Abstracts

Oral Session 6 – Cancer and asbestos

O6.1 FRACTION OF DEATHS FROM LUNG CANCER ATTRIBUTABLE TO OCCUPATIONAL ASBESTOS EXPOSURE AMONG FRENCH MEN IN FRANCE DURING THE PERIOD 1970–2000

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Introduction: Estimating the number of deaths attributable to specific exposure is important for the definition of public health and prevention strategies. This is particularly valuable in health surveillance in order to help in the recognition of and compensation for work related diseases.

Objective: To estimate the fraction of deaths from lung cancer attributable to occupational asbestos exposure in the French male population, for the period 1970–2000.

Methods: A representative sample of the French male population was constituted from controls of 15 case–control studies. For each subject, his job history was known and his history of asbestos exposure was reconstructed by crossing the latter with a French job exposure matrix. The expected number of lung cancer deaths without exposure (A) was computed from the French specific mortality data. The number of deaths including the effect of exposure (B) was estimated by using the same mortality rates multiplied by the relative risk (RR) associated with exposure (being considered as ever versus never). As reported in previous studies, two different values of this RR were assumed: (*a*) 1.5, or (*b*) 2.3. The attributable fraction was then: (b−a)/b.

Results: For the period 1970–2000, 7878 men were included in our sample, accounting for 300 690 person years at risk. The mean age for total person years was 47 years; 35.6% had a non-zero cumulative asbestos exposure. The expected number of lung cancer deaths without exposure was 24.8. According to the assumed RR, the expected number of deaths (taking into account exposure) was respectively 29.5 (*a*) and 37.1 (*b*), with an estimated attributable fraction of 16% (*a*) and 33% (*b*), respectively.

Conclusions: When applying this fraction to the total number of lung cancer deaths among French male in year 2000, between 3150 and 6500 deaths should have been attributable to occupational asbestos exposure. This figure is much higher than the annual number of cases of lung cancer recognised and compensated as asbestos related occupational diseases in France (331 in 1999).

O6.2 RISK OF GASTROINTESTINAL CANCER IN LIGHTHOUSE KEEPERS EXPOSED TO ASBESTOS IN THEIR DRINKING WATER

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Introduction: There has been public concern about the possible adverse health effects associated with the presence of asbestos fibres in drinking water. Previous studies have with some degree of consistency indicated an elevated risk for cancer of the stomach, pancreas, and kidney. Since approximately 1948, a proportion of Norwegian lighthouses were covered with asbestos cement tiles on the roof and walls, and the water supply came from cisterns lined with asbestos cement tiles. In the early 1980s, analyses showed high levels of asbestos fibres in the drinking water.

Method: A cohort of 709 lighthouse keepers first employed before 1966 was classified according to asbestos exposure status, linked to the database of the cancer registry, and followed from 1953–2001. The number of new cancer cases in the cohort was compared to the expected number in the male rural population. Standardised incidence ratios (SIR) were computed, and 95% confidence intervals (CI) estimated assuming a Poisson distribution of the cases.

Results: During the almost 50 years of follow up a total of 185 new cancer cases were diagnosed in the cohort (SIR 1.0; 95% CI 0.9 to 1.2). The risk of stomach cancer in the whole cohort was slightly higher, with an SIR of 1.4 (95% CI 0.9 to 2.0). For those with certain asbestos exposure, SIR was 2.3 (95% CI 0.9 to 5.1), and in the group with 20 years or more since first possible exposure, SIR was 1.9 (95% CI 1.2 to 2.9) for stomach cancer. No elevations in risk were found for pancreatic or kidney cancer.

Conclusions: The present results support the hypothesis that asbestos contaminated drinking water may increase the risk of stomach cancer.

O6.3 INCIDENCE OF MESOTHELIOMA IN FORMER MINERS AND MILLERS OF CROCIDOLITE AT WITTENOOM AND IN RESIDENTS OF THE TOWN

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Objective: To report the incident number of malignant pleural and peritoneal mesotheliomas that have occurred in former Wittenoom crocidolite workers, and in residents of the town of Wittenoom who did not work at the mine or mill, to the end of 2000, and to compare the number in former workers with earlier predictions.

Methods: A group of 6493 men and 415 women who had worked at the former Wittenoom crocidolite mine and mill at some time between 1943 and 1966 have been followed up throughout Australia and Italy to the end of 2000. A group of 4770 residents of the town of Wittenoom, who did not work at the mine or mill, have also been followed in cancer and death registries.

Results: The cumulative number of mesotheliomas up to 2000 was 235 in men and 7 in women who had worked at the mine or mill. There were 60 mesotheliomas in the residents of the town. There have been 224 deaths from mesothelioma in the male workers up to 2000, compared with previously predicted numbers of between 234 and 320 which were based on 84 mesotheliomas that had occurred up to 1986.

Conclusions: The number of deaths in men with mesothelioma between 1987 and 2000 was at the low end of the predictions made earlier based on the number of cases to 1986. If this trend continues, then it is predicted that approximately another 110 deaths with mesothelioma will occur in men by 2020. Although this is fortunately not as high as the earlier predictions, there remains a significant continuing toll amongst the former workers of the Wittenoom mine and mill, which closed over 35 years ago, and among residents of the nearby town of Wittenoom.

O6.4 MESOTHELIOMA IN GREAT BRITAIN FROM 1968 TO 2001 AND BEYOND

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Introduction: Since 1968, the Health and Safety Executive has maintained the British mesothelioma register. We present here an updated estimate of the future burden of mesothelioma mortality in Great Britain, based on data to 2001, together with summary statistics of observed deaths which incorporate geographical (standardised mortality ratios; SMRs) and occupational (proportionate mortality ratios; PMRs) analyses.

Methods: All death certificates from England, Scotland, or Wales mentioning the word ''mesothelioma'' were included in the register, and additional completeness checks were carried out. Projected numbers of future mesothelioma deaths were estimated via Poisson regression modelling, with parameters included for the growth and decline of collective asbestos exposure, age at exposure, the proportion of cases diagnosed, the minimum lag time in years before cases occured, the half life for asbestos clearance from the lungs, and the exponent of time since exposure. Values were assigned to parameters using an iterative numerical approach based on minimising the total deviance of the model. The effect of the assumptions and the modelling approach were explored via sensitivity analyses. Mesothelioma deaths were assigned to geographic region on the basis of place of residence at time of death, and to occupational groups by the occupation recorded on the death certificate (usually the last occupation).

Results: The annual number of mesothelioma deaths in the UK has increased from 153 in 1968 to 1848 in 2001. The peak in mesothelioma mortality is expected to involve between 1950 and 2450 deaths and to occur between the years 2011 and 2015. The areas with the highest SMRs remain those associated with high asbestos exposure in the past, in particular the shipbuilding and railway industries. Results of the occupational analysis are consistent with work in shipbuilding and construction having the highest risk.

Conclusions: The number of mesothelioma deaths in the UK is still increasing and is expected to do so for another 10 years or so. There is a tendency for an increasing proportion of the cases to occur in building and maintenance trades, rather than in manufacturing jobs.