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Development of a Chlorinated Solvent Exposure Data Base for Use in Case-control Studies

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Case-control studies rely on the use of questionnaire data such as job titles and task descriptions to rank or assign exposure estimates to study subjects. For case-control studies where detailed exposure information has been collected by job for specific exposure agents, quantitative subject-specific exposure estimates can be developed using a variety of information sources. NIOSH and NCI are both conducting case-control studies of gliomas in adults, for which the etiology remains ambiguous (except for risk due to ionizing radiation). These case-control studies collected detailed information on job title, industry classification, processes, tasks, activities, chemicals, other materials used, and use of protective equipment for every job in a participant's work history, including for some jobs process-specific and exposure-specific questions. We have developed an exposure levels and exposure determinants data base for chlorinated solvent exposures to be used in these studies.

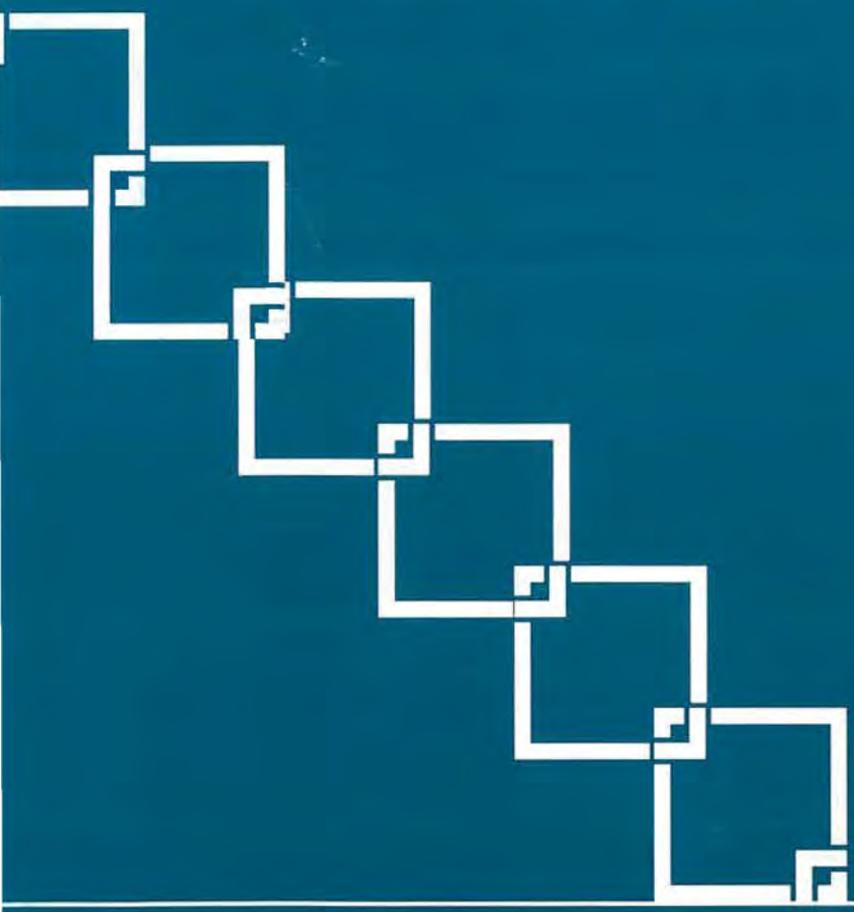
This data base has been compiled with exposure information from the primary literature, NIOSH Health Hazard Evaluations and Industrywide Studies reports, compliance data from the Occupational Safety and Health Administration, and other published sources. Variables include industrial process, job title, airborne exposure levels (arithmetic and geometric means), variability of exposures (geometric standard deviations), and exposure-modifying factors such as engineering controls, industrial process properties, the use of personal protective equipment, and opportunity for dermal exposure. Presented here are data for six chlorinated solvents with hypothesized linkages to brain cancer: perchloroethylene, chloroform, methylene chloride, tetrachloroethylene, 1,1,1-trichloroethane, and carbon tetrachloride, by era, from 1940s to present time. This is the first comprehensive occupational exposure levels and exposure determinants data base for these agents. These data will be used with determinant modeling to develop subject-specific solvent exposure estimates for the current NIOSH and NCI glioma case-control studies. The data base should improve the accuracy of the exposure estimates, reduce misclassification, and improve comparability of exposure estimates and exposure assessment methods across these studies, as well as serve as a resource for other epidemiologic studies.

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