

Health Studies of Volatilized PCBs

CAG Meeting
January 27, 2005

Epidemiological Study Types

- **Group** – ecological approach – observe statistical patterns to identify potential relationships and develop “hypotheses” for further study.
- **Prospective** – following people over time.
- **Retrospective** – looking at people today who were exposed in the past.
- **Case control** – comparing individuals with specific diseases to controls.

Epidemiological Studies

- Epidemiological studies that combine exposure data, outcome data (disease), or both for large geographic areas and *not for individuals*.
- Exposures measured within geographic areas are applied to all persons living in the areas assuming the geographically defined exposures reasonably represent those exposures of all people in an area.
- Considered the weakest type of epidemiological observational studies.
- Ecologic studies alone cannot provide direct evidence of disease causation.

Sources of Study Data

- Hazardous waste sites in New York identified by EPA, NYSDEC, and the International Joint Commission
 - Organized by zip code (excluding New York City)
 - Zip codes characterized as “contaminated,” “other waste,” and “clean” based on the presence of persistent organic pollutants (POPs) at sites
- 1990 Census per capita income by zip code

Sources of Study Data, cont.

- Statewide Planning and Research Cooperative System (SPARCS) maintained by the NYS Department of Health
 - Database system reports all diseases diagnosed for in-patients upon discharge from 1993 to 2000
 - Patient information includes International Classification of Disease (9th revision) codes, age, sex, race, and zip code

SUNY – Albany Study Conclusions

“These observations are consistent with the possibility that living near a POPs*-contaminated site poses a risk of exposure and increased risk of chronic respiratory disease, probably secondary to suppression of the immune system.”

*Persistent Organic Pollutants POPs include PCBs and persistent pesticides

SUNY – Albany Study Statements

- “Another major limitation is that we have no information from SPARCS on socioeconomic status nor behaviors which might pose risks for a particular disease.” [In particular, smoking, or second hand smoke.]
- “While these patterns might reflect suppression of the immune system in residents living near to POPs-contaminated sites, they also may be a reflection primarily of socioeconomic status.”

SUNY – Albany Study Statements

- “The results obtained are consistent with the hypothesis, although they do not constitute proof. The most serious limitation of these studies is the exposure assessment. Living in a zip code that contains or abuts a POPs-contaminated site is a very crude way to assess exposure, since zip codes are large and irregular in shape.”
- “Lower income has been shown to be a predictor of ill health and socioeconomic status may explain some of the differences we have found.”

EPA's Analysis of Respiratory Effects of PCBs

- “... Some of these studies examined workers who had some occupational exposure to Aroclor 1016, but in these studies concurrent exposure to other Aroclor mixtures nearly always occurred, exposure involved dermal as well as inhalation routes (the relative contribution by each route was not known), and monitoring data were lacking or inadequate (Fischbein et al., 1979, 1982, 1985; Fischbein, 1985; Warshaw et al., 1979; Smith et al., 1982; Lawton et al., 1985).” From IRIS

ATSDR's Analysis of Respiratory Effects of PCBs

- The Agency for Toxic Substances and Disease Registry also highlighted a study conducted in 1986 that concluded that self-reported respiratory effects was not elevated among residents who lived within 0.5 miles of three PCB-contaminated waste sites (Stehr-Greet et al., 1986).

Conclusions

- SUNY-Albany study provides “hypotheses”. Lacks specific information on exposure.
- EPA has evaluated a number of other studies on the effects of PCBs on the respiratory system and concluded there is limited exposure information.
- Quality of Life standard for PCBs in air is protective.