Research raises alert on dangers of air pollution

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RESEARCHERS claim to have made a breakthrough in discovering the ways in which air pollution contributes towards the causes of lung cancer, with particular emphasis on exhaust emissions from vehicles.

Some of their findings suggest that such fumes can activate cancerous dormant mutations in cells within the respiratory system.

Scientists involved in the study appear to have pinpointed a link between pollution and the death of a young girl in London in 2013, when a coroner attributed the fatality to illegal levels of air pollution.

Their findings may also help explain why non-smokers can develop lung cancer.

According to an article published in The Guardian, this amounts to a "wake-up call about the damaging impact of pollution on human health".

It may also cast doubt on studies that have suggested vaping is a healthier alternative to smoking.

Prof Charles Swanton, of the Francis Crick Institute, who presented the findings at the European Society for Medical Oncology con- ference in Paris on Saturday, was quoted as saying: "The risk of lung cancer from air pollution is lower than from smoking, but we have no control over what we all breathe.

"Globally, more people are exposed to unsafe levels of air polmechanisms lution than to toxic chemicals in cigarette smoke, and these new data link the importance of addressing climate health to improving human health."

Although smoking is the biggest contributor to lung cancer, air pollution causes one in 10 cases in Britain. It is thought about 6,000 non-smokers annually die of lung cancer. Globally, the figures stands at around 300,000.

The death toll is largely attributed to fine particles – PM2.5 – contained in air pollution, but exactly how such pollution leads to cancer has been unclear.

Unlike smoking or exposure to the sun, both direct causes of DNA mutations linked to lung and skin cancer, air pollution does not cause cancer in this way.

Those who are victims of nonsmoking lung cancer tend to carry mutations that accumulate in the body that usually remain harmless.

Prof Swanton concluded: "So there's got to be something else going on. Air pollution is associated with lung cancer but people have largely ignored it because the

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behind it were unclear."
In their laboratory studies, Prof Swanton's experts showed that mice engineered to carry mutations in a gene linked to lung cancer were more likely to develop cancer when exposed to pollutant particles. They also discovered that the risk was moderated by a protein released as part of the body's immune response to PM2.5 exposure.
Mice given drugs to block the protein became more resistant to the pollutants, possibly paving the way for new cancer-preventing medicines, Prof Swanton said.
"It's a wake-up call on the impact of pollution on human health. You cannot ignore climate health. If you want to address human health, you have to address climate health first."