Open letter to all European Market Surveillance Authorities:

Diesel Euro 5 and early Euro 6 cars still show high on-road NO\textsubscript{x} emissions

Gothenburg, 21 June 2023

According to Commission Regulation (EU) 2018/858, designated national vehicle market surveillance authorities in EU member states and the UK must carry out tests to assess whether vehicles on the road in their respective markets comply with emission standards, including rules prohibiting the use of defeat devices prohibited under EU and UK law (see Articles 8 and 51). In recent cases, the Court of Justice of the European Union (CJEU) clarified that defeat devices can only be used to avoid immediate risks of damage or accident to the engine and cannot be legally justified in any event if they operate to reduce emission controls for most of the year in normal driving conditions (see cases C-693/18, C-128/20, C-134/20, C-145/20 and C-873/19). According to the law, if vehicles are found to contain illegal defeat device technology, breach emissions standards, or otherwise pose a serious threat to people’s health, market surveillance authorities must require “without delay” that manufacturers take corrective action to bring the vehicles into compliance and/or address the relevant risk (see Article 52).

Remote sensing campaigns recently conducted in the H2020 project CARES (https://cares-project.eu/) indicate that diesel cars certified to Euro 5 and early Euro 6 (pre-RDE, i.e., Euro 6abc) are still producing excess emissions of nitrogen oxides (NO\textsubscript{x}) — up to over 10 times the emission standard limit — seven years after the “Dieselgate” scandal. High levels of NO\textsubscript{x} emissions are seen in all vehicle families, most of which were emitting consistent levels of NO\textsubscript{x} across three European cities, signaling that the problem of excess NO\textsubscript{x} emissions is widespread across Europe. These excess emissions pose a serious risk to people’s health across the region, and strongly suggest the widespread and continued use of illegal defeat devices in normal driving conditions.

Moreover, even vehicle families from manufacturers that have announced recalls of cars with defeat devices or issued software updates, such as Volkswagen, Fiat-Chrysler, Daimler, and Renault-Nissan, were still emitting NO\textsubscript{x} emissions greatly exceeding the emissions limits, questioning the effectiveness of such fixes and the sufficiency of the enforcement following the updates. The charts below summarize the results from the measurements conducted in Milan, Krakow, and Prague in 2021-22: https://cares-project.eu/high-emitter-profiles/.

In response to these findings, we recommend that market surveillance authorities carry out targeted evaluations into the continued presence of illegal defeat device technology across these vehicle families and require without delay that manufacturers take corrective action to bring the vehicles into compliance. We also recommend that authorities closely monitor the real-world efficacy of any software updates made (including those already issued by manufacturers) and track their deployment across Europe.

In CARES it has been impossible to link the vehicle models to specific type-approval families. Therefore, we send the list of vehicle families — defined as unique combinations of fuel type, Euro standard, manufacturer group, and engine displacement — asking market surveillance authorities to use this information to link it to the respective type-approval families and to take appropriate action with respect to the relevant vehicle types.

On behalf of the CARES consortium - yours sincerely,

![Signature]

Åke Sjödin
CARES coordinator
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Charts: Average NO\textsubscript{x} emissions per vehicle family

Calculated average NO\textsubscript{x} emissions (mg/km) from **diesel Euro 5** vehicle families as measured by remote sensing during CARES campaigns in Milan, Krakow, and Prague. The blue dotted line refers to the type-approval limit of 180 mg/km. Whiskers indicate the 95% confidence interval of the mean. Only vehicle families with 100 or more measurements are presented.
Calculated average NOx emissions (mg/km) from **diesel pre-RDE Euro 6** vehicle families as measured by remote sensing during CARES campaigns in Milan, Krakow, and Prague. The blue dotted line refers to the type-approval limit of 80 mg/km. Whiskers indicate the 95% confidence interval of the mean. Only vehicle families with 100 or more measurements are presented.
The following table shows the used **taxonomy of vehicle families**, including vehicle makes that belong to each manufacturer group.

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<tr>
<th>Manufacturer group</th>
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<td>Volkswagen</td>
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CARES partners:

CARES is a research project funded under the European Union Horizon 2020 Research and Innovation programme. The project brings together European and Chinese experts in non-intrusive vehicle emission measurements, from 20 partner organizations, to investigate the use of different remote sensing techniques for monitoring real-world vehicle emissions performance and enforcing compliance with exhaust pollutant standards. The goal of the CARES project is to lower barriers to the widespread use of these technologies through a combination of technology development, new analysis techniques, proof-of-concept demonstrations, and extensive dissemination of results, findings, and guidance. The project was coordinated by the IVL Swedish Environmental Research Institute and ran from May 2019 through April 2023.

This project has received funding from the European Union’s Horizon 2020 research and innovation programme under Grant Agreement No 814966.
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