Review: PCB Levels in a Community with Exceptional Exposure to DDT, Triana, Alabama

by K. Kreiss et al.

This is a report of a cross-sectional study of 458 people in a "community" study in Triana. There is no indication of how the people were selected, that is, whether they were volunteers, what the refusal rate was if they were not volunteers, etc. Therefore the levels of PCB found may or may not be representative. However, the study is concerned with the relationship between PCB levels and other parameters, so I don't think the method of choosing the study group is really likely to affect the results.

Some of the findings are of descriptive interest but are not studies of health. For example, the authors find that PCB levels are a function of age, sex, fish consumption and alcohol consumption, and are associated with DDT levels.

There are three findings which might be considered to be health-related. All three of them were found by using a multiple regression technique. In brief, this is a technique which measures the contribution of each of several variables (in these cases age, sex, obesity, etc.) to the prediction of some outcome variable (blood pressure, serum cholesterol, liver enzymes, etc.) when the effects of the remaining variables are taken into account. For example, we know that older people have higher blood pressure, and obese people have higher blood pressure. But since older people tend to be more obese, one cannot tell from the above two facts whether or not the higher blood pressure in obese people is due simply to their being older. The regression technique (Table 2, for example) shows that age is more important than obesity, but that obesity has an effect over and above what is due to its association with age.

The three findings, that PCB level is associated with blood pressure, a liver enzyme, and with serum cholesterol, are set forth in Tables 2 to 5. Variables which are not listed in these tables, such as length of residence and race, were not found to be statistically significant predictors of these three outcome variables.

The relevant column in each table is the right hand one, labelled R^2. This is the proportion of the total observed variation in the outcome variable which is explainable by each of the predictors. For example, Table 2 tells us that 35.5 percent of the observed variation in systolic blood pressure was explainable by age, 0.7 percent by PCB level, and that all the factors measured together explained only 40.8 percent of the observed variation in systolic blood pressure.

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The "contribution" of PCB level to the other outcome variables are: diastolic blood pressure, 6.3 percent, gamma-glutamyl transpeptiduse, 1.9 percent, and serum cholesterol, 1.1 percent.

The weakness of this type of analysis, in this particular study, is that most of the observed variation in the three outcome variables is unexplained by all the predictors taken together. In other words, most of the variation is due to some factor or factors which were not measured. This makes me suspect that if some of those factors were measured, the significance of the PCB contribution, which is minimal at best, might disappear.

One set of findings which is glossed over and not mentioned in the summary is that none of the following were found to be related to PCB level; prevalence of illness, loss of weight, use of medical care or medications, heart disease, or reproductive abnormalities.

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