PLAINTIFF'S
EXHIBIT
GF-2272

APPENDIX 8
Document No.24
MEA/1973/9 (Rev.)

INTERNATIONAL LABOUR ORGANISATION

MEETING OF EXPERTS ON THE SAFE USE OF ASBESTOS

Geneva, 11-18 December 1973

DRAFT REPORT

1. Following a decision taken by the Governing Body of the ILO at its 188th Session (Geneva, November 1972) a Meeting of Experts on the Safe Use of Asbestos was held in Geneva from 11 to 18 December 1973.

2. The agenda of the meeting was as follows:

1. Pathological effects of exposure to asbestos (including asbestosis and cancer).
2. Prevention of risks due to exposure to asbestos:
   (a) technical prevention;
   (b) medical prevention;
   (c) administrative measures.
3. Possibilities of international regulations.

3. The following took part in the meeting:

Dr. Erik BOLINDER,
Medical Adviser to the Swedish Trade Union Confederation,
Barnhusgatan 18,
10553 STOCKHOLM (Sweden)

Mr. Bernd T. von BRAUCHITSCH,
Chairman of the Management of Jurid-Werke GmbH,
Postfach 6,
2057 RHEINBEK (Federal Republic of Germany)

GAF 19011

Dr. A. CAVIGNEAUX,
Médicin-conseil de l'Institut national
de recherche et de sécurité,
30 rue Oliver Noyer,
75014 PARIS (France)

Technical Adviser: Prof. Jean CHAMPEIX,
Faculté de Médecine,
28 Place Henri-Dunant,
63001 CLERMONT-FERRAND (Cedex) (France)

Mr. A.A. CROSS,
Chairman,
Environmental Control Committee,
Asbestosis Research Council,
114 Park Street,
LONDON, W1Y 4AB (United Kingdom)

Technical Adviser: Dr. W.J. SMITHER,
Medical Consultant to the
Asbestosis Research Council,
114 Park Street,
LONDON, W1Y 4AB (United Kingdom)

Mr. L. EATON,
Regional Secretary,
Union of Construction, Allied Trades
and Technicians,
293/295 Kentish Town Road,
London, N.W.5. (United Kingdom)

Technical Adviser: Dr. R. MURRAY,
Medical Adviser to the TUC,
Congress House,
Great Russell Street,
LONDON, WC1B 3LS (United Kingdom)

Mr. W. JOHNSEN,
Manager of Dansk Eternit-Fabrik A/S,
P.O. Box 763,
DK-9100 AALBORG (Denmark)

Dr. W. KLOSTERKÖTTER,
Director,
Institute of Occupational Health
and Industrial Hygiene,
55 Hufelandstrasse,
43-ESSEN (Federal Republic of Germany)

Dr. S.F. McCULLAGH,
Chief Medical Officer,
James Hardie and Coy. Pty. Ltd.,
P.O. Box 219,
GRANVILLE, N.S.W. 2142 (Australia)

Technical Adviser: Mr. R.D. PALFREYMAN,
Director,
James Hardie and Coy. Pty. Ltd.,
P.O. Box 219,
GRANVILLE, N.S.W. 2142 (Australia)

Mr. J.C. McNULTY,
Director,
Occupational Health Division,
Public Health Department,
57 Murray Street,
PERTH, W.A. 6000 (Australia)

Mr. George PERKEL,
Research Director,
Textile Workers Union of America,
99 University Place,
NEW YORK, N.Y. 10003 (USA)

Mr. N. PON,
International Organiser,
International Association of Heat and Frost Insulators and Asbestos Workers,
13220 - 79th Street,
EDMONTON, Alberta (Canada)

Mr. B.B. TAYLOR,
Director,
Asbestos Cement Limited,
P.O. Box No. 486,
6 South Leinster Street,
DUBLIN 2 (Ireland)

Technical Adviser: Dr. S. HOLMES,
Secretary,
Asbestosis Research Council,
Turner Bros. Asbestos Co. Ltd.,
P.O. Box 40,
ROCHDALE, Lancashire (United Kingdom)

Mr. A.G. WILKIE,
H.M. Chemical Inspector of Factories,
Department of Employment,
403-405 Edgware Road,
LONDON, N.W.2. (United Kingdom)

International Organisations
Organisations internationales

Representatives
Représentants

World Health Organization

Dr. G.E. LAMBERT,
Ergonomiste,
Service de la médecine du travail.

International Agency for Research on Cancer
Agence internationale de recherches sur le cancer

Dr. P. BOGOVSKI

Technical Adviser: Dr. J.C. GILSON,
Director,
MRC Pneumoconiosis Unit,
Llandough Hospital,
PENARTH, CF6 1XW
Glamorgan (United Kingdom)

Council of Europe
Conseil de l'Europe

Mr. L. HERTWIG,
Administrateur,
Affaires Economiques et Sociales,
67006 STRASBOURG Cedex (France)

Commission of the European Communities
Commission des Communautés européennes

Dr. P. HENTZ,
Chef de la division Médecine et
hygiène du travail,
Direction générale des Affaires sociales,
LUXEMBOURG (Grand-Duché de Luxembourg)

Non-Governmental Organisations
Organisations non gouvernementales

Observers
Observateurs

International Organisation of Employers
Organisation internationale des employeurs

M. JOIN,
Délégué Général de la Chambre Syndicale
de l'Amiante,
10 rue de la Pépinière,
75008 PARIS (France)

Dr. Jacques LEFOUTRE,
Médecine chef des services médicaux d'Eternit,
2920 - KAPELLEN-OP-DEN-BOS (Belgium)

M. Emidio ANGELLOTTI,
Directeur de la Società Amiantifera
di Balangero,
10070 BALANGERO (Italy)

Permanent Commission and International
Association on Occupational Health

Commission permanente et Association
internationale de la médecine du
travail

Dr. P.V. PELMAR,
Scientific Secretary,
Institute of Occupational and
Environmental Health,
Suite 412,
5 Place Ville Marie,
MONTREAL 113 (Canada)

4. Mr. Astapenko, Assistant Director-General of the ILO, opened the meeting. He recalled the work of the ILO in relation to problems of health protection of workers exposed to airborne dust, and in particular the action carried on with regard to pneumoconiosis. The growing evidence of severe health risks following exposure to asbestos dust has raised great concern in the ILO Governing Body, which felt that effective action should be taken for keeping such risks under control. The meeting of experts was convened in order to give advice on the appropriate preventive and control measures to be taken, and on the type of action the ILO could take.

5. The meeting unanimously elected Dr. J.C. McNulty as Chairman and Mr. A.A. Cross and Dr. R. Murray as Reporters.[1]

Definition of asbestos

6. Asbestos is a broad term applied to a number of substances falling into two chief varieties, chrysotile and the amphiboles. These substances are natural iron, sodium, calcium and magnesium hydrated silicates; they have a fibrous structure and are incombustible. Chrysotile asbestos (white asbestos) is a hydrated megnesium silicate found in serpentine rock. It is widely distributed in nature and accounts for some 93 per cent of the world's asbestos production. Amphibole asbestos varieties include amosite, crocidolite, anthophyllite, tremolite and

[1] M. Bonsanti, also invited, at the last moment could not attend.

actinolite. The last two substances have few industrial applications but are sometimes found as impurities in talc.

Pathological effects of exposure to asbestos

7. An understanding of the biological effects of asbestos is essential to its safer use. The risks to health result from the inhalation of the fibrous dust and its subsequent dispersion within the lung and to other parts of the body. This occurs in those engaged in extracting and processing the fibre, and subsequent manufacture and application of products. In practice, exposure to asbestos dust alone is uncommon; other mineral dusts are frequently inhaled along with the asbestos and may modify its effects. The effect of these and other pollutants, especially cigarette smoke, may adversely influence the type and severity of disease produced by asbestos.

8. Several types of disease may result from inhalation of asbestos:

(a) Asbestosis - a fibrosis (thickening and scarring) of the lung itself and of its outer surface, the pleura which may become calcified.

(b) Cancer of the bronchial tubes.

(c) Cancer of the pleural surface (diffuse mesotheliomas). Diffuse mesotheliomas may also occur in the abdominal cavity (peritoneal mesotheliomas).

(d) There is also some evidence that cancers in other sites of the body may occasionally be asbestos-linked.

These types of disease are first manifest years or even tens of years after first exposure to the dust so that the recent rising incidence of cases in many countries is the result of past dust exposures which were clearly far too high. Current incidence of disease is therefore not a measure of the effects of present dust levels.

9. Asbestosis develops slowly and is detectable by a combination of clinical, radiographic and lung function tests. In the early stages there will be uncertainty about diagnosis. the ILO U/C 1971 Classification of Radiographic Appearances of Pneumoconiosis is of value in grading the continuum of radiographic changes. An agreed international grading of severity taking into account all diagnostic features, might be of value in improving comparability of statistics of disease incidence. Once the disease has reached a stage where diagnosis is certain the fibrosis tends to increase dispite removal from further dust exposure. It is not yet known if there are detectable early stages at which removal from further dust exposure markedly influences the course of the disease.

10. The bronchial cancers associated with asbestos are not distinguishable from those produced by cigarette smoking and other causes, but there is evidence of synergism between cigarette smoking and asbestos so that the risk of developing bronchial cancer is materially greater in asbestos workers who smoke cigarettes than in the general public with similar smoking habits.

There is evidence that where dust conditions have been improved and the incidence of asbestosis greatly reduced the excess bronchial cancer risk has also fallen.

11. The incidence of mesotheliomas is less closely related to the risks of asbestosis and are probably unrelated to cigarette smoking. They may occur many years after even a short exposure to asbestos but their incidence is in some measure dose-related; those with the heaviest past exposures having a higher (or earlier) risk of developing the tumours.

12. Mesotheliomas are an exceptionally rare form of cancer in the general population. Most of the cases are apparently related to past exposure to asbestos but in most surveys a minority have apparently had no such association. With the probable exception of anthophyllite, all types of fibre are associated with mesotheliomas but there is evidence that the risk may be greater with crocidolite than with amosite or chrysotile. The proportion of asbestos workers who may be expected to develop mesothelioras cannot be determined precisely at present because of the very long lapse period - over fifty years in some instances - between first exposure and the occurrence of a tumour. Present evidence indicates that the risk was highest in insulation workers heavily exposed in the past. In this special section of the industry the proportion may have been in the order of 10 per cent. This compares with over 80 per cent in the case of some potent chemical carcinogens such as beta-naphthylamine.

13. The risk of asbestosis and of asbestos-related cancers has been studied in many defined groups of asbestos workers. No simple pattern of risk related to type of job, type of fibre, past dust exposure or other factors has emerged. This may in part be due to inadequancy of past information, but also to differences in the physical and chemical characteristics of the dust which influence both its access to the lungs and to the cells responding to the dust. Exposures to one type of fibre have occurred principally during mining and initial processing. Exposures during manufacture and in insulation work have usually been to more than one type of fibre and to other minerals.

14. The highest excess risks of asbestos cancers and asbestosis have been in the insulation workers (laggers). In the asbestos textile groups where the incidence of asbestosis was very high forty years ago, and where improvement in dust conditions first occurred, asbestos-related diseases have been greatly reduced. The incidence of disease in, for example, the asbestos cement and friction materials sections of the industry has, in general, been lower than in those parts of the industry where the fibres are less firmly bound in the products. In chrysotile mining and milling, despite very heavy dust concentrations in the past, the incidence of severe asbestosis, asbestos cancers and especially mesotheliomas has been low.

15. In conclusion:[1]

(a) It is well established that exposures to asbestos dust of all types in the past have caused serious disease.

(b) There is evidence that the incidence of diseases is related to the intensity and duration of exposure. Thus it may be possible to determine levels of dustiness where the risk may be minimised to an acceptable level.

(c) Estimates of what these levels may be have been made using some of the available evidence. A more comprehensive review of all the evidence is still required, as well as further research including prospective studies.

(d) Much is not yet understood about factors influencing the incidence and severity of asbestos-related diseases but it is unnecessary to wait for a complete understanding or overwhelming proof of one point to make the maximum use of existing knowledge to reduce risks to a minimum in the future.

---

[1] Summaries of current knowledge about the effects of asbestos are available in IARC Monograph of the Evaluation of Carcinogenic Risk of Chemicals to Man. IARC 1973, in the Proceedings of the IARC Symposium on the Biological Effects of Asbestos, Lyon 1972 (IARC 1973), and the Report of the Advisory Committee on Asbestos Cancers to the Director of the IARC (1973).

Prevention of Risks Due to Exposure to Asbestos

(a) Technical Prevention

16. Having regard to the risks indicated in the foregoing review of the pathological effects of exposure to asbestos dust, the experts have been asked to consider methods whereby such risks can be prevented. The problem of the prevention of harmful dust emmission is complicated because of the wide and varied range of products containing asbestos and the variety of uses and applications. The peculiar and in some respects unique properties of asbestos fibres have led to their utilisation in combination with many other materials. It is said that there are more than 3,000 different varieties of such products, varying from the familiar asbestos cement corrugated sheet to the very sophisticated asbestos-reinforced material used in heat shields on spacecraft.

17. This variety of products requires a considerable diversity of processes for their manufacture; the properties of resistance to heat and corrosion of asbestos fibres makes them virtually indestructible. Thus in many applications the materials will endure to the point that they must eventually be removed and disposed of in such a manner that, as in the case of manufacture and application, the possibility of harmful dust emmission is prevented.

18. Safer substitute materials rendering the same purpose as asbestos are desirable and in some instances apparently less harmful materials have been developed. Such substitutes should be used whenever possible, but they should be subjected to the appropriate tests to determine their relative safety, fire and health risks. Nevertheless, it is apparent that the properties of asbestos fibre are such that its continued use is unavoidable in a number of materials.

19. Even where alternative materials have replaced asbestos, there will for many years be installations - plant, buildings, ships - where in due course the asbestos material formerly used (principally in the form of thermal insulation) has to be removed. For many years to come therefore it will be necessary to ensure that such work is performed in such a way that the health of men engaged in this work is not impaired.

20. Consideration of the techniques by which people can be protected from risks arising from asbestos indicate that a fundamental requirement is to distinguish between, on the one hand, those situations where the form of the product and/or the manner in which it is used makes it difficult or impossible to prevent the emission of harmful quantities of asbestos dust, and on the other hand, those materials where the asbestos is so bonded with other materials that in normal use there is little possibility of harmful emission.

21. It follows that some means of measuring the dust exposure is essential for the guidance of those devising techniques of control, and for the monitoring of the environment to ensure that required standards are being achieved and maintained. Nevertheless, the experts stress that whatever standards of maximum dust exposure may be recommended as targets, the ultimate aim will always be the minimum possible amount of occupational exposure.

Standards of concentrations of asbestos dust

22. With any known carcinogen, all exposures must be minimised, but for practical purposes it is desirable that the competent authority establishes target standards, methods of sampling, measurement and frequency of monitoring. It was recommended by the experts that the membrane sampling method[1] as described by the Asbestosis Research Council should be adopted as an international reference method for comparison and correlation of enviornmental data concerning asbestos dust concentrations.

23. In order to establish more confidently a safe standard for all types of asbestos-related disease, much additional data are needed. The experts recommended that, in the present state of knowledge, the 2 fibres/ml standard which

---

[1] Asbestosis Research Council Technical Notes 1, 2 and 3.

had been adopted by some member States should be regarded as an interim target concentration for the prevention of risk to the health of asbestos workers. It was recognised that this standard related to the fibrogenic effects and not to the carcinogenic effects for which no standards exist at the present time.

Technical Prevention of Harmful Concentrations of Asbestos Dust

Dust suppression

24. Wherever technically possible, the process or operation should be designed or redesigned so that dust exposure is reduced to the recommended target concentration or even lower. For example, this can sometimes be accomplished by suppression through wetting or incorporation of the asbestos component into other dust-suppressing materials or compounds (e.g. bitumen). Other examples of control effectively achieved by such methods can be found in certain textile processes by moistening the asbestos which is being processed. Thorough wetting by spray nozzles inserted into old lagging substantially reduces the dust produced during the removal of the asbestos material. Certain asbestos compositions for insulation can be wetted in their bags before being extracted and applied.

25. Such considerations apply to processes from which dust would be evolved unless such measures were taken to prevent it, but there are many operations with asbestos containing materials which are intrinsically dust free. For example, the punching out of rubberised asbestos gaskets is a process which does not produce dangerous dust concentrations because the bonding effect of the rubber reduces the escape of fibres produced by the operation into the atmosphere in the form of inhalable asbestos dust. It has been possible to manufacture some asbestos products (e.g. textiles, millboard) in a dust-suppressed form so that they can be used in many applications without producing harmful quantities of dust.

Enclosure and mechanisation

26. Where it is not possible so to modify a process that asbestos dust is not emitted, the first consideration should be to localise or enclose that process or the dust-producing part of the process so that dust does not escape into the workplace. Wherever possible, mechanical means should be devised to avoid handling involving personal exposure.

27. Wherever possible, manufacturers of equipment specifically intended for use with asbestos should be required so to design and construct the equipment that it does not permit the escape of dust.

Partial enclosure with exhaust ventilation (dust extraction)

28. Where total enclosure is not practicable, in many cases partial enclosure together with exhaust ventilation can be used. Even with totally-enclosed systems, sufficient exhaust ventilation may be necessary to provide negative pressure and avoid dust leakage from joints in the system.

29. The nature of the process will determine the extent to which the process or operation can be enclosed. Openings in enclosures should be as small as possible consistent with access to the work and safe manipulation carried out inside the enclosure. Exhaust draught should be applied to the interior of the enclosure so that air moves inwards through the opening at sufficient speed to ensure that the breathing zone of the operative is free from dust and that dust does not escape into the workplace. In some cases access to the work may be such that a large opening is necessary. Such an enclosure may be more accurately described as a booth. In such cases, particular care is necessary in the design. The capacity of the booth, and the capacity, air speed and positioning of the ventilation equipment have to ensure that turbulence and eddies created by operatives and mechanical movement etc. do not obstruct the effective removal of respirable dust from the breathing zone of the operative and the workplace in general.

Receptor and captor hoods

30. When the process cannot be enclosed in the manner described in the preceding paragraphs, hoods, forming part of an exhaust ventilation system, should be fitted as near as possible to the source of the dust. These exhaust systems may be designed to receive and remove the dust-laden air that the process is delivering to them, or they may be designed to deflect dust particles that are moving in a direction imposed on them by the process, and extract them before they pollute the general atmosphere.

31. Exhaust systems associated with receptor hoods must be capable of removing all the air that the process is delivering to the hood, whereas the fan of a captor system must draw air into the hood at a speed that is capable of changing the direction of the dusty air from the process. Systems based on "low-volume high-velocity" principles have proved effective in coping with operations where high velocities are involved (e.g. abrasive wheels) and should be considered if the methods described in the preceding two sections are impracticable. It should be emphasised, however, that the design of extraction systems for any particular process requires professional expertise and it should therefore be referred to a ventilating engineer of sound professional standing.

32. In many areas of use, for example on building sites, it may be necessary to use mobile or portable equipment.

GAF 19027

Tools fitted with specially designed hoods have been developed for use with mobile dust collection units and if approved as suitable for asbestos by the competent authority, should be used.

Control of dust collected in ventilation systems

33. Dust collection by exhaust draught requires at some stage the separation of the asbestos dust from the air before it is readmitted to the atmosphere. It is important that the filtration of the air should be so effective and reliable that harmful emissions of asbestos dust are not transmitted to the general environment or returned to the workplace. Filtered air must not be readmitted to the workplace unless asbestos dust levels are not more than one-tenth of the recommended target concentration for the working environment.

34. Filtration equipment must be regularly inspected and serviced to ensure that it continues to operate at the designed efficiency. Asbestos dust collected by the unit must be regularly removed under strictly controlled hygienic conditions and removed for disposal in impermeable containers as described in the section of this report dealing with waste disposal.

Maintenance of technical means of dust control

35. All types of dust control equipment should be inspected by technically-competent persons under conditions specified by

the competent authority. A certificate of effectiveness should be issued and made available for inspection by technically-competent persons. It should also be the responsibility of the employers to ensure that such equipment is kept under supervision to ensure that it is at all times operating in the manner intended.

36. Where it is impracticable by technical measures to prevent the possibility of inhalation of asbestos dust, personal protection must be provided in the form of respiratory protective equipment and protective clothing. The use of such equipment should be limited to the interim period required to achieve dust control by technical measures required by the competent authority or to those situations where the degree of technical control of dust is limited.

37. The type of respiratory protective equipment appropriate for different levels of asbestos dust concentrations should be specified by the competent authority, which should also take responsibility for establishing standards and methods for approval of such equipment for use with asbestos. Well-fitted respiratory protective equipment of the half-face mask type will generally be found to be suitable for concentrations up to twenty times the target concentration. Where concentrations could exceed such a level (for example, in some cases of filtration plant maintenance, or removing old asbestos lagging) more sophisticated equipment such as positive-pressure respirators

(where the fresh air supply is fed by a small portable electric pump through a filter into the face piece) would be required. In extreme cases, direct air-line breathing apparatus might be considered necessary.

38. Some experts considered that there was a place for the use of lightweight disposable face masks, of a type approved by the competent authority. Others were apprehensive that the greater comfort of this type of mask might encourage their use in concentrations for which they were not adequate, engendering a false sense of security. It was recognised that the development of effective half-face respirators which could be worn with less discomfort especially in warm weather or warmer climates was very desirable.

39. It is essential that persons who are required to wear protective respiratory equipment should be individually fitted and properly trained in its use, and should be fully aware of the reasons why and occasions when the equipment must be worn. In view of the discomfort of wearing half-face respirators, the duration of continuous use should be limited.

40. Respiratory equipment should be issued to individuals for their exclusive personal use, and exchanged at regular and suitable intervals for cleaning and maintenance by suitably-qualified personnel. Equipment when not in use should be stored in suitably hygienic containers so that it does not become contaminated.

41. Protective clothing should be designed to prevent the deposition of asbestos dust on the personal clothing of the wearer. It should be issued for the personal use of the wearer, and exchanged for cleaning at such intervals as conditions of use necessitate.

42. Accommodation should be provided for changing into and out of protective clothing at the beginning and the end of each work period and for the accommodation, free from the possibility of contamination, of employees' personal clothing not worn at work.

43. Facilities, such as vacuum equipment, should be provided for the removal, at the end of the work period, of dust deposited on the protective clothing. On no account should dust be removed by compressed air or brushing. Protective clothing should not be worn outside the area or place of work for which it is provided.

44. Protective clothing collected for cleaning should be packaged in impermeable containers, such as plastic sacks, labelled as asbestos-contaminated clothing. Cleaning should be carried out under suitable arrangements (e.g. by wetting before unpacking) by cleaning services which understand the need to ensure that their own staff are not exposed to a risk from asbestos dust.

General hygiene

45. When asbestos is being used, particular attention should be paid to the regular cleaning of premises and plant so that deposits of dust do not accumulate.

46. Cleaning should be carried out by vacuum cleaning equipment which has been approved for use with asbestos by the competent authority. Alternatively, cleaning can be carried out by wet methods so as to prevent dust from being given off into the atmosphere of the working environment. Should it not be possible to use such equipment or other equally effective methods, workers engaged in cleaning should be provided with approved personal protective equipment. Cleaning should be carried out in such a manner or at such times that other workers are not exposed to risk, or the area being cleaned should be screened to prevent contamination of adjacent areas.

47. Subject to conditions laid down by the competent authority, the employer should be responsible for ensuring that asbestos dust given off in the place of work, or removed in the form of waste, does not adversely affect other parts of the factory or the general environment.

Demolition of plant buildings and shipbreaking where asbestos materials are involved

48. It was agreed by the experts that probably the greatest problem in controlling harmful dust emissions occurred during the removal of old insulation and in the demolition of premises, plants and ships in which asbestos has been used. High concentrations of dust could occur, and control by ventilation was in most cases impracticable. The experts commented therefore that

particular care should be emphasised for the protection of workers in such situations and the following methods of control applied:

(a) personal protection of a high order;

(b) the use of specially designed tools and techniques;

(c) dust suppression by wetting to the maximum extent possible;

(d) waste material collected, packaged and disposed of in accordance with the recommendations under the section entitled "Waste Disposal"; and

(e) the segregation of areas where such work is carried out to prevent risk to the health of other workers not involved in the work of removal.

It was recommended that wherever possible asbestos material should be removed separately and at an early stage of the demolition and that the use of specialised workers, experienced in the procedures outlined in the above paragraph, should be encouraged.

Waste disposal

49. Process waste, filtered asbestos dust, dust or waste collected by vacuum or other cleaning, should be collected in containers (such as impermeable plastic bags) and sealed so that dust cannot escape. These containers should be removed and disposed of in accordance with procedures laid down by the competent authority.[1]

---

[1] The ARC Recommended Code of Practice for Handling and Disposal of Asbestos Waste Material is an example of procedures adopted in one member State.

Storage and distribution

50. Standards should be laid down to ensure that asbestos fibres, mixtures of fibrous materials, process waste and materials in transit should not emit asbestos dust during storage and distribution.

51. Impermeable bags and methods of packaging should be such as to prevent the escape of asbestos dust, and to facilitate handling in such a manner that the risk of damage to the package and consequent spillage should be reduced to a minimum. Asbestos fibre should be transported in containers wherever possible and palletised to avoid the use of hooks in unloading. Bags should be marked with an internationally recognisable symbol indicating that hooks should not be used. Those concerned with the transportation of asbestos fibre should be warned of the need to observe high standards of hygiene.

(b) Medical Prevention

53. In view of the uncertainties which still exist regarding the dose-response relationship in asbestos workers and the dynamic situation in which new methods and discoveries are continually emerging, the experts agreed that it is necessary to maintain a high standard of medical supervision to ensure the best protection for exposed workers. It will be necessary for some considerable time ahead to try to correlate dust exposure to different types of asbestos with the development of signs and symptoms.

54. It was therefore agreed that workers assigned to a job involving potential exposure to asbestos dust should be subject to medical supervision. Attention was drawn to the need to ensure effective supervision in itinerant workers e.g. in the thermal insulation industry. The competent authority in each country should determine the most appropriate procedures for medical supervision.

55. The purpose of medical supervision is to detect at the earliest possible stage, those signs of disorder which might be caused or aggravated by exposure to asbestos dust, to assess the effectiveness of preventive measures and to determine the long-term effects of exposure.

56. Ideally, such medical supervision should include:

(a) a medical examination before being assigned to asbestos work. The point was made that some workers may already be suffering from respiratory disease or insufficiency and it was unwise to expose such persons to the additional hazard of asbestos exposure. There were differences of opinion on the methods of determining the contraindications to employment with asbestos and its products but it was accepted that the principle was valid and that the need for medical supervision increased the longer the worker was employed;

(b) periodic medical examinations at appropriate intervals. The periodicity varies from country to country from one to three years and depends in some cases on the nature and

extent of the possible exposure. The advantage of periodic medical examinations is not only to assess the clinical status of the worker as compared with the previous examination, but to provide counselling, for example in relation to cigarette smoking and to reinforce the need for co-operation in the maintenance and use of technical or personal protective equipment;

(c) post-employment medical examinations. It was generally recognised because of the insidious nature of the disease that medical supervision must continue after exposure had ceased. Apart from the continuing need to make a diagnosis at the earliest possible stage in the interests of the individual worker it is also important for compensation and epidemiological purposes.

(d) certification of current fitness in a manner prescribed by the competent authority.

57. The nature and extent of the examinations outlined above will depend on local circumstances but they should include:

(a) a personal and occupational history (including smoking habits);

(b) general clinical appraisal including auscultation of the chest;

(c) chest radiography. The point was made that small films are not always good enough for an early diagnosis of asbestos effects. Full-size films are necessary;

(d) lung function tests. Attention was drawn to the ILO booklet on this subject (O.S.H. Series No. 6);

(e) other tests at the discretion of the physician.

It was agreed that while asbestos bodies might be found in the sputum, there were not diagnostic of the disease and their detection was of little significance.

58. The results of medical examinations must be carefully recorded together with the worker's employment history, including data on dust measurements, so that assessments can be made of any developments in the clinical condition, correlation can be made with his dust exposure, advice can be given with regard to claims for compensation and epidemiological information can be derived for research purposes. The method of record-keeping may vary from one country to another but it is essential that:

(a) strict confidentiality in relation to individuals should be observed and personal files should be kept under the seal of medical secrecy;

(b) records should be preserved regardless of changes of employment according to procedures laid down by the competent authority in each country so that they are available for ensuring regular health supervision and for epidemiological research.

(c) Administrative Measures

59. In order to put into effect the technical and medical measures outlined above, to ensure the education and training of

all concerned and to achieve the high standards of collaboration between employers and workers which are necessary for the control of the hazard, a number of administrative measures have to be considered.

Compulsory notification

60. In view of the widespread use of asbestos the experts agreed that the competent authorities must be informed of all work involving exposure to asbestos dust so that the inspection services can take the necessary steps to ensure the application of the necessary technical and medical preventive measures already described. Recognising the difficulties of notifying all the circumstances in which exposure to asbestos dust may arise (reference was made particularly to demolition operations) the experts considered that there should be a notification procedure, if necessary limited to particular occupations, by which the employer would inform the competent authority of work involving exposure to asbestos dust.

Exemptions

61. In circumstances where it can be shown that the risk of inhaling asbestos dust is negligible the competent authority may grant exemptions from any or all of these technical or medical recommendations for control.

Education and training

62. The experts attached great importance to the need for a full understanding of the nature of the asbestos hazard by all persons concerned both inside and outside the undertaking. It is only in the light of this understanding that effective measures can be taken for the control of the hazard.

63. Attention was drawn particularly to the need for an authoritative booklet, suitably illustrated by photographs, line drawings or cartoons, covering the manifold applications of asbestos and describing the technical and medical preventive measures. Some countries have already produced such literature which could form a model for an international text. Other methods of instruction such as films and film strips were mentioned and particular reference was made to the value of the spoken word, either to individuals, e.g. in the course of a medical examination, or to groups of workers or line management.

64. Reference was also made to the need for training of:

(a) physicians so that they can fully appreciate the significance of asbestos exposure in their patients;

(b) occupational hygienists in the methods of measurement and control of asbestos dust;

(c) representatives of employers and workers in industries using asbestos;

(d) civil servants in the official bodies whose duty it is to administer the legislative provisions relating to the use of asbestos.

The level of training provided will depend on circumstances. Those persons working within the industries using asbestos will in general require more detailed knowledge than those outside.

Collaboration between employers and workers

65. The experts recognised the value of effective joint consultation which involves the full and frank disclosure of information relating to dust measurements, epidemiological studies, plant inspections, waste disposal and the like. Reference was made to the practice in some countries of ensuring this interchange of information.

66. It was agreed that without minimising in any way the responsibility of the employer for proper and effective preventive action, his representatives should co-operate with those of the workers in taking practical steps for:

(a) consultation with a view to devising procedures to ensure that the requisite action is taken for the workers' protection against the hazards of asbestos dust at their place of work; and

(b) co-operation in programmes of prevention and supervision, all persons being encouraged to take part.

67. At the same time it was recommended that workers, technicians and any other persons whose work directly or indirectly involves a risk of exposure to asbestos dust must abide by the

prescribed safety rules and make proper use of prevention and protection equipment. This would includ the wearing of personal sampling apparatus where this is considered necessary.

Mr. A.A. Cross
(Reporter)

Dr. J.C. McNulty
(Chairman)

Dr. R. Murray
(Reporter)

Geneva, 18 December 1973