

Traffic Fumes can Trigger Heart Attacks



A large study carried out by researchers from the London School of Hygiene and Tropical Medicine investigated the relationship between the risk of having a heart attack and exposure to different traffic pollutants. Researchers analysed nearly 80,000 heart attacks and these patients' exposure to air pollution leading up to the attack. Certain pollutants were found to be associated with an increased risk of a heart attack within six hours of exposure; after that time there was no increase in risk.

Importantly, as the increase in risk was only short term, the authors suggest that these heart attacks would have happened anyway and that pollution only made them happen earlier. In other words, the study does not appear to show that pollution triggers heart attacks in previously healthy people; it suggests that these attacks were in people already at risk.

This large, complex study is a valuable contribution to this area of research. Previous studies have found a link between pollution and risk of death, especially death from cardiovascular disease, but few have looked at the effects of exposure in the hours leading up to a heart attack.

The researchers used clinical data from a national register that records all hospital admissions for heart attack (defined as myocardial infarction and other acute coronary syndromes) in England and Wales. They reviewed 79,288 such diagnoses over the period 2003 to 2006 in patients residing in 15 cities.

Pollution levels were obtained from a national air quality database, which gets its data from urban background monitoring stations. For each city, they also obtained hourly levels of the following air pollutants: pollutant particles (PM₁₀ – the 10 denoting the size of the particles), ozone, carbon monoxide (CO), nitrogen dioxide (NO₂) and sulphur dioxide (SO₂). The researchers also obtained information on other factors that might influence risk of heart attack, including daily average temperature and humidity from weather monitoring stations and levels of certain viral infections, such as influenza, from daily counts of laboratory confirmed cases.

The possible effect of pollution was investigated within five different timeframes before the heart attack had occurred – 1-6 hours, 7-12 hours, 13-18 hours, 19-24 hours and 25-72 hours. The researchers analysed each pollutant for its effect, both separately and combined with other pollutants.

They also analysed the data in different ways, looking at the possible modifying effect of different factors, such as age, smoking status, season and hourly temperature.

The researchers say that higher markers of pollutant particles and nitrogen dioxide, which are typically indicators of traffic-related pollution, seem to be associated with a temporary increased risk of heart attack 1-6 hours after exposure. However, they say the fact that risk lowered again six hours after exposure suggests that air pollution may be associated with hastening heart attacks in people that were going to have them anyway (called short-term displacement), rather than increasing overall risk.

They say that pollution may trigger heart attacks by various mechanisms, such as increased inflammation, increased blood “stickiness” or rises in blood pressure. The effect of air pollution on deaths from heart and respiratory problems is an established one, but that pollution may not directly increase the immediate risk of heart attack, but may increase risk through another mechanism. However, they add that this finding should not undermine calls for action on air pollution, which has clear associations with increases in respiratory and cardiovascular mortality.

Elderly people and those who have been diagnosed with heart disease and other conditions are currently advised to avoid spending long periods in areas with high traffic pollution levels.

The study concluded that the increase in risk was relatively small, and that pollution probably hastens rather than causes heart attacks.

<http://www.peoplewithpotential.org/traffic-fumes-can-trigger-heart-attacks>