

Investigation of Particulate Matter Originating from Wood Combustion in Residential Areas



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Reviews

Thorough guide! Its this sort of excellent read. It is really simplified but unexpected situations in the 50 % in the book. You are going to like just how the blogger create this publication.

(Prof. Lela Steuber)

INVESTIGATION OF PARTICULATE MATTER ORIGINATING FROM WOOD COMBUSTION IN RESIDENTIAL AREAS



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Shaker Verlag Aug 2009, 2009. Buch. Book Condition: Neu. 21x14.8x cm. Neuware - During winter especially in residential villages, wood is used as a renewable fuel to a certain extent for room heating. Smoke emitted from wood burning in such areas can be a significant contributor to regional haze and high PM10 concentrations. Exposure to elevated levels of wood smoke is likely to have both short and long-term negative health effects. This includes the increasing risk of cancer caused by some of wood smoke compounds. Therefore, the objective of this study was to find a method to determine the contribution of wood smoke particles to the total PM10 load in residential areas. The developed method was applied during two winter seasons in two residential areas. From November 2005 to March 2006 particle-phase PM10 samples were collected in Dettenhausen near Stuttgart which is surrounded by forests of the 'Naturpark Schönbuch'. Within an UBA (Federal Environment Agency) project samples were also collected during winter 2006/07 in the residential site Bechtoldsweiler near Hechingen. These ambient air samples were collected on pre-baked quartz fibre filters and analysed by gas chromatography mass spectrometry (GC-MS). Forty-six different organic compounds were detected and quantified in this study including 16 US EPA priority pollutants (PAHs), different organic wood smoke tracers, primarily 21 species of syringol and guaiacol derivatives which result from the pyrolysis of wood lignin, a thermal degradation product of wood cellulose (e.g. levoglucosan) and resin acid (e.g. dehydroabietic acid). The concentrations of these compounds in ambient air were compared with the fingerprints of emissions from hardwood and softwood combustion carried out in test facilities at Universität Stuttgart and field investigations at a wood stove during real operation in Dettenhausen. It was observed that in the ambient air PM10 samples the wood combustion PARs were detected in higher concentrations...

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