



# **Effect of woodstoves and fireplaces on indoor air quality**

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# Considerations

A well designed woodstove should not emit pollution into the indoor atmosphere, except possibly during refuelling

More scope for problems with open fires

One review and one experimental paper

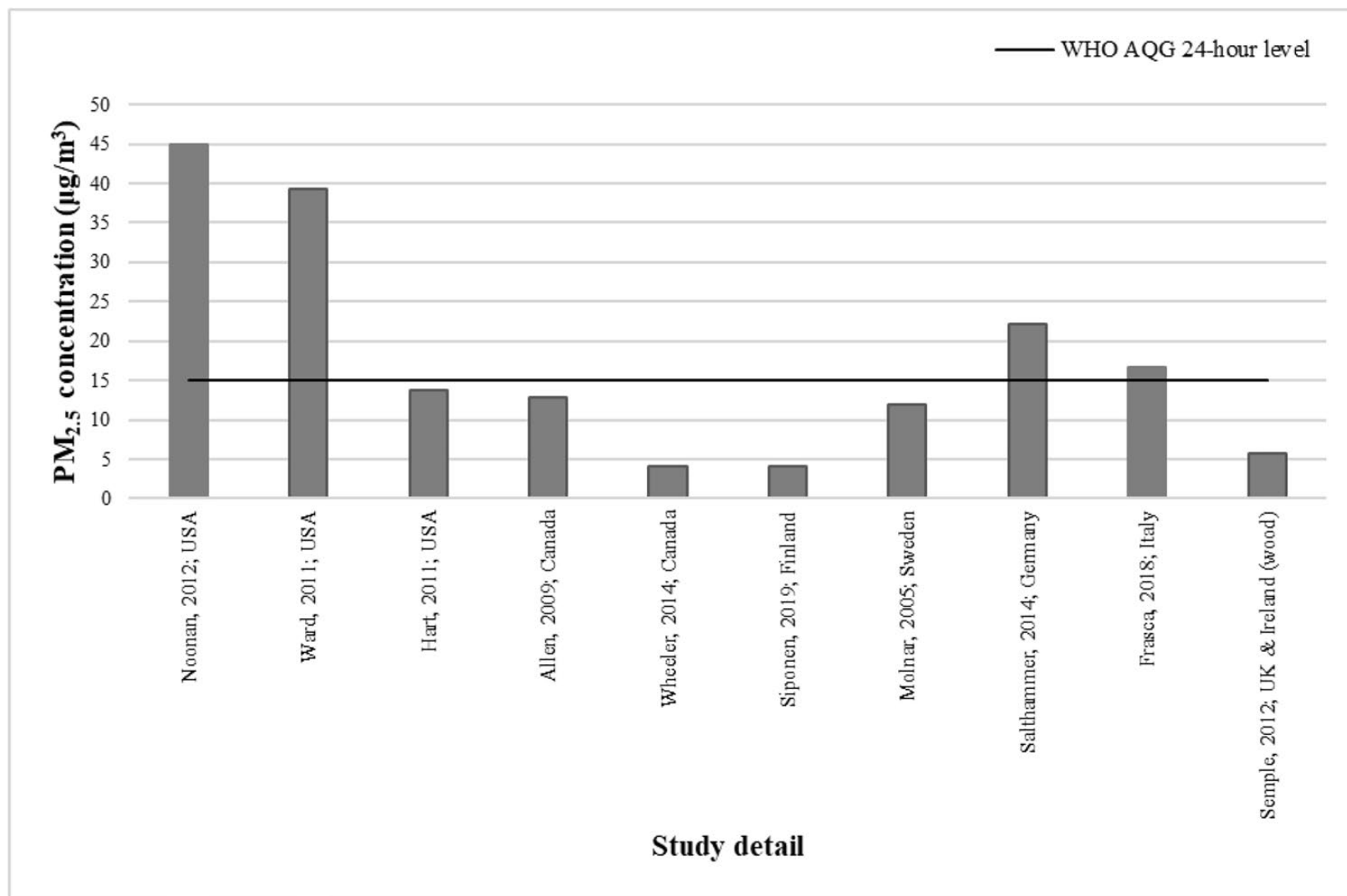
Key consideration: do the measurements take account of the indoor air background from other sources?



**Exposure to fine particulate matter (PM<sub>2.5</sub>) from non-tobacco sources in homes within high-income countries: a systematic review, Wei, S., Semple, S., *Air Qual. Atmos. Health*, 16, 553-566 (2023)**



## Studies that reported woodstove related PM<sub>2.5</sub> concentration in a 24-h period



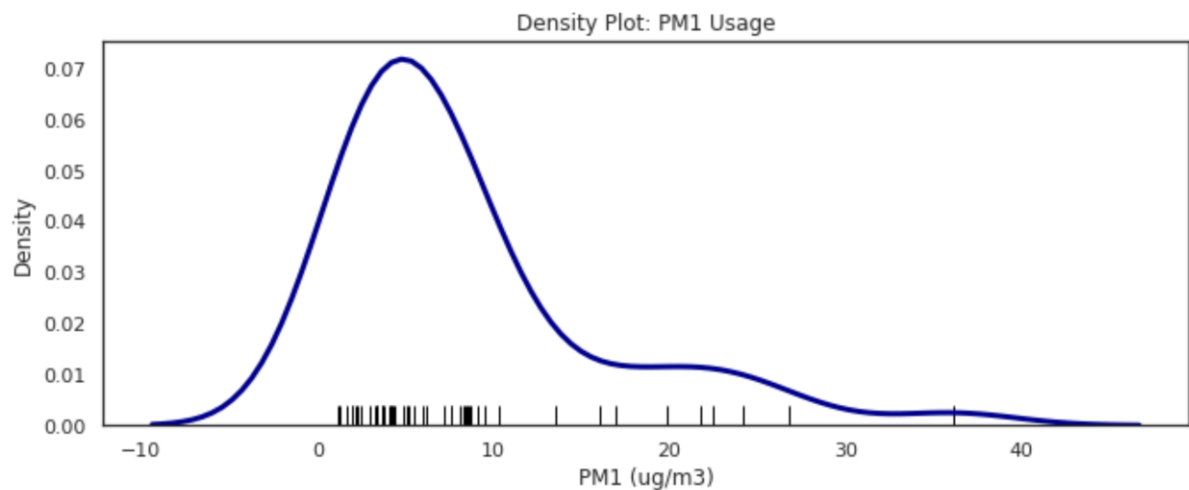
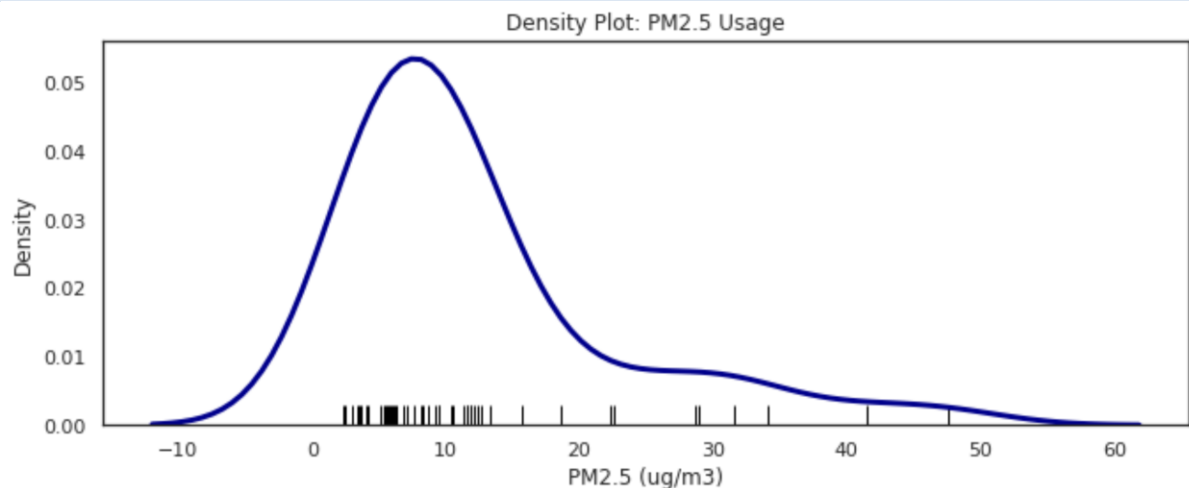
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**Indoor air pollution from residential stoves: Examining the flooding of particulate matter into homes during real-world use, Chakraborty, R., Heydon, J., Mayfield, M., Mihaylova, L., *Atmosphere*, 11(12), 1326 (2020)**



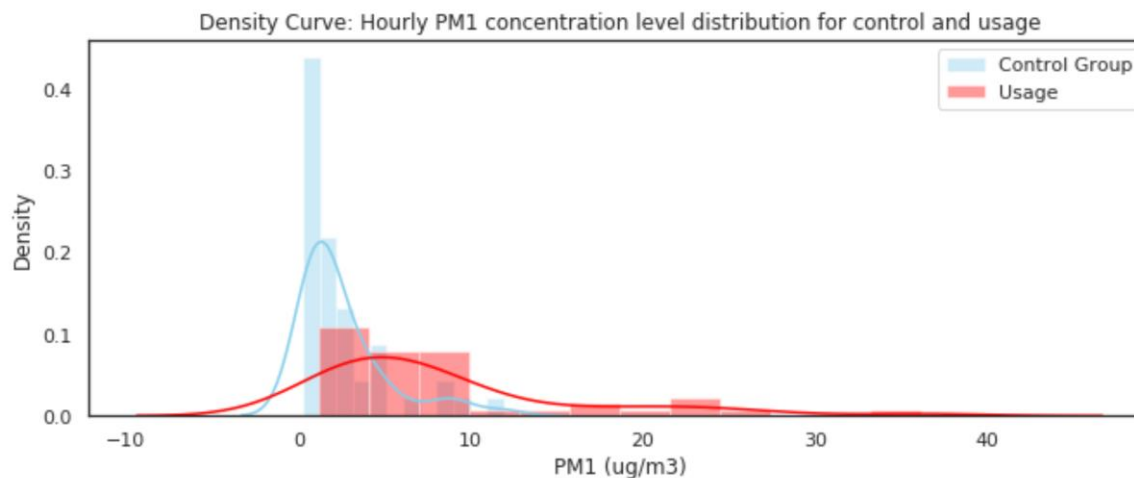
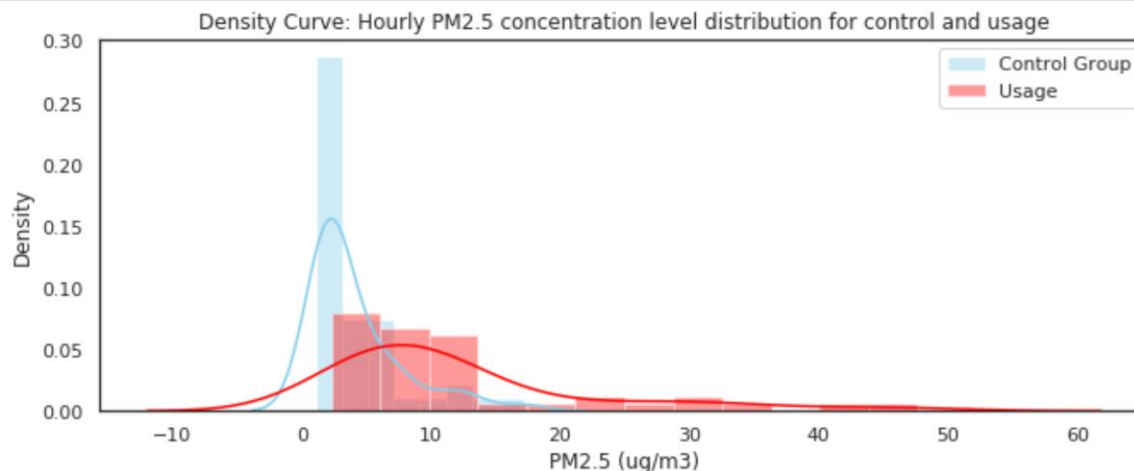
Conditional distribution density plot shows the overall indoor concentration levels during the usage of wood burners. (a)  $PM_{2.5}$  distribution; (b)  $PM_1$  distribution. Note. While the analysis includes the full range of data, for display purposes only the x-axis is truncated to  $60 \text{ g/m}^3$ .



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Control group compared to usage shows higher indoor concentration levels during the usage of wood burners with larger variation. (a)  $PM_{2.5}$  distribution comparison; (b)  $PM_1$  distribution. Note. While the analysis includes the full range of data, for display purposes only the x-axis is truncated to  $60 \text{ g/m}^3$



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# Conclusion

There is good evidence for indoor pollution arising from the use of woodstoves and fireplaces

Impacts upon particulate matter concentrations are modest

Other pollutants such as  $\text{NO}_x$  are unlikely to be significant, but have rarely been evaluated