

NATIONAL PRIORITIES IN OCCUPATIONAL DISEASE: THE FAMILY AND THE COMMUNITY

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ABSTRACT

Statistics and case-histories for occupational disease indicate that investigation of the effects of low-level exposures to harmful substances is inadequate. Animal studies undertaken by John Heath at the Strangeways Research Laboratory, Cambridge, to investigate the effect of very small lung burdens of asbestos and other particulate carcinogens, are reported. Reference is made to relevant epidemiological studies. Examples are given of action taken in the community, to reduce known risks. The need for information relating to health risks to women from both their own and their husband's occupations is outlined.

We recommend that in the field of occupational health priority should be given to preventive action, based on reliable information which has been interpreted correctly.

United Kingdom statistics are generally acknowledged to be among the best available, but, when statistics from a number of our official sources are compared, we find inconsistencies.

As Table 1 shows, less than one third of the cases of asbestosis and mesothelioma reported by the Health and Safety Executive receive benefit from the Department of Health and Social Security (DHSS), yet for many diseases DHSS records provide the best information available. More satisfactory arrangements are being sought, by our Health and Safety Commission⁵.

TABLE 1
Statistics for asbestos disease, years 1974 and 1975.

	OPCS mortality statistics: cause	Awards of death benefit DHSS	Health and safety executive
Asbestosis	72	126	300
Mesothelioma	not available	98	448
Total		224	748

* The Asbestos Induced Diseases Society is now the Registered Charity SPAID: The Society for Prevention of Asbestosis and Industrial Diseases (Registered Charity No 274995).

The ten-year study of bladder cancer cases³, carried out at the Royal Marsden Hospital, established substantial occupational exposure in 37 or 4% of cases and all were awarded benefit. However, it is the histories of the 67 patients (6% of cases in this study) who reported slight exposure, and were not advised to apply for benefit, which should be examined, because we need to ascertain the effects of low level or intermittent exposures to carcinogens, in order to re-examine our concepts of "safe levels" and "acceptable levels". The safe level should be reported honestly, before acceptable levels are decided.

Cases reported to the Asbestos Induced Diseases Society include a shop steward in a brake linings factory, who died from mesothelioma which the Pneumoconiosis Panel claimed was unrelated to his occupation, because the amount of asbestos found in the lung at post mortem was no greater than that found in the lungs of the general population; wives who developed disease as a result of washing overalls, who were not allowed even to apply for benefit (although in a recent case the Pneumoconiosis Panel confirmed the diagnosis before realising that no occupational exposure was involved) and, finally, a Pneumoconiosis Panel decision that, although asbestosis, for which a 50% disability benefit had been paid in life, was confirmed at post mortem, death was due to cancer of the pancreas and was not caused or accelerated by asbestosis. All these cases were refused benefit and therefore do not appear in statistics, yet they all suggest a serious risk from low-level exposures, which should be investigated and reported.

It had been hoped that, by prescribing diseases for benefit, more cases would be identified, but the conditions which govern the award of benefit are now inhibiting investigation of cases of low exposure. DHSS statistics do not give us a true picture of the incidence of industrial disease.

We must look particularly to independent research for the information on which to base preventive measures. The work of Professor Selikoff and his team at Mt Sinai¹ led industry to accept that asbestos taken home on a worker's clothes is a permanent risk to the family².

Animal studies being conducted by John Heath at the Strangeways Research Laboratory, Cambridge were planned to see if malignant lung tumours could result from a single deposit of 2 mg of chrysotile asbestos placed in the lungs of rats by the intratracheal route. The effect of incorporating with the asbestos a small proportion (10% w/w) of one of a number of powdered metals used in industry, and the further effect of a subsequent administration of a low-level systemic carcinogen, such as a nitrosamine, were also studied.

The results so far show 2/30 mesenteric tumours after only 5 months, following an intratracheal instillation of 2 mg Canadian chrysotile (IUC sample). With 2 mg of chrysotile incorporating 10% w/w cadmium, there are 1/20 malignant lung tumours and many more (8/20) tumours with chrysotile + cadmium + a nitrosamine. A similar picture obtains with silica + cadmium + a nitrosamine and with nickel and other metals.*

* Representative slides of a typical tumour induced in the rat were shown during the lecture at the Congress, together with slides showing the reaction of the cells of the lung to the deposit of mineral and metal particulates. This work is not yet published.

Dr Owen Lloyd of the Department of Community and Occupational Medicine, Dundee, reports excess deaths from respiratory cancer (15 observed, 6 expected) between 1968 and 1974 in the area of a Scottish town where air pollution by iron, manganese, nickel, lead and cadmium was heaviest⁶. A foundry was shown to be the focus of this cluster of deaths.

These studies suggest that chrysotile and other low-level carcinogens, such as cadmium and nickel in urban and industrial atmospheres and nitrosamines ingested with food or synthesised endogenously in the intestinal tract, acting synergistically, are certainly hazardous. The incidence of asbestos bodies found at post mortem in lung tissue of people not occupationally exposed is increasing. In 1975/1976 no cases of lung cancer received DHSS industrial diseases benefit, yet 7000 non-smokers die from lung cancer in the U.K. each year. The whole question of long-term effects of very small lung burdens of asbestos and other particulate carcinogens needs urgent investigation.

Meanwhile, we are encouraging action to eliminate known avoidable risks. For example, dockers are insisting on measures which Judge Beaudry's committee in Quebec and the Economic and Social Committee in Brussels failed to persuade industry to introduce; namely, containers carrying asbestos must be properly cleaned, clearly marked and used only for asbestos.

When Barking Council was unable to find a waste disposal site for soil containing crocidolite removed from gardens near Cape's old factory and failed to take adequate precautions, it was two local residents, Mr and Mrs Steggle, who warned children to keep away and insisted on the mounds' being damped down and covered with tarpaulins (Fig. 1).



FIG. 1 — Tarpaulin covered mounds of asbestos-contaminated soil in the gardens of houses at Barking.

Mr Ralph Pickett, who worked in the engineering workshops of British Rail, made drawings to explain the risk to the general public in railway carriages (Fig. 2), after he learnt that he was suffering from mesothelioma. He died early in 1977. Professor Acheson used the diagram (Fig. 2) to help secure a £30 million programme for the removal of the asbestos in specially constructed "asbestos houses", (Fig. 3) by men wearing impermeable protective clothing and air-line respirators (Fig. 4).

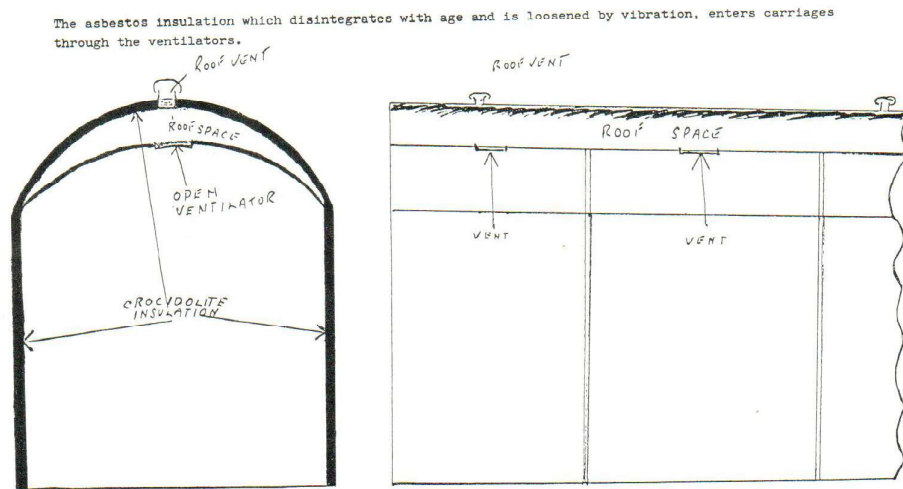
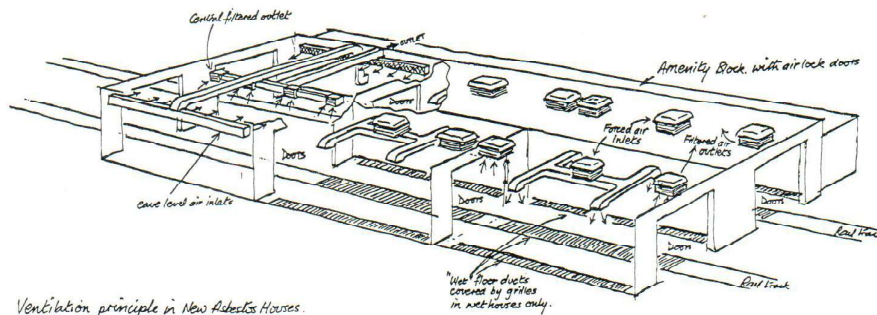


FIG. 2 - Diagram of British Rail carriage showing the risk to the travelling public from crocidolite asbestos insulation.



Ventilation principle in New Asbestos Houses.

- 4 Wet-houses have - EACH one forced inlet
Two filtered outlets
- 1 Double width dry house has same level forced inlets
and central filtered outlets.

FIG. 3 - Diagram of houses constructed for the removal of crocidolite asbestos insulation from British Rail rolling stock.



FIG. 4 – Equipment used for the removal of asbestos insulation. From British Rail rolling stock.

The Office of Population Censuses and Surveys⁴ has reported that early studies which concluded that life style played a more important part than occupation in the aetiology of disease failed to take into account the relatively high proportion of wives who worked in occupations which involved exposures similar to those of their husbands.

We are concerned at the lack of information on health risks to women, both from their own and their husbands' occupations. There are substantial differences in mortality from cancer of the cervix in women of the same social class⁹. Higher rates in wives of fishermen (Standardised Mortality Ratio 544), miners working underground (SMR 192), metal furnacemen (SMR 277), plasterers and cement finishers (SMR 195) are reported in the most recently published statistics. Risk factors for cancer of the cervix are early onset of sexual activity, promiscuity and infection with Herpes Virus-2, so that a positive cervical smear raises doubts about a woman's sexual behaviour. There has been surprisingly little investigation of the role of possible carcinogens from contact with her husband.

If there are occupational risks transferred from husband to wife, there should be campaigns to encourage women to attend for check-ups in areas where "high risk" industries are situated, and general practitioners and family planning

doctors could advise women to choose barrier contraceptives rather than the IUD and the pill, since the diaphragm apparently protects against cancer of the cervix¹¹. Another possible need for links between occupational risk and health care in the community is suggested by the recent conclusion that, whereas 12% of cancers in England and Wales may be occupationally related, for circulatory diseases the figure is nearly 30%⁴. If this is so, should a doctor recommend oral contraceptives to a woman in a high-risk occupation?

The last two decennial supplements on occupational mortality in England and Wales^{9,10} have shown considerable occupational differences in breast cancer mortality which appear not to have been explored by epidemiologists, who have concentrated on hormonal factors related to parity and, more recently, diet. Employment in the clothing industry, or being married to someone who works in it, is associated with an increase in breast cancer risk for women above that of their social class, and certain occupations, e.g. tailors, are associated with particular risk (Table 2).

TABLE 2
Breast cancer standardized mortality ratios.

		Social class III M (skilled manual)	Clothing workers	Tailors, dress, light clothing makers
Single women	1961 -	118	133	211
	1970-72	111	150	194
Married women	1961	104	139	153
	1970-72	109	127	158

Just as studies of lung cancer risks in different industries are now related to the number of workers who smoke, it is important that studies of possible breast cancer risks should include the childbearing history of married women, since those who first gave birth when young are at lower risk, and an industry which had a high percentage of such workers and even a moderately raised incidence of breast cancer should be under suspicion.

In order to protect the health of female workers, we need morbidity as well as mortality statistics, and it is particularly unfortunate that our most recent morbidity statistics⁸ do not include information on occupation provided in an earlier survey⁷ which showed, for example, that semi-skilled workers in textiles had the highest consulting rates for disorders of menstruation, and that when women working full time, part time, and not gainfully employed, were compared, and subdivided into those with and without family responsibilities, it was women working full time with family responsibilities who had the highest consultation rates for disorders of menstruation and menopausal symptoms. The importance of such disorders not only for the women themselves, but for their husbands and children should not be underestimated, but unfortunately such data are no longer being collected.

Any study of occupational health must include the family, and also the unborn child.

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