

Author's response to reviews

Title: Serum PCB levels and congener profiles among US construction workers

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Responses to review comments

Reviewer #1

Concerning the comment about comparison to age – matched reference values, we have done that to extent possible in the tables, but the age range of our referents goes only to age 51, so we do not have exact comparison values for the older study subjects. We have compared them with the closest age-matched values among the referents. We believe these are the most appropriate comparison subjects, as they are men residing in the Greater Boston area (as do the study subjects), and their serum levels were measured in the same laboratory as the 6 construction workers.

Reviewer #2

1. On the comment about the use of the term “substantial differences”, we would prefer to use this term, as it avoids any statement about the statistical significance of the differences. We do not think it is valid to test for differences, for example, in mean values between datasets that vary so greatly in size, particularly when our subject dataset is so small ($n=6$). We have added the following text in the results section: *We did not test for statistically significant differences between datasets since the construction workers’ dataset was small ($n=6$). Instead, we presented results in figures and tables to highlight the differences.*

On the question about alternative sources of the low molecular weight congeners, such as a recent fish meal, we do not have detailed diet information on the 6 construction workers or the 358 referents, but we think it is very unlikely that the differences in the congener patterns are attributable to diet. First, the likelihood that all 6 construction workers had a fish meal more recently than did the referents seems small. Second, our reading of the literature makes us think that the effect of seafood consumption would most likely be seen in serum levels of the more highly chlorinated congeners, not the lower chlorinated PCBs that we observed in the construction workers. A recent publication by Freels, S. at al., Congener profiles of occupational PCB exposure versus PCB exposure from fish consumption, Chemosphere online, suggests that the greatest differences in relative proportion between people with occupational exposures and fish eaters were seen for PCB 74 (greatest in workers) and PCB 180 (greatest for fish eaters).

2. In order to present the data in such a way that the differences in both congener levels and patterns are clear, we have made the following changes. We have added a new Figure 2 which displays the congener profiles by percent of the total for both the subjects and the referents. So now there are companion figures that compare the congener profiles between subjects and referents, Figure 1 by serum concentration, and Figure 2 by percent contribution. In response to the reviewer’s suggestion, we have added a new table 2 that includes the information the reviewer requested. We have not modified figures 3 and 4 as the reviewer suggested, as the information on % contribution by congener is already presented in Figure 2 (now renumbered as Figure 3).

3. Our studies of buildings, as well as those conducted by other investigators in the US and Europe suggest that Aroclors 1254 and 1260 are the PCB formulations most likely to be found in building caulk. It is correct that the portion of the total PCB mix comprised of the lower chlorinated congeners is generally 5% or less for each congener up to PCB

74. However, our data and that collected by others who have studied exposures to people who occupy or work in, or conduct renovations on these buildings consistently show that these di-, tri-, and tetra-chlorinated congeners are elevated in serum, possibly because of their greater volatility (our references 6 and 7).

5. On the matter of the measurement of serum lipid levels, we used the gravimetric determination. We agree that subjects 1 and 2 are on the low side (0.12 and 0.24%), compared to normal lipid levels we see, which are 0.5-0.6% lipids. Samples #4 and 5 are on the high side of the range, at 0.9 and 0.8%. We are not concerned about the validity of these measurements.

6. For both the subjects and the referents, we used zero for nondetectable values in calculating summary statistics.

Reviewer #3

1. Comments 1-4 no response needed.

5. On the format of the presentation of the results, we have made the recommended changes.

6. The recommended change to the abstract has been made

Discretionary comment: the recommended change has been made, language added to background section.