three years. Research by the Manchester Evening News has found the average daily amount of the "big five" pollutants - which pose significant health or environmental risks - have gone down by as much as two-thirds at test sites in parts of the region. The figures were obtained from the UK National Air Quality Information Archive and were based on automatic readings taken every hour at five monitoring sites. When we carried out a similar survey in 2003, we found pollution had rocketed over five years. Since then, councils have been tough on cleaning up the environment - and Manchester has even been fining bus and car drivers who leave their engines running when stopped at the side of the road in its pledge to become Britain's greenest city. Other pollution-cutting measures from the last three years include: A green energy drive, including cladding the 400ft CIS tower in Manchester in solar panels, and Britain's biggest inner-city wind farm on the roof of the Co-op building; Spot-checks on emissions from cars; and Fitting "particulate traps" to more than 100 Stagecoach buses to cut significantly the amount of fumes being released. At Manchester Piccadilly, the average daily amount of sulphur dioxide has fallen from 14 micrograms per cubic metre of air in 2003 to just FIVE in 2006 - down 65 per cent. Similar cuts were found in south Manchester (60 per cent), Bolton (63 per cent) and Bury (54 per cent).

Only Salford-Eccles registered a rise in sulphur dioxide, which has been linked to asthma. Manchester, Bolton, Bury and Salford all showed cuts of between six and 11 per cent in particulates - solid dust and fumes which can damage the lungs - and.a drop in nitrogen dioxide. Manchester and Salford showed improvement with carbon monoxide, another pollutant linked to asthma, but Bolton and Bury were worse. Ozone was higher at all sites except south Manchester. Manchester councillor Neil Swannick said he was "very pleased" and added: "The council has been very active in dealing with the sources of pollution." Experts welcomed the figures, but warned much more remained to be done. Dr Ian Longley, of a pollution expert at Manchester University's school of earth, atmospheric and environmental sciences, said: "If we want to continue the improvements, we need to turn to alternative fuel vehicles or cut traffic. Otherwise, those improvements will stop." He added: "If pollution levels are going down, that is a very good thing for asthmatics and people with bronchitis." Dave Coleman, of Manchester Friends of the Earth, said: "The big challenge now is to reduce the pollution caused by fossil fuels and carbon dioxide. That is the battle for climate change."

However, as results from Cityflux, a project to measure fluxes of pollutant particles and gases from urban centres, show, there is more to it than this…

Heat Waves and Health

Glenn McGregor, Department of Geography, King's College London

There is no formal definition of heat waves however these can be considered as infrequent periods of unusual heat lasting for 3 days and beyond. Heat waves are a result of changes in the normal weather patterns and are associated with periods of blocking when a large area of high pressure stalls over the UK. Heat related illness and death occurs because the body is unable to shed heat gained by day and by night. Certain sectors of the population are especially vulnerable to the health effects of heat. The August 2003 heat wave was notable for the high level of "extra deaths" associated with it. These reached 2137 for England and Wales and 600 for London alone. A greater number of hot days are expected with human induced climate change. By 2050, a summer like 2003 will be almost a normal summer. This holds a number of implications for health and the economy in general. One way of preparing for heat waves is to develop a heat wave plan with early warning systems as part of this. On a longer time scale we also need to think about how we design buildings and plan/re-develop our towns.