

Briefing Six facts about diesel the car industry would rather not tell you

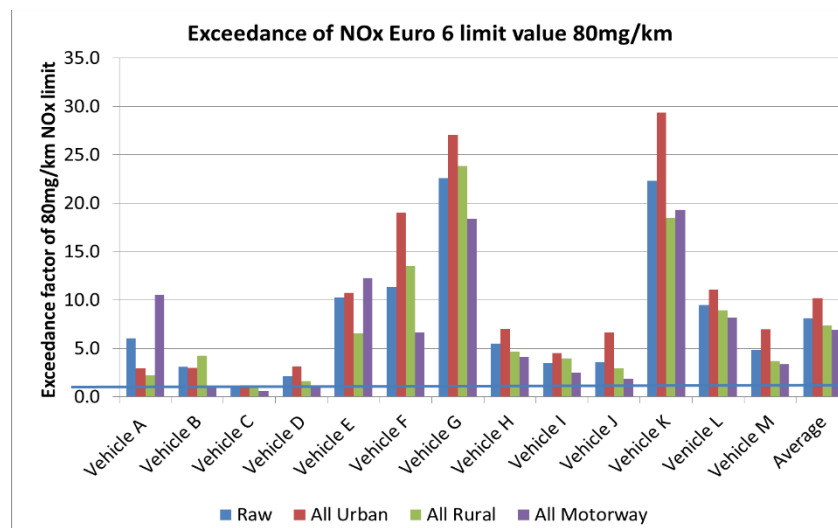
1. A typical diesel car emits 10 times more nitrogen oxides than an equivalent gasoline car.

Testing conducted by the independent International Council on Clean Transportation (ICCT)¹ found a typical modern Euro 6 diesel emits 7-10 times more nitrogen dioxides (NO_x) on the road than the Euro 6 limit achieved in tests (80mg/km). Petrol cars have a tighter limit (60mg/km) that is typically met on the road.

NO_x is a mixture of mainly nitric oxide (NO) and nitrogen dioxide (NO₂). Diesel cars also produce much more nitrogen dioxide (NO₂) within the NO_x emissions they emit. The European Commission's scientists² found the share of NO₂ in the total NO_x emissions reached 60% for diesel vehicles but was substantially lower for gasoline vehicles (0-30%). NO₂ is the more toxic form of nitrogen oxides. Although nitric oxide (NO) is also converted to NO₂ in the air, the process can take time and is dependent on the availability of other pollutants in the air. As a result the NO₂ levels in streets with a high penetration of diesel vehicles are especially high.

2. 12 out of 13 Euro 6 diesel cars failed to achieve the Euro 6 limit in tests conducted on the road. The worst vehicle emitted 22 times the allowed limit.

Independent tests by the ICCT (below) and others show how most Euro 6 cars produce much more pollution on the road than during laboratory tests.



Emissions are the highest in urban areas where most people are exposed to the pollution. On average a new diesel car emits 800mg/km of nitrogen oxides driving in town compared to the limit of 80mg/km.

¹ <http://www.theicct.org/news/press-release-new-icct-study-shows-real-world-exhaust-emissions-modern-diesel-cars-seven-times>

² Ibid Reference 14

3. Diesel exhaust fumes cause cancer. Nitrogen dioxide causes a range of short-term health effects, like asthma; and longer-term effects that shorten lifetimes. In the air nitrogen oxides are converted into other harmful pollutants like fine particles and ozone.

The World Health Organisation has classified diesel exhaust as carcinogenic.³ It causes lung cancer in humans.

Breathing NO₂ even for a short time can inflame the airways of healthy people and cause increased symptoms in people with asthma. During periods of high nitrogen dioxide pollution there are increased visits to hospital emergency departments and hospital admissions for respiratory issues. A severe episode of pollution occurred most recently in Spring 2014 when pollution levels reached hazardous levels in London.

Living in a place with high levels of NO₂ can also produce chronic, long-term health effects. For example, it has been associated with both low birth weight babies and small head circumferences.⁴ It has also been associated with excess deaths in a large study in Rome and heart attacks.⁵

In the air NO_x is eventually converted into nitrate aerosol particles that are a significant component of PM_{2.5} (fine particulates), one of the pollutants of greatest health concern. So although diesel particle filters are reducing direct emissions of fine particles, the NO_x emissions are also causing this pollution.

NO_x in the air also contributes to the creation of ozone created when it reacts with unburned hydrocarbons (fuel) in the presence of sunlight. Transport has been estimated to be responsible for 45% of the emissions leading to ozone formation.⁶ Children, the elderly, people with lung diseases such as asthma and people who work or exercise outside are at risk of adverse effects from ozone. These include reduction in lung function and increased respiratory symptoms as well as respiratory-related emergency department visits, hospital admissions, and possibly premature deaths. Virtually all EU citizens are exposed to ozone above WHO health guidelines.

4. The current system for testing cars in a laboratory is obsolete and produces meaningless results – the figures quoted by ACEA.⁷ The car industry is fighting to delay and weaken new on-road tests precisely because Euro 6 cars cannot achieve the limits set.

Cars are currently tested in a laboratory using a test called NEDC. The test is outdated and obsolete and produces results for the amount of pollution being emitted that are totally unrepresentative of those achieved by the car on the road. In addition carmakers deploy “cycle beating” techniques to lower the test results still further. One reason carmakers are able to manipulate test is because they pay the organisations overseeing the tests and usually conduct these in their own laboratories.

The introduction of Euro 6 regulations in 2007 was supposed to be accompanied by a new real-world driving emissions test which measured pollution produced on the road – but arguments over how the test should be carried out have delayed its introduction that should have started in 2015.

³ http://www.iarc.fr/en/media-centre/pr/2012/pdfs/pr213_E.pdf

⁴ Pedersen et al, 2013, Lancet Respiratory Medicine 2013;1:695-704

⁵ Cesaroni, 2014, BMJ 2014;348:f7412

⁶ EEA 2014

⁷ <http://www.smmmt.co.uk/industry-topics/diesel-facts/#responsiveTabs1>

Carmakers are fighting to weaken the new test. For example, compared to the testing proposed by the European Commission and member states, carmakers want:

- a. Less of the test carried out in urban areas (ACEA suggest 26%, the Commission 33%)
- b. A lower maximum test speed (130kmph) compared to 145kmph proposed by the Commission
- c. Cars not to be tested in cold weather – minimum temperature 3°C not -7°C proposed by the Commission
- d. Cars only to be tested at low altitudes (below 700m) not 1300m

Crucially carmakers want high conformity factors to apply. These factors multiply the permissible level of pollution. Carmakers have been calling for a conformity factor of 5 to apply from 2017 and 3 after 2021. This would increase the permissible limit of pollution to 400mg/km and 240mg/km respectively. If Euro 6 diesels are so clean why do carmakers want to raise the allowable levels of pollution?

5. On average, diesel cars actually emit more, not less CO₂, than petrol or hybrid cars.

The SMMT figures show that in 2013 the average diesel car emitted 129.2g/km of CO₂. The average gasoline emitted 128.8g/km and the average alternatively-fuelled car (mainly hybrids) 95.5g/km.

Diesel cars also tend to be driven much further. Over its lifetime a typical diesel drives 230,000km and a gasoline car 169,000km – all these additional miles produce more CO₂. Diesels also cause higher emissions in their production as they tend to be larger.

6. The UK has some of the highest levels of nitrogen dioxide in Europe.

Levels of NO₂ in the UK are some of the highest in Europe.

King's College London scientists measured in Oxford Street London an average of 135 milligrams per cubic metre – the nitrogen dioxide levels are three times higher than the EU's safety limit. The street broke hourly limits of 200 milligrams per cubic metre more than 1,500 times during the year.⁸

Official figures from the UK Government show that the UK is not expected to meet the EU Ambient Air Pollution limits (that should have been met in 2005) until 2030 as a result of high levels of nitrogen dioxide.

Further information

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⁸ <http://www.dailymail.co.uk/sciencetech/article-2688686/The-polluted-street-world-LONDON-Oxford-Street-highest-levels-nitrogen-dioxide-claims-expert.html#ixzz3U48GYArJ>