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differences in study design and method of data collection which could well explain the discrepancies in the findings of these reports. The authors' classification of these differences as minor may well have led them to what we believe to be an overstatement of the conclusion, ie, "... the positive results of Kantor et al, Peters et al, van Steensel-Moll et al, along with those of Fabia and Thuy establish the hypothesis of hydrocarbon and lead exposed jobs being potentially hazardous... in pregnancy."

The expectation that Wilms' tumour and brain tumours and leukaemia and all cancers, respectively, will have the same risk factors seems somewhat unreasonable on both biological and epidemiological grounds. A factor of primary importance, namely, timing of exposure, ie, prenatal versus postnatal, has received inadequate attention and may well differ for different types of cancer and for age when a given childhood cancer is diagnosed. We must also realise that specific exposures are not actually measured in these studies, but rather associations are reported with parental occupations that are believed to have had the exposures reported. Further, occupation and occupational exposures are ascertained by different methods (records, interviews, birth certificates) in different studies. These last two considerations may well lead to potential severe inaccuracies in assessing exposure. With this in mind, the fact that differing occupations have been reported in positive association with different cancers, and that nearly as many studies show no such associations, the most likely interpretations might well be that each of these differing findings is explicable on the basis of chance or due to the differing methodologies used or different cancers studied.

We agree with Arundel and Kinnier-Wilson in their final statement that "large numbers of cases and better information on both histological diagnosis and parental occupation exposure will be necessary." We would add that by investigating hypotheses more clearly defined with respect to timing of exposure, and by restricting comparisons to specific cancers, more meaningful information will be obtained about the role of parental occupation in cancers in children.

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References


The authors reply as follows:

It is a matter of opinion whether the differences of methodology used in studies of the association between parental occupational exposures and childhood cancer should be called major or minor. However, I would take issue over two points raised by Drs Gold and Shaw concerning our recent paper in the Journal.

Firstly, they consider our expectation that different neoplastic categories (Wilms' tumour, brain tumours, and leukaemia) might have the same risk factors to be "somewhat unreasonable on both biological and epidemiological grounds." According to the Oxford Survey of Childhood Cancer approximately 5% of all children's neoplasms are caused by prenatal x rays, and ratios of spontaneous to radiogenic cancers are the same for four subgroups of haemopoietic neoplasms and six types of solid tumours. Judging by these observations, the cancer effect of prenatal irradiation (the only certain cause of childhood cancer) is non-specific. Therefore it is reasonable to expect that this might also be true of other causes of these diseases.

Secondly, Drs Gold and Shaw seem to think that "a factor of primary importance, namely, timing of exposure, ie, prenatal or postnatal, has received inadequate attention." In the Oxford Survey the age distribution of x rayed and non-x rayed cases has been extensively studied. The results show that the third trimester of pregnancy is a relatively late date for initiating a cancer which occurs within the first ten years of life. Therefore, although postnatal exposures to radiation may have a cancer effect, this will show not in childhood but in adolescent or early adult life. Again it is reasonable to suppose this to be true of other causes of cancer.

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