

Luftföroreningar inne och ute: Olika källors betydelse

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Luftföroreningar och hälsa: baseras (nästan) uteslutande på utomhushalter

- Infiltrationen av utomhusluften varierar beroende på bostad/lokal och brukarnas beteende
- Den personliga exponeringen (dvs det vi faktiskt andas in under en dag) är inte summan av ute + inne
- Våra egna aktiviteter (inne och ute) ger bidrag till vår exponering som vi inte kan fånga med stationära mätare

Infiltration av partiklar från utomhusluft till olika miljöer

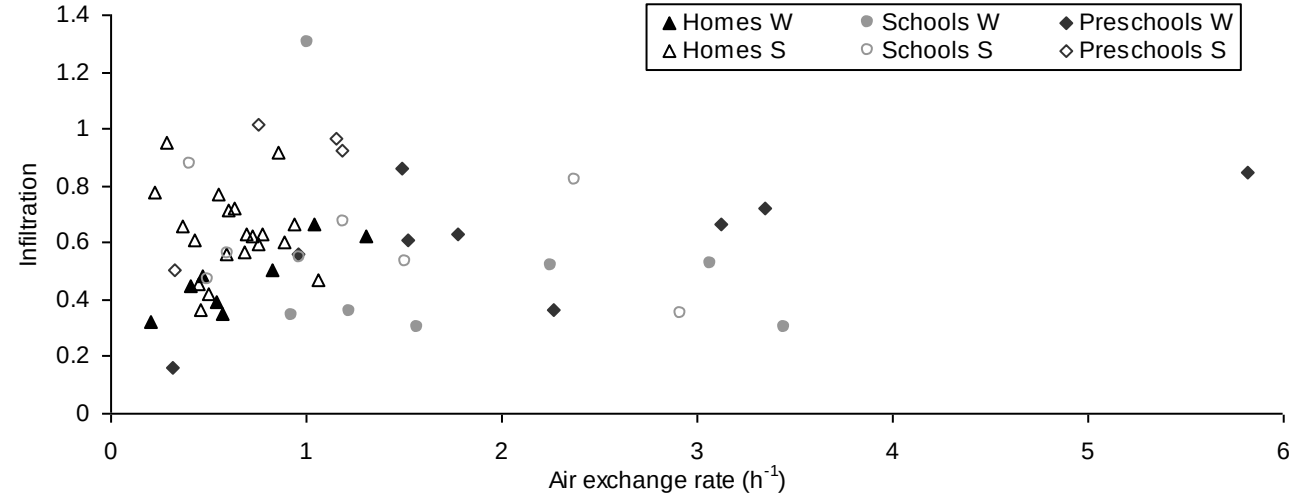
PAPER www.rsc.org/jem | Journal of Environmental Monitoring

Indoor and outdoor concentrations of PM_{2.5} trace elements at homes, preschools and schools in Stockholm, Sweden

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	Homes		Schools		Preschools	
	S	Pb	S	Pb	S	Pb
Both seasons	0.61	0.70	0.53	0.59	0.69	0.70
Winter	0.47	0.62	0.36	0.43	0.63	0.63
Spring	0.63	0.70	0.55	0.64	0.90	0.75



Mätningar av NO₂ inomhus vs utanför bostäder

Passiv provtagning under 7 dagar

Stroh et al. *Population Health Metrics* 2012, 10:10
<http://www.pophealthmetrics.com/content/10/1/10>



POPULATION HEALTH METRICS

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Measured and modeled personal and environmental NO₂ exposure

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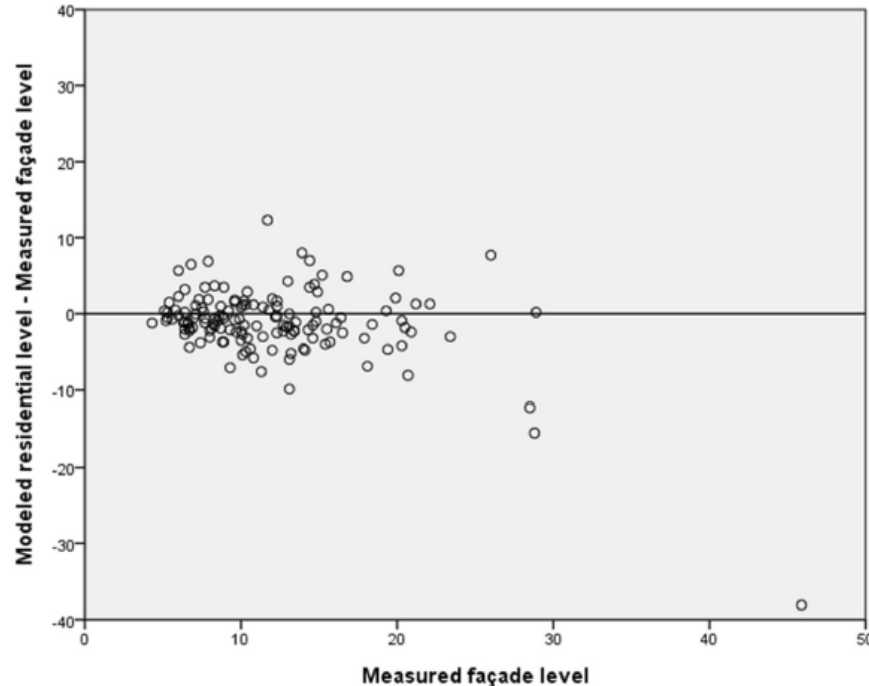


Figure 2 Bland-Altman plot: *Measured façade level* vs. *Modeled residential level* of NO₂ (µg/m³); $r_s = 0.8$, $n = 142$.

Mätningar av NO₂ utanför bostäder vs personlig exponering

Passiv provtagning under 7 dagar

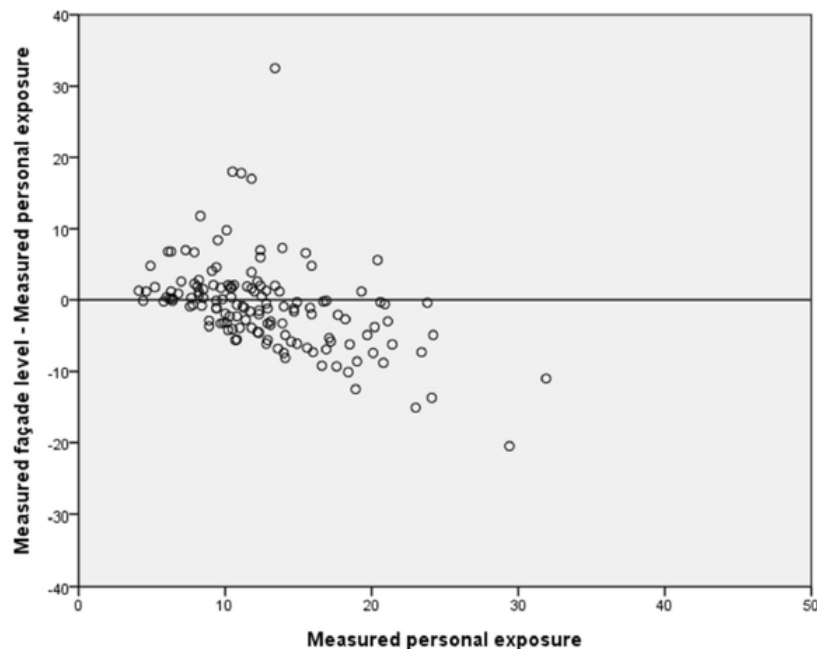


Figure 4 Bland-Altman plot: *Measured personal exposure vs. Measured façade level of NO₂ (µg/m³).*

Mätningar av PM_{2.5} personburet, inomhus, och utomhus

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www.nature.com/jes



Exposure to fine particles (PM_{2.5} and PM₁) and black smoke in the general population: personal, indoor, and outdoor levels

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Pumpad provtagning under 24 timmar

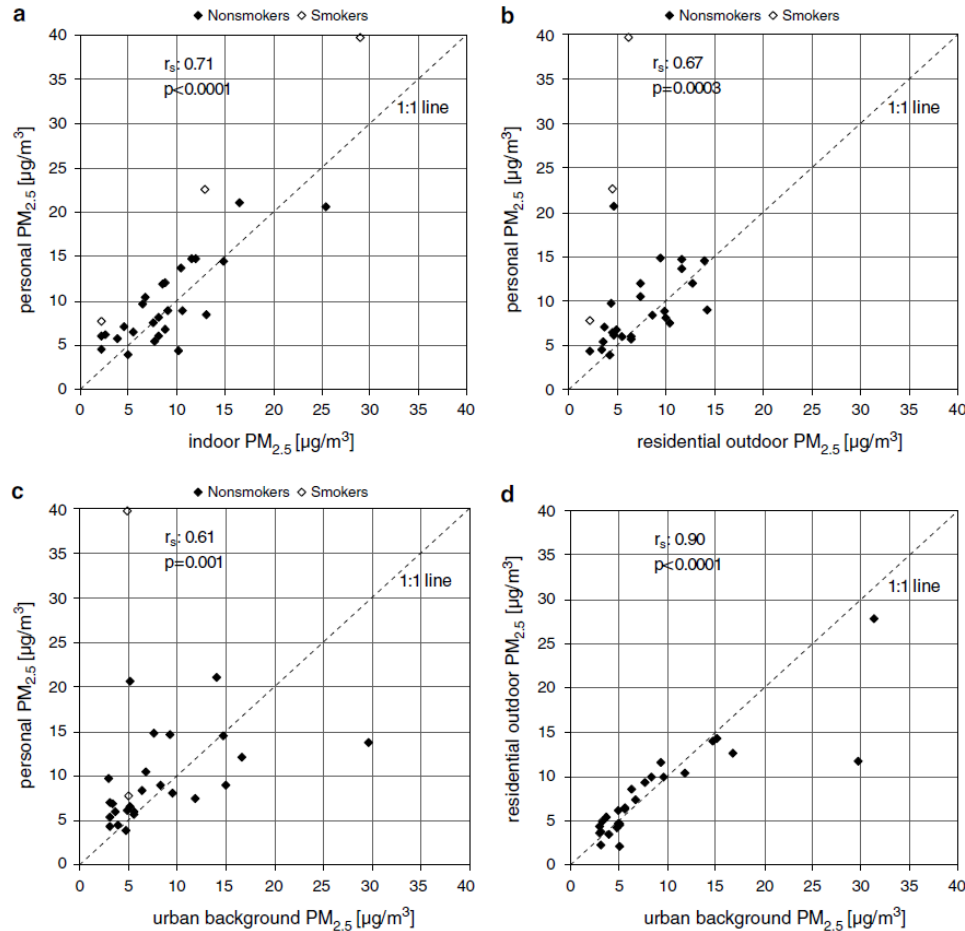


Figure 1. (a) Personal exposure versus indoor concentrations of PM_{2.5} ($\mu\text{g}/\text{m}^3$); (b) personal exposure versus residential outdoor concentrations of PM_{2.5} ($\mu\text{g}/\text{m}^3$); (c) personal exposure versus urban background levels of PM_{2.5} ($\mu\text{g}/\text{m}^3$); and (d) residential outdoor concentrations versus urban background levels of PM_{2.5} ($\mu\text{g}/\text{m}^3$). r_s is the Spearman correlation coefficient for non-smokers (a–c).



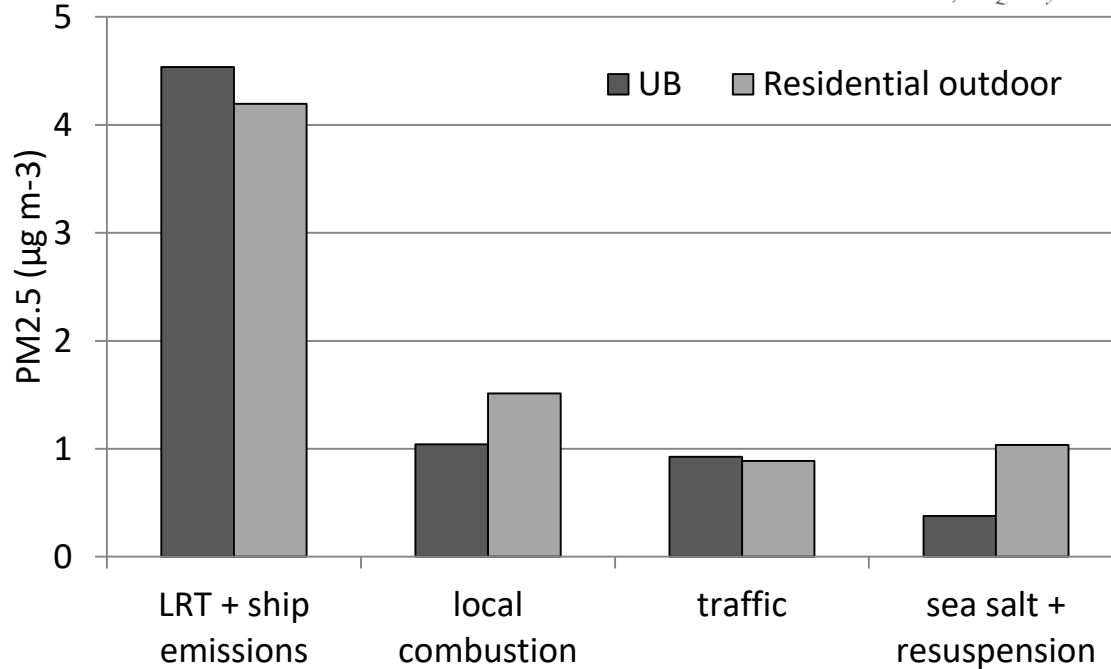
Factor contributions to PM_{2.5} for urban background and residential outdoor data

Source Apportionment of PM_{2.5} Using Positive Matrix Factorization (PMF) and PMF with Factor Selection

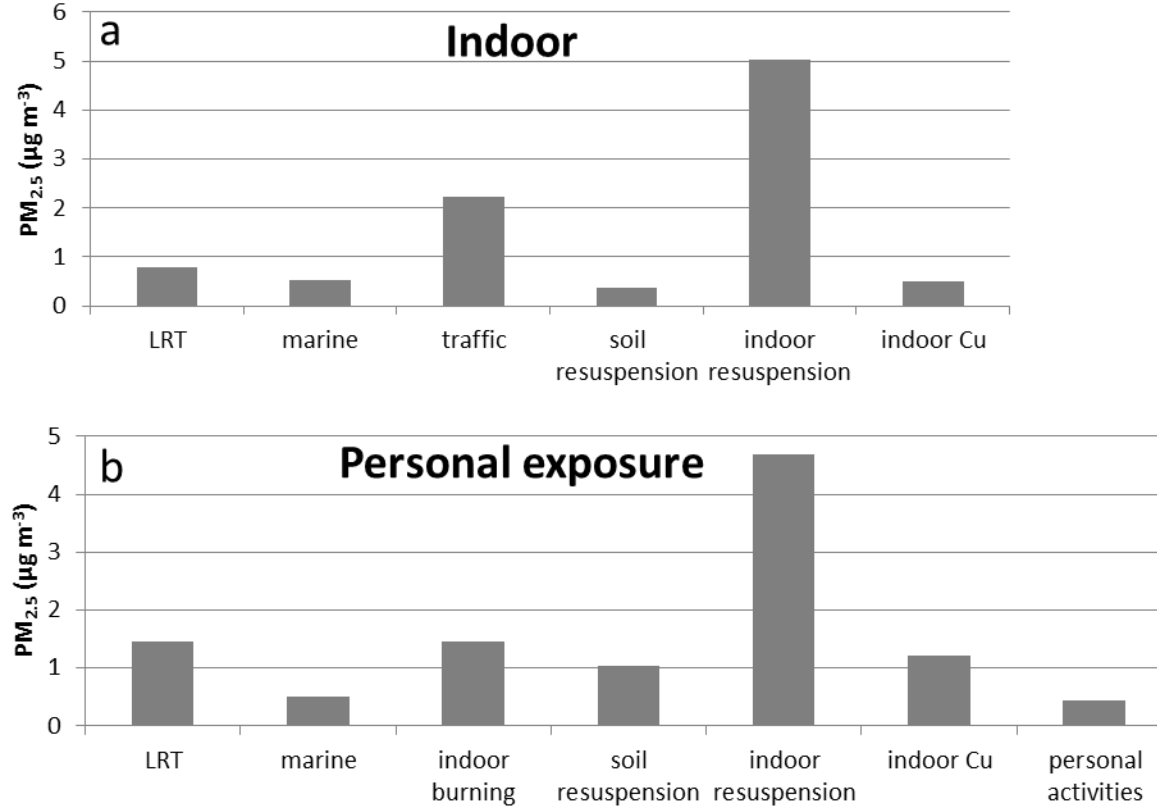
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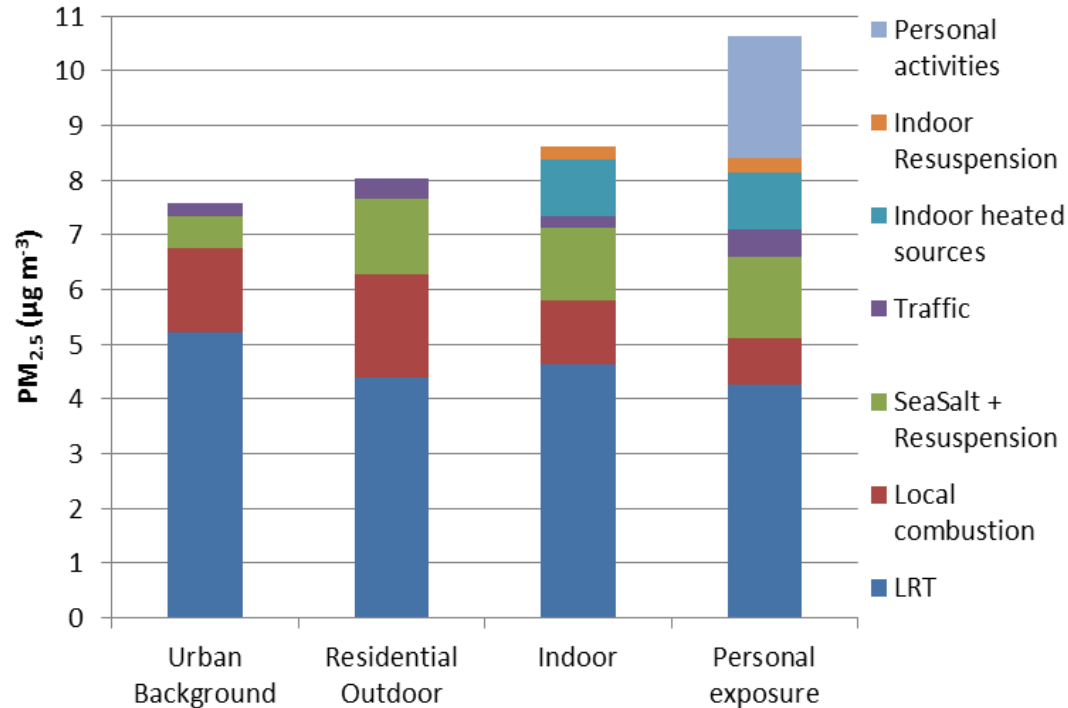
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Factor contributions to PM_{2.5} for indoor and personal exposure sampling



The contribution from the different factors in the Factor Selection model to each microenvironment.



Korrelation mellan olika källor i olika miljöer

Correlations between the different microenvironments and corresponding factors in the factor selection model. Correlations marked in bold are statistical significant ($p < 0.05$)

	LRT	Local combustion	Traffic	Sea salt + resuspension	Indoor resuspension	Indoor heated sources
UB vs Out	0.81	0.85	0.20	0.64	—	—
UB vs In	0.69	0.66	0.17	0.55	—	—
UB vs Pers	0.71	0.85	0.07	0.64	—	—
Out vs In	0.70	0.63	0.62	0.75	—	—
Out vs Pers	0.69	0.66	0.46	0.46	—	—
In vs Pers	0.73	0.73	0.26	0.61	0.94	0.65

Vad vi vet och inte vet

- Skiljer sig de inomhusgenererade luftföroreningarna väsentligt från utomhusgenererade avseende?
 - Kemisk sammansättning
 - Storleksfördelning
 - Benägenhet att reagera och omvandlas i kroppen
- Vi vet inte tillräckligt för att uttala oss om detta!
- Men i epidemiologiska studier är sambanden mellan utomhushalter och hälsoutfall (förvånansvärt) god