Book reviews


The Advisory Committee set up by the Secretary of State for Employment started its deliberations in 1976. Its terms of reference were wide: to review the risk to health of people exposed to asbestos at work, and also the risk to the general public exposed to asbestos used at work, or from consumer products or asbestos waste. The committee was required to make recommendations as to whether any further protection was required.

The committee, chaired by Mr W Simpson, consisted of 15 members drawn from employer and employee interests, local authorities, and consumer groups; and medical and scientific members. Five separate working groups reported to the main committee. The medical, environmental monitoring, and legal and administrative groups were all chaired by members of the Health and Safety Executive. The fourth group was entitled "Production and use of asbestos products" and later a fifth group was set up entitled "Substitutes and substitution." The members of these last two groups had special interests in the building trade, insulation, and demolition, and also brakes and gaskets in the automobile industry.

The first volume contains the main text of the report setting out the principal facts and arguments on which the conclusions are based, and the proposals on legal and administrative controls, both for the workplace and for the general public. The 41 recommendations are summarised at the end of the volume, where the recommendations of the earlier reports on "Work on thermal insulation and sprayed coatings" and "Measurement and monitoring of asbestos" in air are also given. The second volume contains the papers commissioned by the Advisory Committee—that is, "The ill effects of asbestos on health" by Acheson and Gardner, and "Asbestos control limits" by Steel. Volume 2 also contains an account of the current asbestos controls in other countries and the results of an exploratory survey into the feasibility of substitution by other materials. Thus although the material from the papers by Acheson and Gardner and by Steel are largely assimilated into the main body of the report, volume 2 also contains much that rewards careful reading.

The chapter on asbestos in the workplace gives very succinct information. Crocidolite has not been imported into Britain since 1970. In 1976 41 000 fewer metric tons of chrysotile asbestos were imported than in 1973, the largest drop recorded. Whether this was due to economic factors, the difficulty of handling a material under such tight restrictions, or the increase in use of alternative materials is not speculated on. Particularly interesting is the figure showing the distribution of dust-exposure levels in different branches of the manufacturing industry. The curves are based on personal samples taken by the Factory Inspectorate over a six-year period. In the asbestos cement industry 98-5% of the samples showed a concentration below 2f/ml and 95% below 1f/ml, whereas for insulation board 88-6% were below 2f/ml and 72-5% below 1f/ml. However, maximum concentrations of 10-2f/ml for friction materials and 13-7f/ml for insulation board were noted. Conditions are not so happy in the section of the asbestos industry concerned with removal, stripping, and demolition including shipbreaking. Conditions vary from job to job and day to day, dust control is difficult and expensive, and collection of waste often presents serious problems. Moreover, whereas the processing of raw asbestos is controlled by three or four companies in Britain, several hundred firms with workforces varying in size from more than 200 to one or two employees are concerned here.

There are still considerable uncertainties about the total number of asbestos workers. The Committee estimates that about 25 000 workers may be exposed at any one time, but very much more than this will have been exposed at some period during their working life.

When considering asbestos and the general public the report emphasises the difficulties of sampling extremely low concentrations of asbestos in air, but this has been achieved, and levels around factories varying between 0-1f/ml and 2-5f/m³ have been recorded. In buildings, however, there are insufficient data to draw conclusions about asbestos dust levels. Since 1969 disposal of asbestos waste has been largely controlled by codes of practice and legislation. The Factory Inspectorate is active and has sampled at 61 disposal sites. The vast majority of samples were within the hygiene standards. While considerable resources have been used both to protect the public and to ascertain the degree of exposure experienced, the report can hardly go further than the Zielhuis report which stated that there is no established evidence that true ambient exposure carries a definite risk but that there are too many uncertainties to deny the existence of such a risk.

Chapter 3 of the first volume is devoted to the medical effects of asbestos exposure. It opens with a statement on the biophysics of asbestos, recapitulating the experimental evidence that carcinogenicity of fibres is related to the proportion of fibres per unit mass with diameters of between 0-5 and 2-5 μm and lengths of 10-80 μm. Fibre diameter is the key to the number of fibres inhaled. For a given mass of airborne amphibole, the number of fibres available for inhalation is greater for crocidolite than for amosite. Chrysotile has a greater tendency to divide into fibrils than the amphiboles, and its aerodynamics depend to a certain extent on the amount of milling or grinding, but it may become as respirable as the amphiboles.

Among workers exposed to asbestos lung cancer is the most frequent of the asbestos-related diseases, but cigarette smoking is heavily implicated. Asbestosis rates second as a cause of death. The number of deaths due to mesothelial tumours continues to rise, and reached 292 in the UK in 1976. After consideration of the available epidemiological data the report accepts that there is an increased risk of gastrointestinal tumours. It considers that there is clear evidence that...
in relation to mesothelial tumours
crocidolite has been more dangerous than
chrysotile or anthophyllite. Amosite has
an intermediate position. The epidemi-
ological evidence for this later conclusion
is based on a study of a factory using
amosite by Seidman et al.\(^2\) and on the
presence of amosite fibres in a high
proportion of the lungs of patients dying
of mesothelial tumours in North America.\(^3\)

When turning to the question of dose-
response relations, the report reiterates
the difficulties experienced in assessing
various studies due to differences in
measurement techniques, and recent
improvement in counting techniques with
the membrane filter due to use of the
reticule eyepiece, which has led to 2-4
times higher counts on equivalent samples
than in the 1950s and 1960s. Considerable
reliance has been placed on the second
study of asbestosis from Rochdale.\(^4\) Berry
shows that an annual incidence of 0.5% of
certified asbestosis has occurred after a
cumulative dose of less than 100 fibre
year/ml—that is, under the current
standard of 2f/ml. The committee found
no evidence of a threshold for lung cancer
or mesothelial tumours, but accepts that
the risk is proportional to cumulative dose.
When turning to the public health risk, the
same criteria have been adopted and
all available measurements of asbestos
in air in cities, buildings, and the vicinity
of dumps considered. The committee
concludes that the presence of chrysotile
containing small quantities of amphibole
is unlikely to have produced any material
increase in the risk of lung cancer, or any
appreciable number of cases of mesotheli-
aoma, a statement which seems to reflect
the uncertainties noted earlier. It also
concludes that more data are required
about school buildings and dumps
where children may play.

Before turning to the proposals for
administrative and legal controls in
section 4, the committee summarises the
evidence relating to the medical effects of
exposure to each type of asbestos.

The major proposals relating to the
permitted levels of asbestos in air are now
well known, but other concepts, explained
at some length in section 4, are less fam-
iliar. The views of the committee on
prohibition are that the control of any
useful but hazardous material is preferable
to the ultimate sanction of prohibition.
Prohibitions are limited to the application
of asbestos in thermal insulation by means
of spraying, the import of raw crocidolite,
and manufactured goods containing croci-
dolite. There has been a voluntary ban on
the import of crocidolite since 1970. Enforce-
ment difficulties are envisaged in
implementing the ban on manufactured
goods, but it is considered that a labelling
scheme might be effective.

The question of substitution is also
fully discussed. There is a recommendation
that anyone who produces specifications
of, or carries on a process using, asbestos
considers its substitution by other materi-
als, so far as it is reasonably practical.
The committee recognised that man-made
mineral fibres are less harmful to man
than asbestos, but was apprehensive that
these fibres might be used in such dimen-
sions as came within the carcinogenic
range. There is also a recommendation
that the Health and Safety Executive
takes into account the social costs of
obtaining, using, and disposing of asbestos,
as well as costs and benefits more easily
defined. It is not too clear what is meant
by "the social costs." Where substitution
or prohibition is inappropriate, recom-
mandation 9 requires that a single control
limit for each type of asbestos should be
applied to all processes and products
containing it, and that this set of limits
should have legal backing. The recom-
manded control limit for chrysotile asbestos
is 1f/ml, for amosite asbestos, 0-5f/ml, and for
crocidolite, 0-2f/ml. There is very detailed argument supporting
recommendation 9. Recommendation 10
requires legislation to be drawn up so as
to make it clear that there is an overriding
obligation to reduce exposure to asbestos
dust to the minimum that is reasonably
practical. The subsequent recommenda-
tions deal with monitoring in the work-
place, exhaust ventilation, and protective
equipment and are not controversial.

The recommendations as to medical
supervision are of interest. The Advisory
Committee believes that the aims of
medical supervision should be, firstly,
to protect individual workers and, secondly,
to collect data that may be used in
epidemiological study to assess the
effectiveness of control measures. Apart
from the opportunity to warn asbestos
workers against smoking, the committee
is pessimistic about the value of medical
supervision to the individual, but finds
reasons for its continuation. At present
two organisations, EMAS and the
pneumoconiosis medical panels, are res-
ponsible for collecting epidemiological
data. The committee would like to see
them replaced by a single body, EMAS.
The responsibility for medical supervision
and the cost would still remain with the
employer, and medical examinations need
not be carried out by EMAS, but appar-
ently the responsibility for record main-
tenance would remain with this body.
This scheme would have clear advantages
in dealing with the mass of firms of
various sizes in removal, stripping, and
demolition, where the workers are often
at risk and there is poor medical cover,
but larger companies would probably
prefer to continue with their present
medical systems in co-operation with
EMAS. The committee has information
about restrictions on asbestos in 14 other
industrial nations, but comparisons are
difficult due to differences in measuring
techniques. Sweden appears to have gone
furthest in restricting its use, but the use
of crocidolite is also banned in Denmark
and Ireland. No other country has
specific regulations relating to amosite
asbestos. The estimated cost to the manu-
factoring industry of complying with the
proposed control limits is given. It would
cost the asbestos cement industry, where
levels are generally at 1f/ml or below,
half a million pounds capital expenditure,
and £300,000 a year, with a rise in cost of
the product by 13%. but the textile, mill
board, and paper factories would need to
spend £10 million in capital expenditure,
with a rise in cost of product of 17%, if
indeed the operation were feasible. About
5,000 thousand jobs might be lost.

Three months were allowed for com-
ment on this report, and the new control
limits should be operative by 1 December
1980. It seems probable that with the
problems industry faces, perhaps particu-
larly the restrictions on the amosite
industry, more time will be needed. The
report itself is well-presented, compre-
hensive, and thoughtful, and repays
careful reading.

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