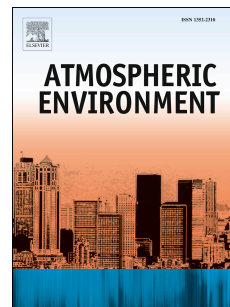


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Particle number concentration near road traffic in Amsterdam (the Netherlands):  
comparison of standard and real-world emission factors

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1 **Particle number concentration near road traffic in Amsterdam (the Netherlands):**  
2 **comparison of standard and real-world emission factors**

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10 **ABSTRACT**

11 In this study, NO<sub>x</sub> and particle number concentration (PNC) at an urban background and a  
12 traffic location were measured in the city of Amsterdam (the Netherlands). Modelled and  
13 measured contributions to NO<sub>x</sub> and PNC at the traffic location were used to derive real-  
14 world PN emission factors for average urban road traffic. The results for NO<sub>x</sub> were  
15 applied to validate our approach. The real-world PN emission factors (#.km<sup>-1</sup>) were  
16 2.9E+14 (urban road) and 3E+14 (motorway). These values were at least a factor eight  
17 *higher* than dynamometer-based PN emission factors from COPERT 4 and HBEFA  
18 databases. The real-world PN emission factors were used to model the contribution to PNC  
19 near road traffic in 2014. This was two to three times higher than the PNC urban  
20 background along urban roads over 20,000 vehicles per day and near motorways. The  
21 discrepancy between dynamometer-based and real-world emission factors demonstrates the  
22 need for more PNC observations to assess actual PN emissions from road traffic.

23  
24 *Keywords: particle number; road traffic; emission factors*

25  
26 **1. INTRODUCTION**  
27

28 It is well known that exposure to emissions from road traffic is associated with increased  
29 health risks (e.g. HEI, 2009). In urban areas are traffic emissions a major source of  
30 ultrafine particles, which are particles with a diameter smaller than 100 nm (Kumar et al.,  
31 2011). The particle number concentration (PNC) is considered to be representative for the  
32 concentration of ultrafine particles (Chow and Watson, 2007). Traffic-based ultrafine

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