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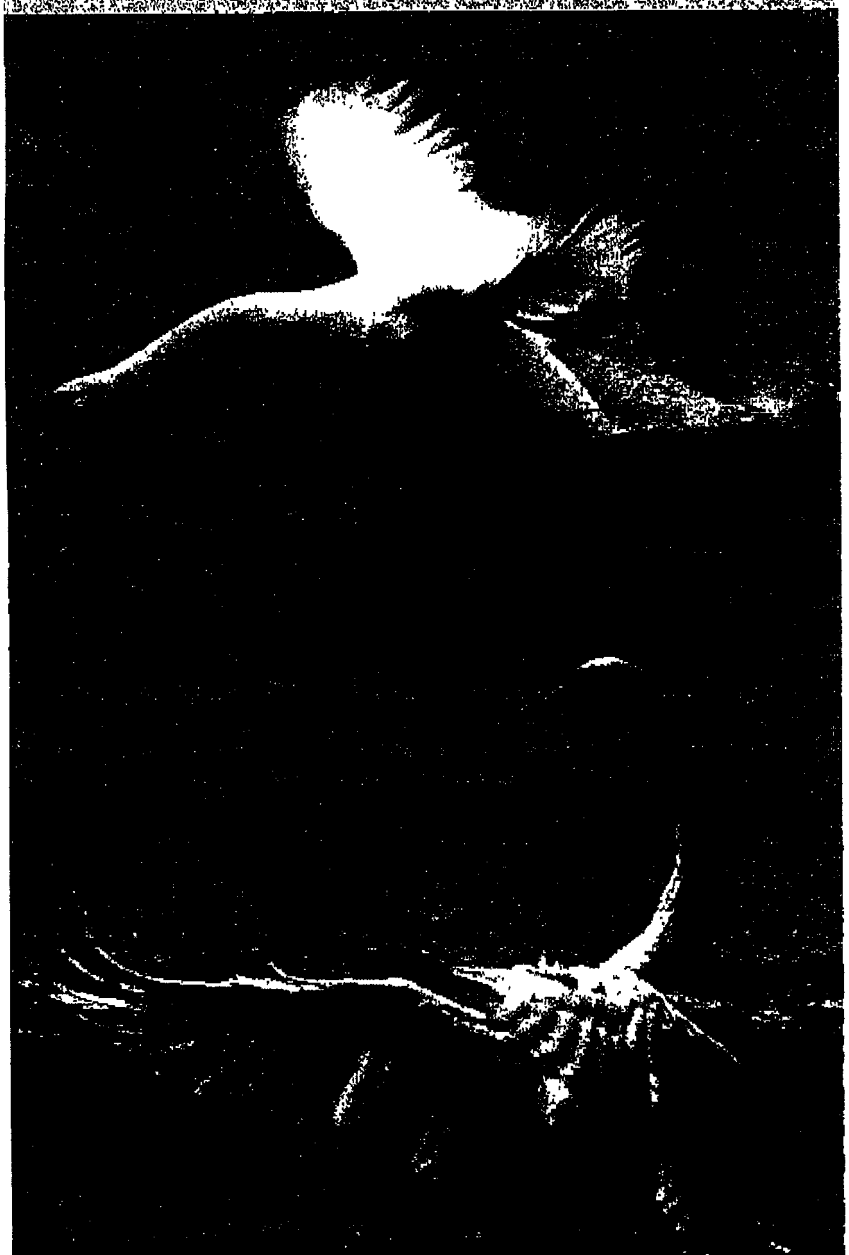

## EPICOH 2001

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risk factors for self-rated health and loss of job, and selecting high risk industries. More few-item standard question batteries should be developed and validated.

**O76** MALIGNANT MESOTHELIOMA IN AUSTRALIA (1945– 2000). J. LEIGH, Centre for Occupational and Environmental Health, Department of Public Health and Community Medicine, University of Sydney, Sydney, Australia

Between 1945 and 1980, 658 (535 male, 123 female) cases of malignant mesothelioma were identified in Australia. Since 1981 Australia has maintained a complete national register for cases of malignant mesothelioma. Incidence has increased rapidly and is still increasing in both males and females. In 2000 the annual incidence rate was 6.6 per 100,000 (male >20/year) (1982-85: 2.7) and 1.6 per 100,000 (female >20/year) (1982-85: 0.325). Incidence rates are similar to liver cancer in Australia. As at 31 January 2001, there were 6,350 cases in Australia. Pleural:peritoneal ratio was 18:1 (male), 6:1 (female). Positive asbestos exposure history was obtained in 87% of cases. Mean latency from first exposure was 37 years. The pattern of exposure is shifting away from the older traditional industries towards product, domestic and environmental exposure. Exposure occurred in a wide range of occupations and industries and non-occupational settings. Some common exposure histories were: repair and maintenance of asbestos materials (13%), shipbuilding (3%), asbestos cement production (4%), railways (3%), powerstations (3%), boilermaking (3%), Wittenoom (5%), wharf labourer (2%), para occupational, hobby, environmental (4%), carpenter (4%), builder (6%), navy/merchant navy (3%), plumber (2%), brake linings (2%), multiple (12%). Approximate lifetime risks (%) for identifiable occupational groups exposed 30 to 50 years ago were calculated as:

Lifetime risk (%) =

$$\frac{70 \times \text{number of mesothelioma cases notified 1986- 2000} \times 100}{\text{Population in occupation category in Australia} \times 15}$$

Results were: Wittenoom mine or mill worker (16.6), power station worker (15.0), railway labourer (11.4), navy/merchant navy (5.1), Wittenoom town (3.1), waterside worker (2.1), carpenter/ joiner (2.0), painter/decorator (1.6), plumber (1.3), boilermaker/ welder (1.3), plasterer (1.1), bricklayer (0.8), electrical fitter, mechanic, electrician (0.5), vehicle mechanic (0.5) [cf all Australian men (0.39), all Australian women (0.07)]. The incidence is still increasing and, as peak asbestos exposure was in 1973, peak incidence is not expected until about 2010. These incidence rates are the highest national rates in the world. The expected total number of mesothelioma cases in Australia from 1945 to 2020 is estimated to be about 18,000, based on models for Wittenoom, extrapolated for Australia as whole (assuming Wittenoom contributes 5% of cases), and direct extrapolation from the best fit to the empirical incidence curve, constrained to have a maximum value at 2010, following a 37 year latency from the time of maximum exposure. The estimated number of cases still to occur in Australia (present population = 19 million) is thus about 11,000 by 2020. With asbestos related lung cancer estimated to occur at a ratio of 2:1 to mesothelioma the expected future case load of asbestos related cancer can be expected to be of the order of 30,000-40,000 by 2020. The various Australia state and federal government preventive, clinical and compensatory authorities are now developing a national strategy for dealing with this problem.

**O77** EVALUATION OF AN OCCUPATIONAL SAFETY CAMPAIGN DIRECTED AGAINST INJURIES. J. DYREBORG, K. LYNGBY MIKKELSEN, National Institute of Occupational Health, Copenhagen, Denmark

A DWEA tool to be used by the Health and Safety Organisation at worksites in their investigation of the immediate and underlying causes of injuries was developed by the Danish Work Environment Authority (DWEA). The tool was introduced at Danish worksites via direct delivery and instruction (*few hours*) by a DWEA inspector to 400 selected worksites. We at the National Institute of Occupational Health were asked to evaluate the effect of this safety campaign and this abstract concerns the baseline results of a follow up study on the effect of the safety campaign.

The expectation of the effect of the DWEA tool was to induce *a change in attitudes towards the causes of injuries* away form merely focusing on obvious immediate causes and fault finding to more focusing on underlying weaknesses and root causes.

We initiated the evaluation by at baseline measurement of the attitudes towards the causes of injuries using a twelve items questionnaire. The respondents were asked whether the accidents of the company could be assigned to certain types of causes using a scale from nearly all accidents, many accidents, few accidents and no accidents. Besides the attitudes items the questionnaire inquired about the present injury investigation practice if any. At the day of the introduction of the tool at the worksite, but before the instruction began, the DWES inspector handed over the questionnaire to a representative of the Health and Safety Organisation at the worksite.

It was hypothesised that those companies with a well established injury investigation practice would have a more mature safety attitude compared to those enterprises with no procedures for accident investigation and prevention, which was expected to have a less mature safety attitude.

In total 163 companies responded to the questionnaire. 44% of the companies had a procedure for investigation of injuries. The results of the 12 items scale of safety maturity revealed that one item had a significant "floor effect" and was therefore excluded from the scale. The other eleven items showed a reasonable distribution of answers across all categories and were therefore kept. The "don't know" answers (4%) category were recoded as "no accidents". On the basis of a Factor Analysis on the 11 items one dimension could be identified as a safety maturity factor. The scores from this dimension were rescaled to have a mean 100 and a standard deviation 10 (range: 74.2–117.1).

Companies where accidents were regarded as mainly accidental had an index of 101 versus 97 for those companies where only few or none accidents were considered as accidental ($p=0.01$), this being in accordance with the expected performance of the safety maturity index.

We tested whether having an accident investigation procedure was associated with a higher safety maturity index and found that this was not the case. Companies with and without an accident investigation procedure had an index of 99.3 and 100.5 respectively ($p=0.452$).

Thus the hypothesis that companies with an accident investigation procedure should have higher safety maturity could not be supported by the results. This could be due to the fact that the procedures already used by the companies do not convey maturity in the safety perception.

This baseline study showed that the 11 retained items in the attitude scale provided a reasonable safety maturity index, which could be used for the further evaluation of the DWEA accident