

NOx gases in diesel car fumes: Why are they so dangerous?

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Nitrogen oxides are poisonous gases that contribute to acid rain and suffocating smog

Nitrogen oxides, poisonous gases that contribute to acid rain and suffocating smog, are found in the fumes of diesel cars like the ones Volkswagen has admitted to fitting with emissions-cheating software.

What is it?

Nitrogen oxides (NOx) are poisonous gases derived from nitrogen and oxygen combustion under high pressure and temperatures.

NOx is composed of nitric oxide (NO), and a smaller percentage of more poisonous nitrogen dioxide (NO2).

Fossil-fuel burning is by far the main man-made source: cars, trucks, tractors and boats or industrial processes like power generation and cement-making.

Natural sources include bacterial activity, volcanic outbursts and lightning.

What does it do to humans?

NOx has direct and indirect effects on human health.

It can cause [breathing problems](#), headaches, chronically reduced lung function, eye irritation, loss of appetite and corroded teeth.

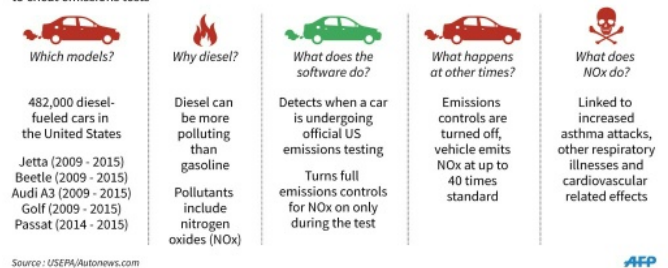
Indirectly, it can affect humans by damaging the ecosystems they rely on in water and on land—harming animals and plants.

In Britain alone, known NO2 emissions have been estimated to kill 23,500 people every year, according to aerosol science professor Ian Colbeck of the University of Essex, southeastern England.

Also emitted in diesel fumes are solid particles which can penetrate deep into the lungs and cause cancer, chronic breathing problems and premature death in people with heart or lung disease.

Volkswagen's alleged pollution-hiding cars

US Environmental Protection Agency says VW admitted it had equipped cars with software to cheat emissions tests



Graphic outlining Volkswagen's scheme to disguise pollutant emissions in its cars, according to the United States Environmental Protection Agency

In 2012, the World Health Organization's cancer research agency classified [diesel engine exhaust](#)

as cancer-causing.

Why is lying about cars emissions a big deal?

The European Union, United States and other countries have NOx reduction targets in a bid to improve public health.

But analysts and green groups have been warning for years that actual vehicle emissions were likely much higher than reported ones—creating a false sense of confidence in the quality of the air we breathe, and preventing adequate measures from being taken.

"Concentrations of NOx have not fallen as much as expected despite the introduction of new technology on vehicles," said James Longhurst, an environmental science professor at the University of the West of England, Bristol.

"If the deliberate bypassing of emission control systems is more widespread than just VW (Volkswagen) diesel sales in the US, then it may help explain what has been observed in measurements of air pollution in cities."

Sources: US Environmental Protection Agency (EPA), European Environmental Agency (EEA), UN Environment Programme (UNEP), Science Media Centre (SMC)

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