Cars under new EU rules produce 4.5x more pollution on average than allowed

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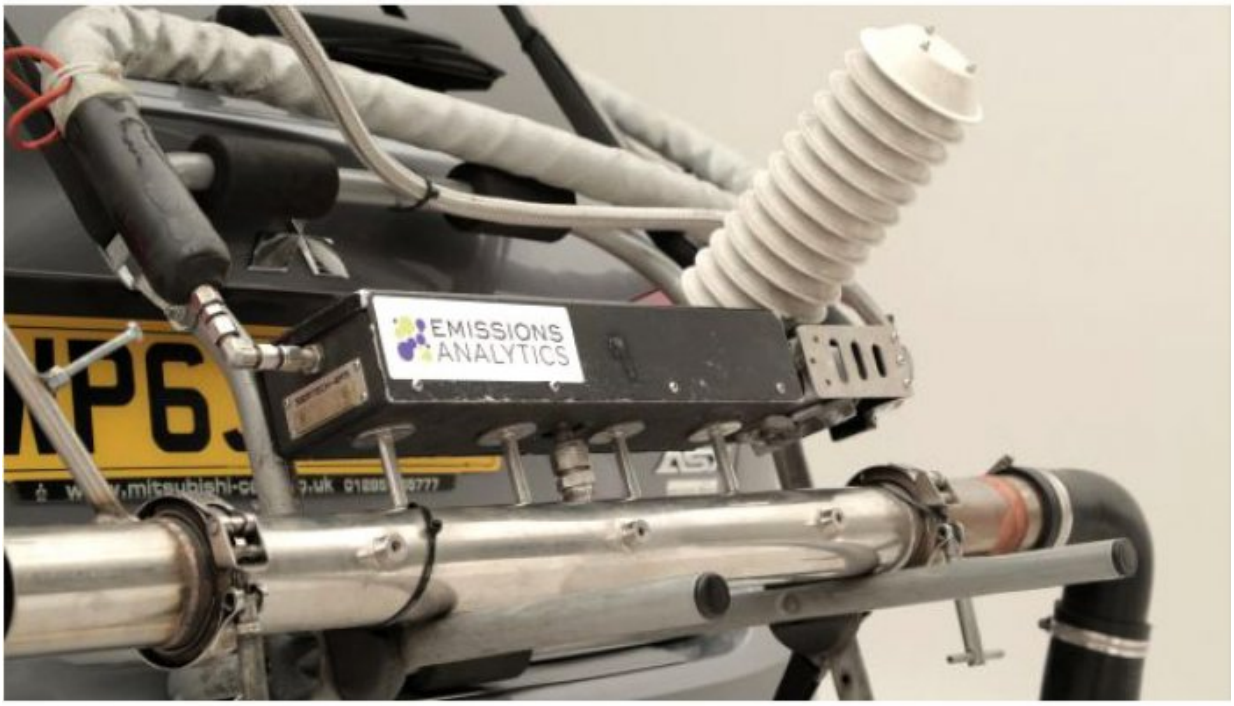

Credit: Imperial College London

New diesel cars on the roads create much more pollution than is allowed by the European Commission's EURO-6 guidelines for acceptable emissions limits for new vehicles, according to new research. The

EURO-6 guidelines became mandatory in September 2015.

In the largest study so far to compare emissions measurements from lab-based and real-world driving, researchers from Imperial College London examined nitrogen dioxide (NO2) and nitric oxide (NO) emissions, collectively known as NOx, because of their direct link to health problems such as childhood asthma. The UK's air pollution is thought to contribute to 40,000 premature deaths each year, and NOx (particularly NO2) plays a large part in this. Air pollution in general contributes to strokes, asthma, heart disease, chronic obstructive pulmonary disease, lung cancer, and lung infections. Across the EU, it is thought to reduce life expectancy by nine months.

The UK and several other European member states consistently breach the EU air quality limit value for ambient concentrations of NO2. This has resulted in the current court battle between the Department of Environment Food and Rural Affairs and the environmental law NGO ClientEarth.

Using portable emissions measurement systems (PEMS) attached to vehicle exhausts, the researchers collaborated with Emissions Analytics to measure the amount of NOx produced by 39 Euro 6 diesel cars. They found that emissions levels of NOx widely exceed the EURO-6 type approval limit in both the motorway and urban environment.

In the study, NOx emissions ranged from one to 22 times the limit, with the average NOx emission 4.5 times the limit. During urban driving (when public exposure is highest) the emissions were even higher, averaging 5.4 times the EURO-6 approval limit.

The researchers compared their results to estimates of vehicle emissions using COPERT, an air quality emissions model developed by the European Environment Agency. The average NO2 emission in the new

study was 2.5 times the COPERT model estimate, rising to 2.8 for urban driving.

There was much variability in the EURO-6 vehicles tested with just two cars able to meet the type approval limit during real driving. Since Euro 6 vehicles are already in use the researchers argue that it is important to identify the worst performing cars and ban them, rather than just relying on generic EURO-6 standards for regulation. This would enhance the effectiveness of schemes like Clean Air Zones and allow for consumers to make informed decisions when purchasing a new car. The researchers found that removing the five most polluting vehicles reduced average emissions considerably.

Rosalind O'Driscoll from the Centre for Environmental Policy at Imperial College London, the lead author of the study, said: "Unfortunately the EURO-6 diesel cars seem to be following the pattern of EURO-4 and 5 by far exceeding type approval in real world driving. These results are concerning, particularly for people living in urban areas, as NO2 is linked to childhood asthma among other health issues."

"Higher levels of NO2 are particularly problematic in urban areas, and we found that many of the diesel cars emitted large proportions of NO2, directly enhancing concentrations of this toxic component at road-side locations."

At present, manufacturers must adhere to emissions limits tested only in a lab setting, but next year, type approval testing will include real-world driving environments to tackle real-world emissions levels. The authors also suggest that rather than using generic guidelines for all cars, each car model should be tested on its own merit with regard to emissions. In the study, they say: "This could prevent manufacturers pushing the EU limits in a lab setting that may ultimately cause unacceptable pollution levels in real-world environments."

Provided by Imperial College London