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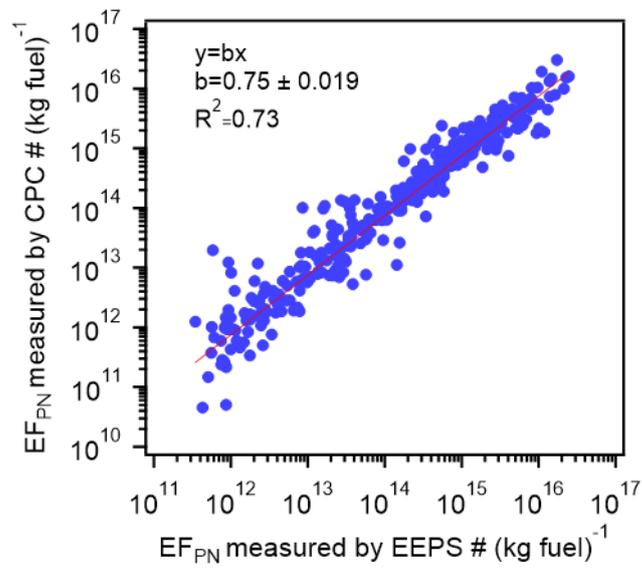
Supplement of

A transition of atmospheric emissions of particles and gases from on-road heavy-duty trucks

Liyuan Zhou et al.

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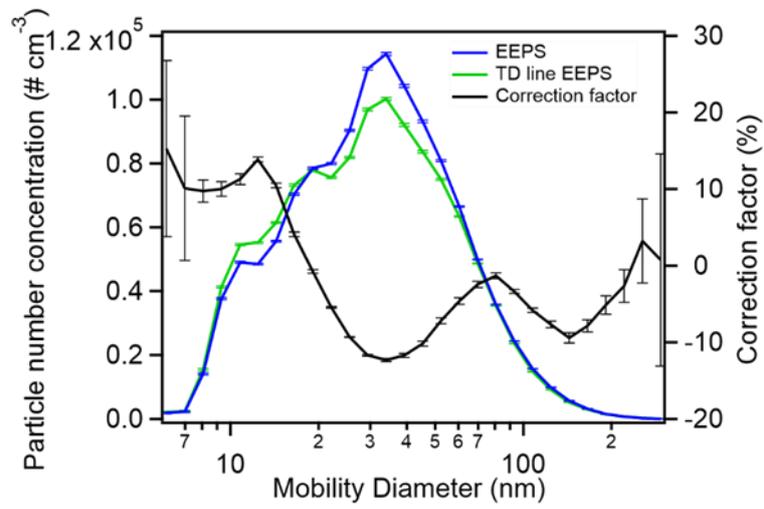
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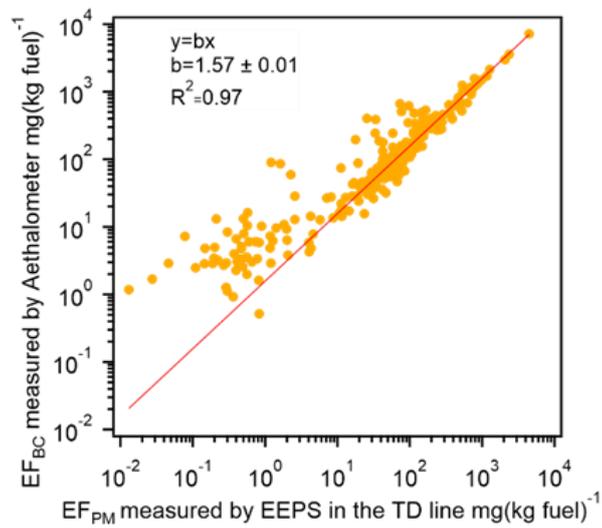
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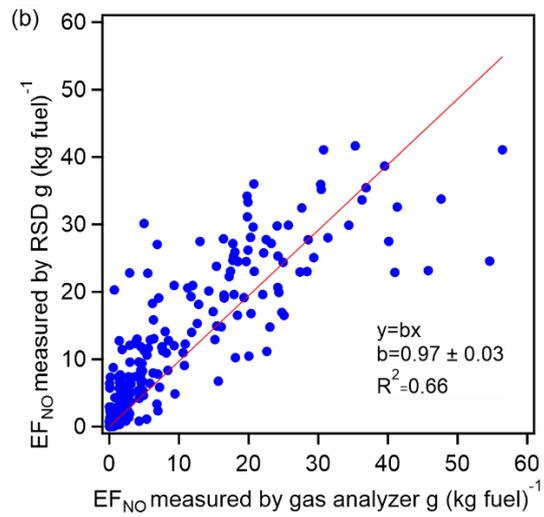
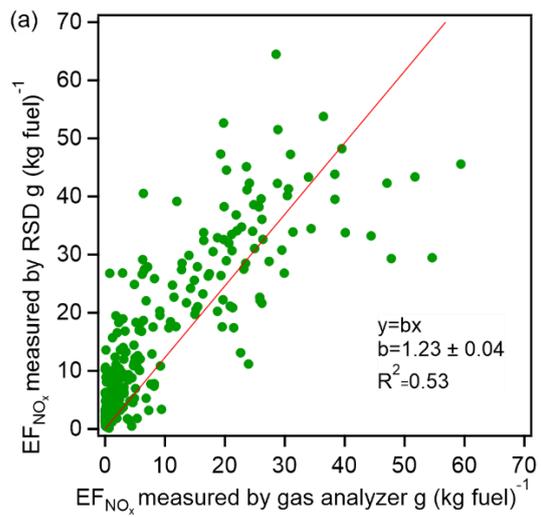
Fig. S1. Relationship between EF_{PN} measured by CPC and EEPS.



3

4 **Fig. S2.** Size-dependent ammonium sulfate concentrations measured by bypass EEPS and TD line EEPS and corresponding
5 correction factors.

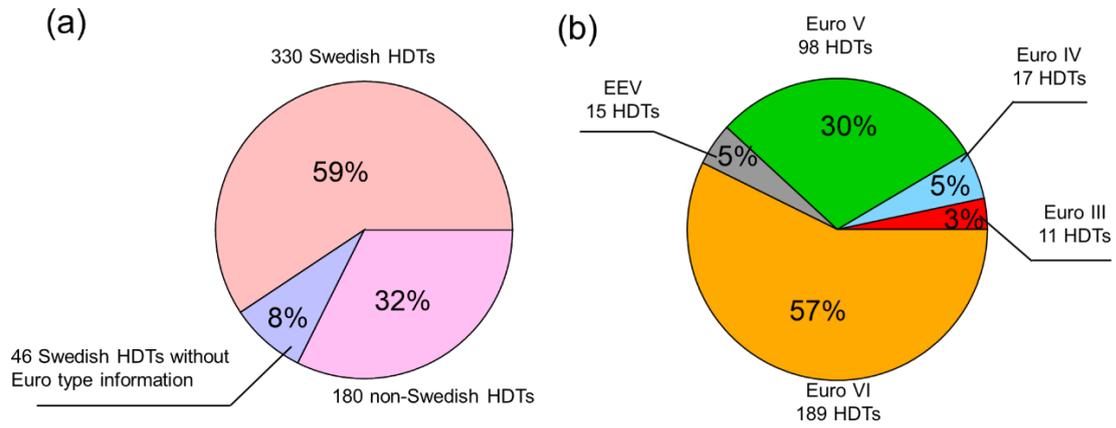




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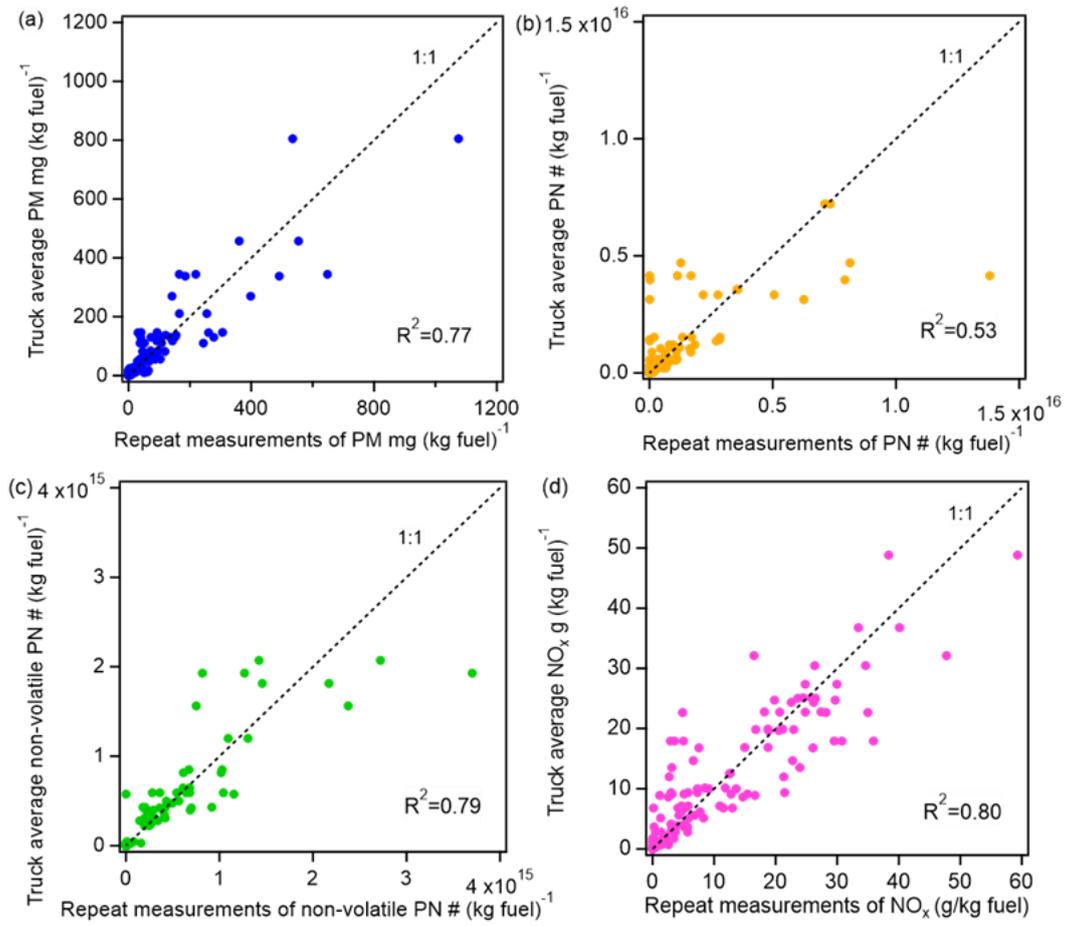
Fig. S4. Relationship between EF_{NO_x} and EF_{NO} (NO₂ equivalents) measured by the gas analyzers and RSD.



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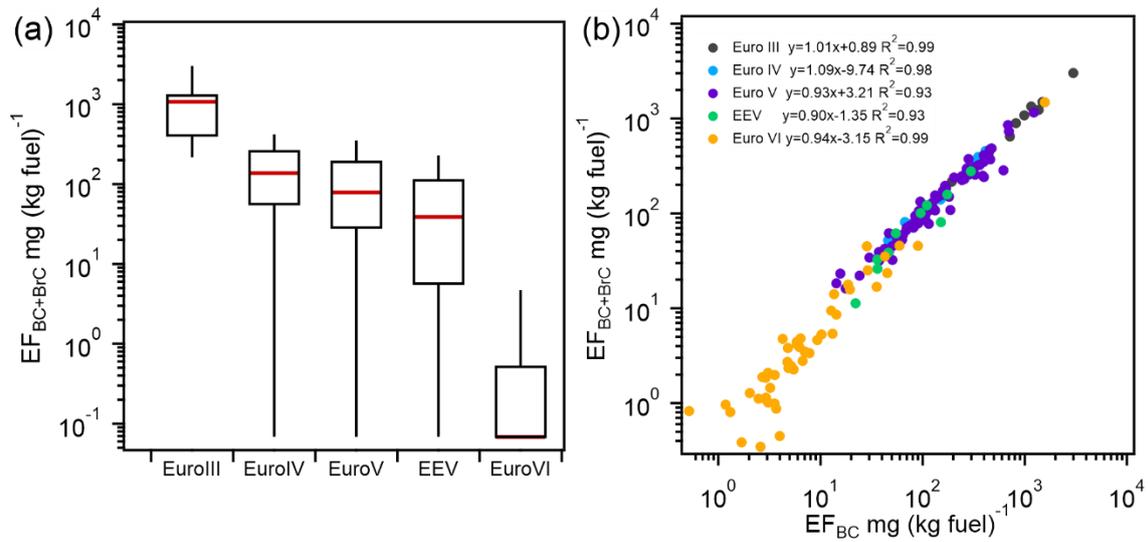
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Fig. S5. (a) Composition of all 556 HDTs trucks and (b) 330 Swedish HDTs with valid Euro type information.



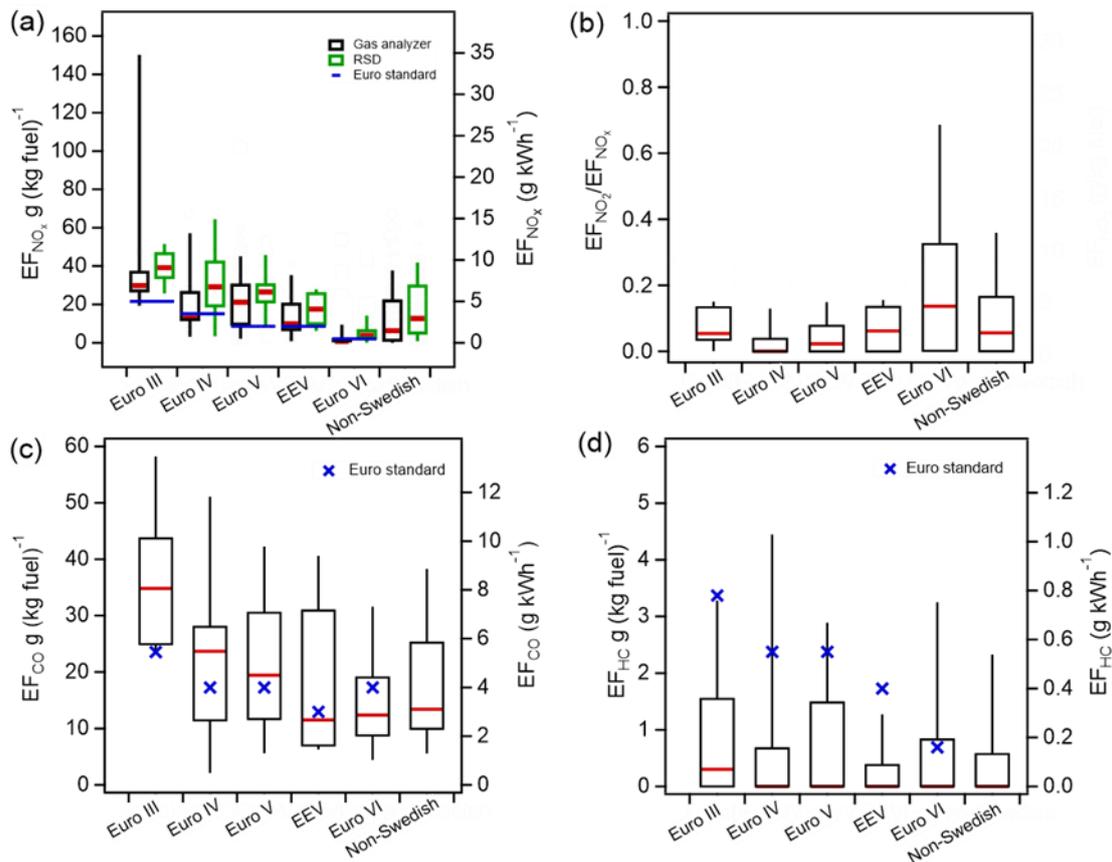
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14 **Fig. S6.** Average pollutant emission factors of PM, PN, non-volatile PN and NO_x for each HDT against the individual plume
 15 measurements of the corresponding HDT.



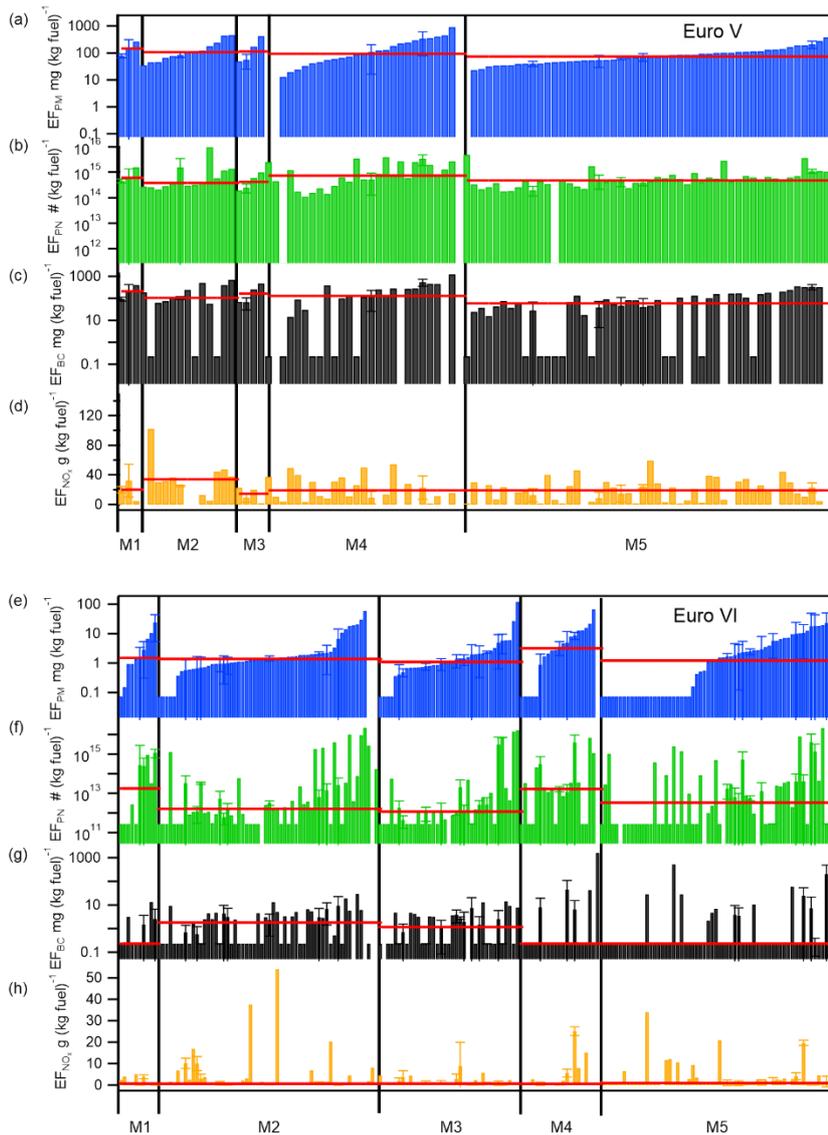
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17 **Fig. S7.** (a) EF_{BC+BrC} for Euro III to Euro VI HDTs. Non-detectable pollutant emission signals for captured plumes have been
 18 replaced by EF_{min} . For box-and-whisker plots, the top and bottom line of the box are 75th and 25th percentiles of the data, the
 19 red line inside the box is the median, and the top and bottom whiskers are 90th and 10th percentiles and (b) scatter plot of
 20 EF_{BC+BrC} and EF_{BC} for Euro III to Euro VI HDTs.



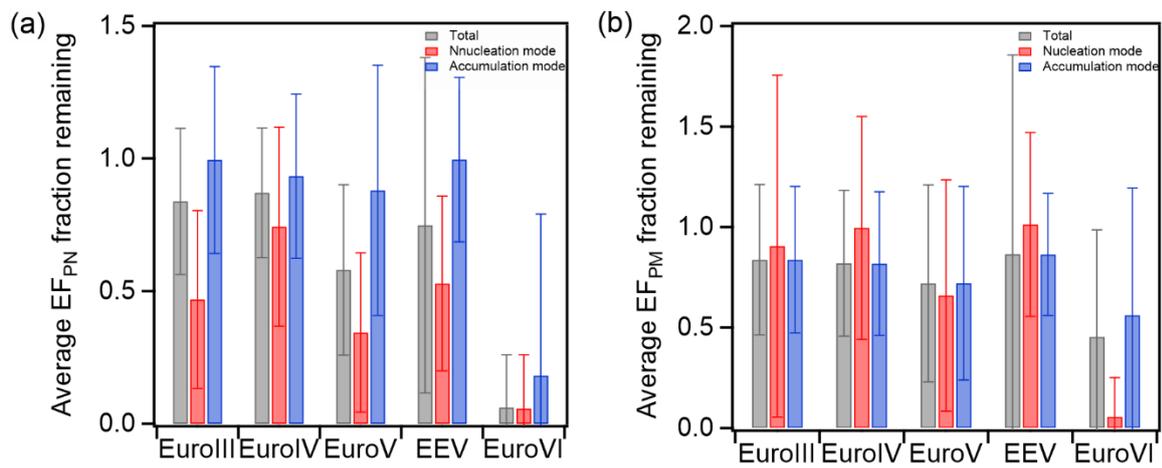
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22 **Fig. S8.** (a) EF_{NO_x} , (b) EF_{NO_2}/EF_{NO_x} , (c) EF_{CO} , and (d) EF_{HC} for Euro III to Euro VI and non-Swedish HDTs. Non-detectable
 23 pollutant emission signals for captured plumes have been replaced by EF_{min} . For box-and-whisker plots, the top and the bottom
 24 line of the box are 75th and 25th percentiles of the data, the red line inside the box is the median, and the top and bottom
 25 whiskers are 90th and 10th percentiles. Note that the comparison with the emission standard is only indicative as they are based
 26 on test cycle performance.



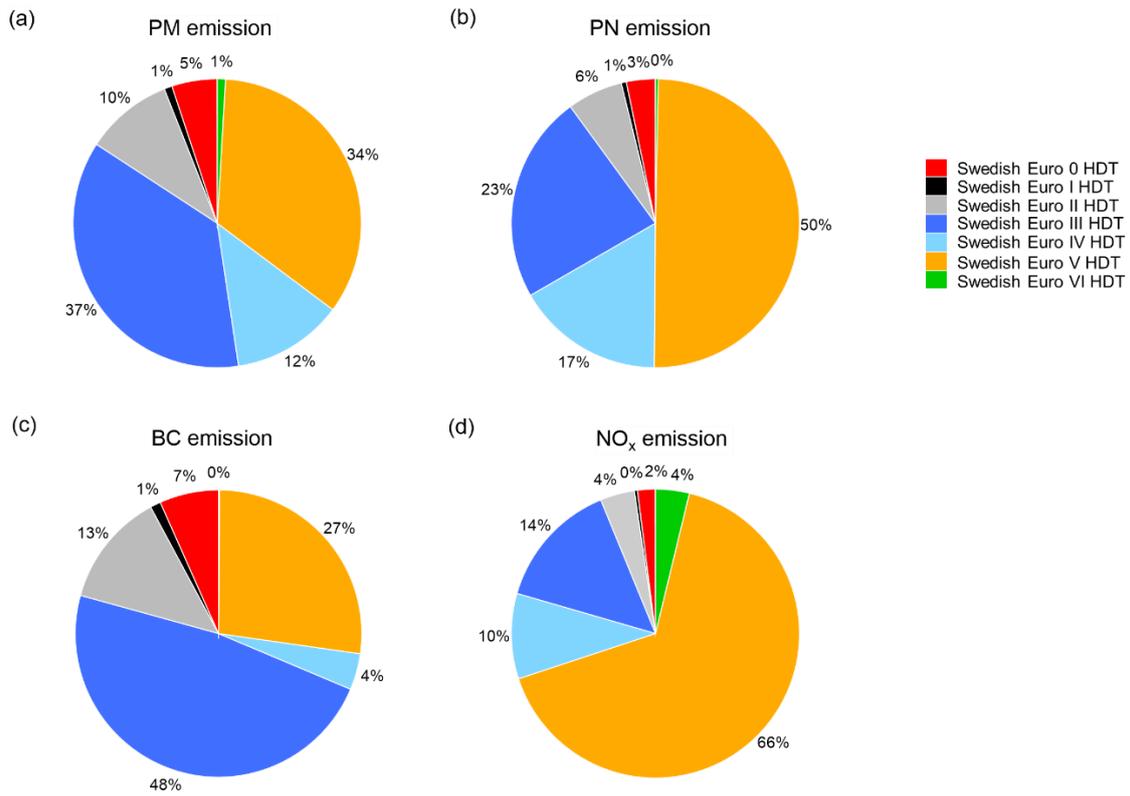
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28 **Fig. S9.** (a) EF_{PM} , (b) EF_{PN} , (c) EF_{BC} and (d) EF_{NOX} for Euro V HDTs and (e) EF_{PM} , (f) EF_{PN} , (g) EF_{BC} and (h) EF_{NOX}
 29 for Euro VI HDTs with respect to manufacturers: M1, M2, M3, M4 and M5. For an individual HDT with multiple
 30 passages, an average has been calculated and the error given is the standard deviation (1σ). The red solid lines
 31 represent the median EFs for the different engine manufacturers. Kruskal–Wallis test shows no significant
 32 manufacturer difference in EF_{PM} , EF_{PN} , EF_{BC} and EF_{NOX} for Euro V HDTs, whereas a significant difference was
 33 observed between M2 and M5 in EF_{BC} of Euro VI HDTs ($p=0.016$).



34

35 **Fig. S10.** Average EF_{PN} and EF_{PM} fraction remaining of the total particle, nucleation mode, and accumulation mode particle
 36 of Euro III-VI HDTs, error bars represent the standard deviation (1σ).



37

38 **Fig. S11.** Approximation of contributions of pollutants emitted from Swedish HDVs in each Euro class to the total (a) PM,
 39 (b) PN, (c) BC and (d) NO_x emissions (by adopting median EFs).