

Interactive comment on “Relationships between size-fractionated indoor and outdoor trace elements at four retirement communities in Southern California” by A. Polidori et al.

Anonymous Referee #2

Received and published: 8 June 2009

General Comments

The authors have done an exhaustive chemical characterization of ambient and indoor aerosol concentrations in 3 size ranges at four sites. This paper provides an extensive data set to examine the infiltration of coarse, fine and ultrafine particles into the indoor environments. Indoor concentrations of particulate matter are crucial because people spend more than 80% of their time indoors, and are especially important for susceptible subpopulations, in this case the elderly. It was found that Sulfur may not be an especially good tracer for west coast sites because its penetration efficiency is high with regards to the rest of the accumulation mode, and its deposition rates are slower than

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other particle types. In addition, many semi-volatile species, the prime example being ammonium nitrate, may evaporate indoors due to the low concentrations of the corresponding gas phase species. The results of descriptive paper like this are instructional. The authors need to decide if this is an overview paper or is it an attempt to build a case for using another tracer besides Sulfur for these studies. If the former is the case, more quantitative effort needs to be made between trace elemental concentrations and sources. Coupling these results with a receptor model would be beneficial. If it is to build a case for another tracer, then the discussion needs to be tightened to focus only on sulfur and then propose from the quantitative analysis of the other TE data which one would be better served for this purpose. If the authors want to make the case that vaporization of aerosol components are important, data showing lower I/O ratios and Ss for NH_4NO_3 might do it.

Specific comments

The data in Figure 2 are quite difficult to read. Because there is so much data presented, deciding above which tack to take will perhaps clear this up.

Page 4938 lines 1-4. What were the AERs calculated for each of the buildings? How were k's calculated?

Page 4940 lines 24 through 26. Relatively short residence time of which size fraction? Coarse particles have a short residence time. So do ultrafines. Which size range is being discussed here?

Page 4943 lines 13 and 14. This sentence should be near the calculation of EF, perhaps line 9.

Interactive comment on Atmos. Chem. Phys. Discuss., 9, 4931, 2009.

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