

Age standardization of X-ray readings

Inasmuch as the prevalence of X-ray abnormalities reflects various assaults to the lung (separate from that under study) that accrue overtime, it is necessary to consider age in comparisons of groups exposed to asbestos in different circumstances. Any age effect can, in part, be due to unknown exposures to various dusts, including asbestos, the opportunities for which increase with time. Additionally, any dust-related changes progress with time and the manifestation of relatively minor exposures early in life can be significant in later years. As discussed previously, a selection criteria for the exposed and control groups resulted in study populations that had similar age distributions. However, to more accurately take into account any age effect, the overall percentages of X-ray abnormalities were standardized to the age distribution of all 983 individuals for whom readable X-rays were available. A standardized percentage, P_{std} , was calculated using equation (1).

$$P_{std} = \sum_i P_i N_i^T / 983 \quad (1)$$

Where P_i is the percentage of abnormal X-rays in the i th age category of the group of interest and N_i^T , the number of all 983 individuals in the i th age group. For a group having an age cell with no data (insulation/factory, other) standardization was based on those cells with data using equation (2).

$$P_{std} = \sum_{\text{avail } i} P_i N_i^T / 983 \left[\sum_{\text{all } i} P_i^T N_i^T / \sum_{\text{avail } i} P_i^T N_i^T \right] \quad (2)$$

Where P_i again equals the percentage of abnormal X-rays in the i th age category of the group of interest and N_i^T , the number of all 983 individuals in the i th age category; P_i^T is the percentage of abnormal X-rays among all 983 individuals in the i th age category. These overall age-standardized percentages are shown in Table 13. The difference between the individuals performing brake work and those with no identified asbestos exposure remains, while the percentage of abnormalities in those employed in a garage but not engaged in brake repair work