Ozone key to link between heat and increased cardiovascular death risk

Ozone may prove the key to the link between high temperature and the increased risk of death from heart disease or stroke, suggests research published ahead of print in *Occupational and Environmental Medicine*.

The researchers base their findings on a population of almost 100 million people in 95 different geographical areas across the USA during the summer months of June to September.

Participants were already taking part in the National Mortality and Air Pollution Study (NMMAPS), which looked at health and weather pollution between 1987 and 2000.

During this period, 4 million heart attacks or strokes occurred, and when the authors plotted daily deaths against fluctuations in temperature during one day, they found that ozone was a common link.

The results showed that the higher the ozone level, the higher was the risk of cardiovascular death attributable to high temperatures.

Ozone levels ranged from a daily average of 36.74 parts per billion to 142.85 ppb, while average daily temperatures ranged from 20 to around 42 degrees Centigrade.

A 10 degree temperature increase on the same day was associated with a rise in heart disease or stroke deaths of just over 1% at the lowest ozone level and by more than 8% for the highest levels.

Ozone is chemical pollutant that is strongly tied to weather conditions, particularly the amount of ultraviolet light in the atmosphere, say the authors. It is generated by a reaction between nitrogen oxides, volatile organic compounds, and oxygen in sunlight.

A link between temperature and ozone in driving up cardiovascular mortality is plausible, say the authors.

Exposure to ozone may affect the airways and the autonomic nervous system, so making people more susceptible to the effects of fluctuations in temperature, they suggest.

Public health warnings during hot weather ought to include information on ozone levels, when these are high, they say.

Rising temperatures and the impact of ozone are likely to become increasingly important as the world heats up as a result of global warming, they add.

Source: British Medical Journal