

# AIR & ROAD VEHICLES

*EU citizens in urban areas are exposed to dangerous levels of air pollution through the air they breathe. Passenger cars and vans are a major cause of this pollution.*

Road transport is a major source of air pollution that harms human health and the environment. Vehicles emit a range of pollutants including nitrogen oxides (NO<sub>x</sub>) and particulate matter (PM). The EU has set limit values for the maximum amount of air pollution citizens should breathe, but people in urban areas are still exposed to levels of NO<sub>2</sub> and PM well above these limits, mainly due to high concentrations of passenger cars and vans in these areas [1].

## EU legislation

- In order to reduce urban air pollution the EU has set limits for the maximum amount of pollution that can be emitted from vehicles [2]. Vehicles are therefore laboratory-tested before the car can be put on the market to ensure compliance. However real emissions on the road are much higher than emissions measured in the laboratory tests.
- This is because passenger cars and vans are tested in a laboratory on a rolling road, with the level of emissions measured over a drive cycle that is intended to reproduce real world driving

conditions. Unfortunately the current test cycle fails to accurately reproduce these conditions and is therefore not representative of how European citizens drive their cars in their everyday life. The so called “cycle beating” techniques developed by carmakers enable vehicles to meet the limits during tests. This gap between the emissions measured in the laboratory and the emissions in real life driving conditions means non compliance in the real world with emissions limits.

## FACTS AND FIGURES



NO<sub>x</sub> comprises a mixture of nitric oxide (NO) and nitrogen dioxide (NO<sub>2</sub>). NO<sub>2</sub> is a toxic gas harmful for health. NO<sub>x</sub> emissions also contribute to acidification and eutrophication, causing serious damage to ecosystems.

**40%**  
NO<sub>x</sub> EMISSIONS



Road transport is the main source of NO<sub>x</sub> emissions [3] and accounts for 40% of emissions in urban areas.



The average contribution of local traffic to urban NO<sub>2</sub> and PM<sub>10</sub> concentrations is estimated at 64 % and 34 %, respectively [4].

**80%**

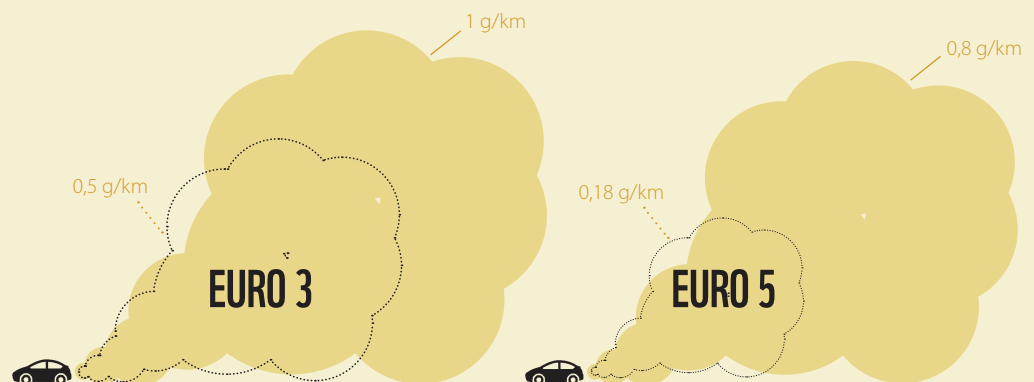
It is estimated that 6-12% of the EU urban population is exposed to NO<sub>2</sub> levels above the EU limit value and that approximately 80% of the urban population is exposed to PM<sub>10</sub> levels exceeding the WHO guidelines

## DIESEL CARS: REAL-WORLD VS. TEST NO<sub>x</sub> EMISSIONS

Test NO<sub>x</sub> emissions



Real world emissions





## PASSENGER CARS IN THE US: NO DISCRIMINATION AND STRICTER STANDARDS

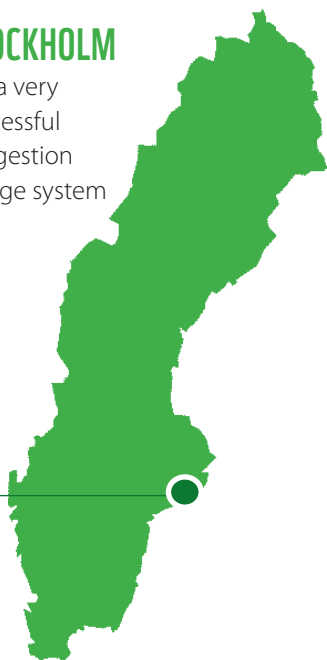
US Tier II emissions standards for  $\text{NO}_x$  are the same for both diesel and for petrol cars and are stricter than European standards (although measured on a different test cycle). The  $\text{NO}_x$  emissions limit for cars in the US is 0.04 g/km, while in the EU limits are 0.08 g/km for diesel cars and 0.06 g/km for petrol cars [5]. What is more, the US is set to adopt stricter Tier III standards.

The European Commission should introduce real world emissions testing that reflect actual driving conditions and include the most polluting driving patterns.

## CUTTING POLLUTION WITH NON-TECHNICAL MEASURES

### STOCKHOLM

has a very successful congestion charge system



Some European cities have implemented non-technical measures to further cut down air pollution from transport [6]. Stockholm has a very successful congestion charge system. In 2011 there were 20% less cars on the roads than before its introduction in 2005. The traffic reduction was 29% [7].  $\text{PM}_{10}$  levels in the city centre were 15 to 20% lower in the first two years of the measure than compared to before its introduction and  $\text{NO}_x$  emissions decreased by approximately 10%. There are other policy measures that cities can use to improve air quality. Examples include Low Emission Zones (LEZ), better urban planning as well as the promotion of cycling, walking and public transport.

For footnotes, please refer to separate reference sheet and to the EEB website.

## RECOMMENDATIONS

- Introduce an improved test cycle at the latest by 2016. It should be based on the Worldwide harmonized Light vehicles Test Procedures (WLTP).
- Introduce real world emissions testing using Portable Emissions Measurement Systems (PEMS). This ensures that emission limits are not only respected during tests in laboratory conditions but also outside the lab.
- Make the system of Type Approval more consistent through the establishment of an EU-wide Type Approval Authority that would delegate testing services to accredited national organisations and require uniform standards and procedures.
- Carefully monitor if Euro 6 standards, which will introduce a reduction of  $\text{NO}_x$  emissions limits to new vehicles from 2015, effectively achieve a reduction of emissions in real world driving.
- Develop Euro 7 standards to achieve further emission reductions. New emission limits for diesel cars should be strengthened and aligned with those for petrol cars.
- Create a European framework to help Member States and cities to implement non-technical measures and cut down road vehicle pollution in a harmonised and coherent way.
- Adopt ambitious emission reduction commitments in the revised National Emissions Ceilings Directive. Emission reduction commitments must go beyond the Gothenburg Protocol and aim to achieve the health and environmental objectives of the EU's 6<sup>th</sup> and 7<sup>th</sup> Environment Action Programmes by 2030.

### More information

- Emission standards for light and heavy road vehicles, Factsheet, AirClim, 2012: <http://www.airclim.org/publications/briefings>
- Laboratory versus real world: Discrepancies in  $\text{NO}_x$  emissions in the EU, ICCT, 2012: [www.theicct.org/blogs/staff/laboratory-versus-real-world-discrepancies-nox-emissions-eu](http://www.theicct.org/blogs/staff/laboratory-versus-real-world-discrepancies-nox-emissions-eu)