Estimating the half-lives of PCB congeners in former capacitor workers measured over a 28-year interval

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• Aims
  – To determine the half-lives of PCB congeners of occupational origin in the serum of former capacitor workers
    • part of a study conducted in 2003-2006, i.e. approximately 28 years after their last occupational exposure
  – To further understand the toxicological/epidemiological consequences of exposure to PCBs in humans
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• Methods
  – 241 persons from a source population of 6798 former capacitor workers were interviewed and asked to donate a blood sample for serum PCB congener analysis
  – A subgroup of 45 participants also had serum archived from 1976 and reanalyzed for the same 27 PCB congeners by the same laboratory
  – Half-life computations were restricted to those congeners that were occupational in origin: PCB-28, 74, 118, 105, 156
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• Results
  – Estimates of the half-lives of the congeners among the 45 persons were longer than those reported by Wolff et al. (1992), due primarily to the much longer interval between exposure and determination of serum PCB concentrations
  – Half-lives were significantly greater for:
    • the heavy versus light occupational congeners
    • women versus men and
    • those with low versus high initial exposure
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• Results (cont’d)
  – Current serum total PCB concentrations, expressed as the geometric mean of wet weight data, averaged 6.7 ng/g for the entire 241-person cohort
    • This represents a 10-fold decrease from values reported in the late 1970s, but is still nearly twice the average for persons of similar age residing in the same area but without occupational exposure
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• Results (cont’d)
  – Current serum PCB concentrations remained significantly and positively associated with earlier occupational exposure, but were not associated with fresh water fish consumption.
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• Conclusions
  – Results support a consistent and long-duration trend of increased PCB body burden in this cohort of former capacitor workers compared with non-occupationally exposed individuals