WOOD COMBUSTION CONTRIBUTION TO PM: RESULTS FROM DIFFERENT WINTER CAMPAIGNS IN MILAN

Andrea Piazzalunga[1,*], Paola Fermo[1], Vera Bernardoni[2], Roberta Vecchi[2], Gianluigi Valli[2]

[1]*Dep. Inorganic, Metallorganic and Analytical Chem., University of Milan, Via Venezian 21, 20133, Milan (Italy)* - [2]*Institute of General Applied Physics, University of Milan, Via Celoria 16, 20133, Milan (Italy)*

[*]*Now: Dep. of Environmental Sciences, University of Milano-Bicocca, Piazza della Scienza 1, 20126, Milan (Italy); andrea.piazzalunga@unimib.it*

Recent studies report on the relevance of wood burning as a particulate matter (PM) source and on the identification of levoglucosan as a suitable marker for biomass burning emissions and their contribution to PM in ambient air. In Lombardy (Northern Italy), PM10 concentrations frequently exceed the EU daily limit of 50 $\mu g/m^3$ and estimates by the INEMAR emission inventory show that on average 28% of primary PM10 and 31% of primary PM2.5 can be ascribed to wood burning.

PM10 and PM2.5 samplings were carried out in Milan (35 samples in total) during three winter periods (years 2005-2006-2007). Levoglucosan and other anydrosugar compounds (mannosan and galactosan) quantification was carried out using HPAEC-PAD method. OC and EC were also quantified by TOT method. PM10 average mass concentration during the investigated periods was about 70 $\mu g/m^3$. OC concentrations were on average 10 $\mu g/m^3$, accounting for 15% of the PM10 mass; the average levoglucosan concentration was 400 ng/m^3 in Milan (i.e. 15% of OC). In Milan, the PM2.5 to PM10 levoglucosan ratio (0.85) suggested that wood burning mainly contributed to the fine fraction.

For a deeper insight on the wood burning impact on PM concentrations, we determined levoglucosan and other anydrosugar compounds in 4-hours resolved samples. Details on the measurement campaign and main results are reported in Vecchi et al. (2008). OC, EC and levoglucosan concentrations are shown in figure 1, where intra-day variations can be observed. In figure 2 the levoglucosan to OC ratio is reported, it is noteworthy that on average this ratio is higher during night-time (from 8 p.m. to 8 a.m.).

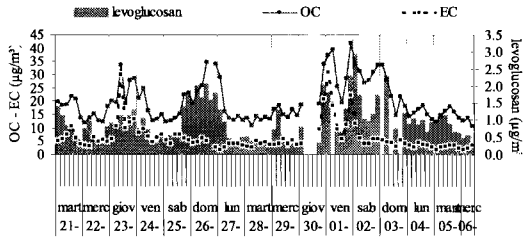

figure 1:

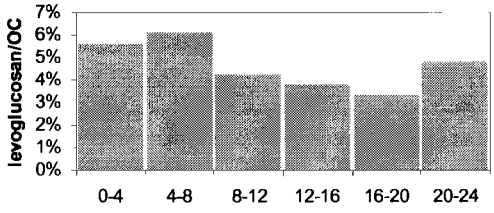

figure 2

Bibliography

Vecchi, R., Bernardoni, V., Fermo, P., Lucarelli, F., Mazzei, F., Nava, S., Prati, P., Piazzalunga, A., Valli, G. (2008). *Environmental Monitoring and Assessment,* in press

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