Two general indices of asbestos exposure are available for use in direct epidemiologic studies of groups not known to be occupationally exposed to asbestos. The first is based on knowledge of each member's place of work and place of residence. Because of the long latent periods of asbestos-related disease, this knowledge must cover each person's whole lifetime. The second is a quantitative estimate of each member's lung content of asbestos fibers. There are few such direct epidemiologic studies, and they are inadequate to answer the questions at issue.

Of 42 persons with mesotheliomas reported in Pennsylvania, 10 had worked in asbestos plants, 8 lived or worked close to an asbestos industry, and 3 were members of families that included asbestos workers; in 11, no history of exposure could be obtained, and the remaining 10 had questionable random exposures. On 165 fatal malignant mesotheliomas known to pathologists in Canada between 1959 and 1968, an association was confirmed with occupational exposure to asbestos, but suggests that the excess was in the manufacture and industrial application of asbestos, rather than in mining and milling. It is apparent that no quantitative conclusions were possible from these studies, which present serious methodologic problems to the epidemiologist. They suggest a risk in household contacts and in residence in the immediate neighborhood of asbestos plants. There appear to be different levels of risk in different types of occupational exposures, and some of these may be reflected in corresponding household and neighborhood experience.

Another source of evidence of the relative risks associated with inhaling moderate or small numbers of asbestos fibers is the experience of persons who have had occupational exposures below those known to be definitely hazardous. The maximal airborne fiber concentrations recommended for prevention of asbestosis are much higher than any likely to be encountered in nonoccupational situations. Occupation-related asbestosis can be effectively controlled with airborne fiber concentrations much higher than are likely to be encountered in non-occupational situations. It is important to determine whether workers whose exposures have been reduced to levels that prevent or greatly delay asbestosis, as well as others whose exposures are indirect, have a lower risk of lung cancer than those with higher and more direct exposures.

Most series of case reports of mesothelioma include some persons who have worked in the construction or shipbuilding industries, but in trades not involving direct contact with asbestos. Such persons as plumbers, electricians, and metal workers often have more ferruginous bodies in their lungs than do white-collar workers. A study of occupational groups in California revealed an excess of deaths from lung cancer in insulation workers, but found no excess lung-cancer deaths in other construction trades. There may be a definable gradient of effect within the construction trades. More thorough studies of groups with indirect exposures are certainly needed.