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WORLD SYMPOSIUM ON ASBESTOS

The World Symposium on Asbestos held in Montréal last May drew about 700 participants from 49 countries. Sponsored by the Government of Canada, the Government of Québec and the Commission of the European Communities, the Symposium whose theme was "Asbestos, Health and Society" enabled representatives of the scientific, government, industrial and labour sectors to have their opinions heard.

Given the volume of information gathered during some 22 hours of lectures and discussions, it is to be expected that publishing of the proceedings in two languages will require long and arduous work. Through the cooperation of several of its members who participated in the Symposium, AMAQ was able to collect quite a few notes which complete the information already available from a tape of the discussions. Although there is no question of drawing up a detailed report of the Symposium's proceedings, it is, however, possible to focus on the highlights which, in hindsight, seem to stand out as the direction of this meeting. This bulletin is being published with a view to synthesizing the findings and supporting them with the speakers' remarks.

Conclusions of the Secretary General

At the end of the Symposium, its Secretary General, Dr. J. Dunnigan, reminded the participants in the closing speech that there was no simple answer to the main issue of the Symposium: "Can society live with asbestos?.

Indeed, although the participants answered "yes" to this question, they nonetheless multiplied the warnings and demands for the exeroise and systematic and concerted application of legal and strict controls of asbestos at all levels.

Dr. Dunnigan moreover pointed out: **"It is obvious that research is far from complete. Much effort and time will be needed to fill in the numerous gaps in our knowledge. The analysis of epidemiological data must be pursued, so that the decisions of tomorrow can be made in the light of data that are more recent and extensive than what is available today, especially with regards to the evaluation of risk of low levels of exposure, in the occupational and para-occupational settings as well as in the general environment.**

"Concerning the general population, I think we can say that with the present stage of knowledge on the real and identifiable biological effects, no scientific or medical evidence allows us to conclude that there is a risk for the general public using asbestos-based products, or that such risk, if any, would be greater than the multitude of other risks encountered by the citizens of a modern society in their daily lives.

"In our societies where the responsibility of individuals, groups and nations becomes increasingly necessary, the widest and most objective information must be made available so that nations, groups and individuals may take decisions in a responsible manner".

Dr. Dunnigan concluded: **"If this first multidisciplinary symposium has contributed to the dissemination of extensive although sometimes contradictory information, I will be happy to close these proceedings on an optimistic perspective".**

Asbestos, Health and Society

Although the wide variety of factors involved in the asbestos issue make it difficult to get an overall view which is both complete and objective, the Symposium made it possible to determine the main orientations which, henceforth, should guide scientists, governments, industry and labour unions in taking up their positions and in drawing up their policies.

No to Banning, Yes to Controls

No matter where the speakers who succeeded each other to the rostrum came from, no matter their leaning or specialty, it was very clear that, with the scientific knowledge and technology currently available, it would be unwarranted to ban asbestos

Dr. I. Selikoff

It is interesting to note here that Dr Irving Selikoff, Director of the Environmental Sciences Laboratory of the Mount Sinai School of Medicine, admitted that the setting of suitable controls would make it possible to continue living with asbestos In fact, during the question period following his address, he stated: "If asbestos use is **properly controlled, it need not be banned. In the vernacular of the United States, the ball is now in the industry's court. The problem is proper control and if that is achieved, as I said in 1976, a ban will not be requested".**

Moreover, although Dr Selikoff did not say exactly what he expected from the industry, he did strongly insist that everything possible be done in the future to ensure the safety of all **"This discussion will not be able to answer the critical question "should the use of asbestos be continued?" if evidence is also not available that it can be safely used, that there will be vigorous insistence on all feasible safety measures; not minimal controls but maximum capabilities. Would this prevent all asbestos disease? No, but it will avoid all that can be avoided, at least at this time. It may well be that to do less than we can will be unacceptable".**

A. Gorsuch

For her part, Ms Anne Gorsuch, Administrator of the Environmental Protection Agency (EPA), who was at the Symposium to present the American policy regarding asbestos legislation, also indicated that the banning of asbestos would not be a suitable measure **"Given what we know about asbestos today, we realize that any premature rejection of all uses because of politicized theories about potential dangers would have been clearly out of order".**

There were many questions from the audience regarding this possibility of society continuing to use asbestos and its products Although most speakers did not hesitate to recommend sustained and on-going effort towards asbestos controls, they admitted that the technology, research and political will in this regard have already made it possible to live with asbestos, and will continue to do so in the future

Dr. J.C. McDonald

In addition, during one of the Symposium's panel discussions, Dr Corbett McDonald, Director of McGill University's Institute of Occupational Health and Safety, clearly indicated that asbestos mining did not pose any particular hazards for people living in mining regions **"My opinion is that, provided reasonable standards of environmental hygiene are observed, the general population in the chrysotile mining districts, in Black Lake for example, are not at any detectable risk."**

It will be recalled that Dr McDonald directed several asbestos studies, one which is among the most important epidemiological studies dealing with the Thetford Mines and Black Lake region

J.F. Martonik

John F Martonik, Deputy Director of Health Standards Programs of the U S Department of Labor, also favoured continuous control of asbestos, particularly through adequate regulations In this regard, he stressed the importance of the volume and quality of scientific data already available for setting up control structures which are both fair and strict **"From the regulatory standpoint, the scientific information on asbestos is or could, at least for regulatory purposes, be considered abundant in comparison to information we have on many other toxic substances. And in general, although there are uncertainties, there is a prolific amount of information available, and sufficient information to take some amount of regulatory action. So, although we've been discussing these uncertainties today, we should not neglect to focus our attention on the fact that much is known about asbestos, much more perhaps than we know about many other toxic substances in the environment today".**

Mr Martonik also reiterated the American Government's position which, through the OSHA, intends to ensure the safety of asbestos workers and the population in general by setting up suitable controls and regulations He also stated that the industry should take its share of responsibility in the implementation of this policy

All these remarks coincide well with a context of cooperation at all levels for controlling asbestos so that Society may continue to benefit from its qualities without having to worry about possible negative effects

Controls: Scientific and Socio-Economic Implications

As regards the setting up of controls, the representatives of the scientific community, the governments, the industry and the workers attempted to determine the factors which any future regulating of asbestos should take into account.

If, in light of their remarks, the scientific information appears to be the very basis for any regulatory process, it also appears that the social and economic costs related to the implementing of the legislative measures should be taken into consideration

W. Simpson

The conclusions of the British Advisory Committee were expressed in the same spirit, as the Committee's Chairman, Mr William Simpson, who is also President of the Health and Safety Commission, told the Symposium **"The evidence certainly pointed to a strategy for reduction in exposure to the minimum that was reasonably practicable; and reasonably practicable in legal British language means balancing the risk against the cost And the recommendations of the Committee did suggest that we would have a maximum limit exposure level and the continuing duty on people to reduce exposure to the levels that were reasonably practicable".**

A. Gorsuch

While reiterating the American Government's policy objectives regarding asbestos, Ms Anne Gorsuch said that the Environmental Protection Agency (EPA), of which she is the Administrator, would not fail to take economic requirements into account when it draws up its recommendations **"On behalf of President Reagan I reaffirm the United States commitment to the protection of the environment in ways that ensure the health, safety and well-being of our people, and the people of the International community".** She continued: **"This administration will integrate its environmental policies with its measures for promoting the economy, encouraging responsible government, and easing the burdens borne by our people because of governmental programs".**

N. Venkataraman

Moreover, it appeared that the cost-benefit concept differs according to the level of industrialization of a country, particularly in developing nations due to their socio-economic requirements In this regard, Mr Nagaswami Venkataraman, Executive Director of Hindustan Ferodo Limited, stressed the vital role played by asbestos in the key sectors of India's economy **"Asbestos plays a major role in the key sectors of the Indian economy and in India's plans for growth, modernization and self-reliance. It is also evident that if these plans are not to be adversely affected, the use of asbestos is likely to increase in the 1980's. (...) Looking at the prospect of substitutes for asbestos, it is seen that at the present time, there is no techno-economically viable alternative which is available in sufficient quantities and which can be used in existing processes".**

C. Ushewokunze

Describing the special situation of a developing nation which produces asbestos, Mr Christopher Ushewokunze, Secretary of the Ministry of Mines in Zimbabwe, pointed out that asbestos helps to improve the living conditions of Third World communities: **"Asbestos-cement products are particularly significant to developing countries. (...) In Africa and Asia this material provides pre-fabricated low-cost housing systems which provide an immense benefit where there are serious housing problems. Asbestos-cement pipes are relatively light compared to concrete and steel, and of course are comparatively cheap".**

The Population is Safe

The issue of asbestos and the environment was widely debated during a session specially devoted to the multiple aspects of non-occupational exposure

Dr. J. Siemiatycki

Dr Jack Siemiatycki, an epidemiologist with the Institut Armand-Frappier of Montréal, presented the conclusions of a study sponsored by the Québec Department of Social Affairs and conducted recently on the people living in the asbestos region. The results of this study now make it possible to state, among other things, that females living in the towns of Thetford Mines and Asbestos are experiencing no excess mortality due to asbestos exposure. This is all the more remarkable given the fact that these people are exposed to a concentration of fibres in the air and water that is infinitely higher than elsewhere, due to the presence and mining of chrysotile deposits nearby.

Dr Siemiatycki pointed out that **"Despite the fact that these women have been exposed, most of them since childhood, to an environment which may have been a 100 times or more polluted with chrysotile asbestos than those reported in some major North American and European cities, they have not experienced mortality rates significantly in excess of Québec rates. The confidence limits would indicate that these results are certainly compatible with the hypothesis of no excess risk".**

W. Felbermayer

In order to get as complete a picture as possible of the effects of asbestos on the general population, it was essential to study also emissions into the environment which could be related to finished products. This aspect of the issue was researched by Mr Wolfgang Felbermayer, Head of the Institute for Environmental Protection and Clean Air, in Austria.

The study was more specifically aimed at determining the consequences on the environment of widely used asbestos-cement roofing in a given site. The object of the study was to answer the following questions: What is the total concentration of fibres in the air and how are they distributed? What influence do weather changes have on the fibre concentration in the air? Does the normal wear of asbestos-cement products increase the concentration of asbestos fibres in the environment?

To answer these questions, the researchers analyzed air samples from sites with and without asbestos-cement roofing. One of the most remarkable results of this study is the demonstration that the concentrations of asbestos fibres in the air which can be attributed to asbestos-cement roofing are always below 1 fibre per litre, no matter what weather changes occur. Mr Urs Mani presented the report on the study to the Symposium. **"At the test sites with and without asbestos-cement roofing, the total fibre concentration has the same magnitude as organic and inorganic fibre concentrations. (...) The extent of the total fibre concentration is dependent on environmental factors such as type of heating, land use, and so forth. It was possible to correlate fibre concentrations with seasonal conditions only at sites with asbestos-cement roofing. (...) The average calculable asbestos fibre concentrations at the two test sites are lower than the determining limit of 1 fibre per litre".**

M. Ross

Finally, Mr Malcolm Ross, Research Mineralogist with the United States Geological Survey, reminded the assembly that the presence of asbestos in the environment and the resulting exposure for the population could not be solely related to the commercial mining of this ore. In fact, asbestos exists in its natural state throughout the earth's crust. It can be found in water as well as in soils.

In addition to the various types of asbestos which are mined commercially, geologists and mineralogists have found that asbestiform fibres are present in other types of ores. Finally, according to the mineralogist, the extraction of certain ores, such as gold, emits mineral fibres which are chemically identical to asbestos fibres and represent similar risks. Mr Ross therefore concluded **"The problem of non-occupational exposure not only extends from the use of commercial asbestos but from all sorts of other activities that we might not think as directly related to asbestos exposure".**

Having presented these facts, the author concluded his address with a sarcastic remark aimed at unwavering disparagers of asbestos: **"If a carcinogen is defined as something that will cause cancer when implanted into animals, – and it appears that some portion of the particles in many kinds of rock dust could, when implanted into experimental animals, cause some tumors – then we have a definition that a significant portion of the earth's crust is a carcinogen".**

Substitutes, an Uncertain Avenue

Medical and scientific research combined with technology have made it possible today to provide for the safety of the workers and the population in the extraction and processing of the fibre. On the other hand, it is still difficult at the present time to achieve the same certainty for every product, although studies are being conducted to determine the safe uses of asbestos.

Aware of this fact, the industry, the governments and the scientists have collaborated in the development of substitutes which would offer better guarantees of quality and safety than asbestos. However, the very properties of asbestos fibre and its many applications make its replacement an extremely complex issue.

A. Pye

This was emphasized by Mr Andrew Pye, Associate Editor of Design Engineering Magazine, of Great Britain, who collaborated in a study on substitutes. **"The point that I wish to emphasize is that the substitution of asbestos containing materials will not be by a single, universal product; rather each application has to be considered individually. The resultant erosion of the supply infrastructure of the user industries will evidently lead to cost penalties associated with the use of substitutes".**

Dr. R. Bluzat

In fact, the speakers who dealt with this matter had to admit that, in the majority of cases, the substitutes offered no more guarantees than asbestos and that, consequently, any substitution at the present time seemed premature. This opinion was supported by Dr Roger Bluzat, Research Consultant for Saint-Gobain Pont-à-Mousson, in France, using the example of asbestos-cement. **"In my opinion, asbestos cannot disappear yet – and I do mean yet – from asbestos-cement products, because the substitute products still do not have all the qualities required".**

Dr Bluzat then expanded on his statement, particularly with regard to biology, technology and cost implications. **"First of all, concerning the biological safety of artificial mineral fibres, let's say that this safety, as Dr. Chris Wagner said, is probable, but is not yet guaranteed. (...) Secondly, there is the aspect of the durability of the products. With synthetic and organic fibres as well as with fibreglass, resistance problems within the cement are still very complex and probably still not resolved. Finally, there is a cost problem which must be mentioned, even if it won't please everybody. The substitute product is more expensive and for the time being, this higher cost goes hand in hand with poorer quality. Hence, replacement is probably possible on the long term, and is currently the subject of intensive studies.** In the short term, however, I think that the efforts are being directed at a manufacturing method and types of use which keep exposure to a minimum".

It appears from these discussions that current scientific knowledge does not permit to draw conclusions regarding the biological effects of the substitute fibres, whether they are organic or inorganic.

Selected Safe Uses

The recommendation to reduce exposure levels through selective regulation according to the types of fibres and products seems to be the general direction taken by a good number of the speakers and participants at the Symposium.

W. Hunter

In particular, it is the position adopted by the CEC and presented by Mr William Hunter, Principal Administrator of the Health and Safety Directorate of the Commission of the European Communities: **"Exposure reduction is to take place by technical and individual protection measures. Limit values proposed for crocidolite are of 0.2f/cc and for other types of asbestos as 1f/cc".** Mr Hunter also pointed out that, if asbestos is to be ▶

Selected Safe Uses

replaced, there must be the assurance that the substitutes offer better guarantees of quality and safety. Referring to a proposal of the CEC, he explained that, with regard to finding a replacement: **"asbestos shall be replaced by suitable and safer substitutes when they are available".**

For the moment, the Commission is proposing regulations dealing with the restrictive use of asbestos through a selection of fibres and products considered safe. **"There is a requirement for crocidolite which prohibits crocidolite except in asbestos-cement pipes and in acid-resisting seals, gaskets and joint packings. There are other prohibitions: there is a prohibition as regards insulation, air filters, and roadway surfacing, and also a prohibition when asbestos is used solely for decorative purposes".**

Dr. J.C. McDonald

Along the same lines, but referring to the manufacturing of the products rather than their use, Dr. Corbett McDonald stressed the variations in the dimension and very nature of the risk, depending on the type of fibre and type of industrial process. Referring to the four major epidemiological studies dealing with the dose-response relationship as regards lung cancer and to the results of 24 studies as regards mesothelioma, Dr. McDonald drew attention to the fact that **"There are very marked differences in the risk in different industrial situations, and very substantial differences, particularly relating to mesothelioma, in relation to the fibre types I would say that unless society can control asbestos, using measurements of the fibres of the size that really are causing trouble, then it would be best to take notice of these differences, and perhaps to concentrate its social needs in the industries of lower risk, which in general are probably the friction industries and the cement industries – certainly not insulation, very questionably textile – and to be very cautious, or to abandon the use of the amphiboles. I will not say that it might not be possible to deal with the amphiboles if we had an adequate measures of exposure".**

During the panel discussion which followed his address, Dr. McDonald said regarding chrysotile **"I am reasonably happy that it is possible to mine chrysotile, probably to make friction products, probably to make asbestos-cement pipe products at a level where no epidemiologist would be able to detect an excess (risk)".**

Asbestos: A Decision for Society

Following the many addresses and discussions at the Symposium, a consensus was reached to the effect that the future of asbestos lies in the development of suitable regulations and the systematic application of strict control measures, from the moment the fibre is mined to its use in the form of finished products, including all phases of its handling. However, the conditions of this control and the basis for these regulations still give rise to major differences of opinion between the various parties concerned.

Dr. J. Peto

Furthermore, it must be recognized that the scientific data, which must be the basis for any decision, do not always tally. This point was raised by Dr. Julian Peto, epidemiologist with the Imperial Cancer Research Fund at Oxford University. The speaker, in fact, stressed the need for researchers to reach a consensus before supplying society with the data required for any decision-making.

On the other hand, Dr. Peto pointed out that the scientist cannot be asked to give the answer to a moral or political question. **"Rights and responsibilities are moral and social rather than scientific issues, and a scientist is no better qualified than anyone else to decide whether a risk of 1 in 1 000 or 1 in 10 is acceptable. The scientist's job is to decide whether the risk at a particular level of exposure is in fact 1 in 1 000 or 1 in 10".**

While recognizing that the assessment of the risk is still a complex task for all parties concerned, Dr. Peto is of the opinion that it is up to Government to determine what is an acceptable risk, since this is a political decision. **"It seems to me self-evident that neither management nor labour can be expected to adjudicate fairly in conflicts involving their interest. So the primary responsibility for both regulation and effective enforcement has to lie with the government. The government, and hence, in fact, society will bear the primary responsibility, both for failing to get the best advice, and for failing to act on it".**

New Scientific Data

The chemical differences noted between the raw asbestos fibre and the processed fibre could produce marked variations in their biological effects on man.

Dr. J. Dunnigan

At least this is what can be inferred from the synthesis of about twenty scientific studies presented at the Symposium by Dr. Jacques Dunnigan, Director General of l'Institut de Recherche et de Développement sur l'Amiante (IRDA). Showing that the surface properties play a determining role in the toxicity of fibrous materials, these studies provide important information which could prove to be an essential element in any future regulating of asbestos and its products. In addition, this finding adds a new dimension to the theory developed by Mr. Miller Stanton according to which the physical properties of the fibre could be the principal factor responsible for the biological effects of asbestos.

According to Dr. Dunnigan **"Fibrous particles which may be emitted or released from finished products may very well be physico-chemically different from the original fibres. This in turn may very well lead to a modification of their biological effects".** Stressing the importance that such a difference could have in terms of regulations, he added **"Regulations concerning the use of finished products are not scientifically supported if arrived at by extrapolation of the biological or epidemiological data obtained after exposure to pure, unmodified fibres. Regulations should therefore discriminate between the end-uses of chrysotile in which the fibres have been altered physico-chemically, and those uses in which pure, chemically un-modified fibres may be emitted".**

Dr. A. Langer

Dr. Dunnigan's remarks were supported by Dr. Arthur Langer, Associate Director of the Environmental Sciences Laboratory of the Mount Sinai School of Medicine, New York. During the panel discussion following the addresses, Dr. Langer in fact declared **"The bottom line is that in any study, whether it's an epidemiological study, or an animal study or an IN VITRO study, the materials must be thoroughly characterized physically and chemically to make sense of the overall pattern".**

A. Deruyttere

On the practical side, a comparative study made it possible to differentiate between the physico-chemical properties of virgin asbestos dust and asbestos-cement dust. Mr. André Deruyttere, Head of the Physical Metallurgy Section of the University of Leuven (Belgium), presented the details of this research which he conducted. He explained, in particular, that if the two types of dust are submitted to various tests, including that of absorption, it is found that the reaction of the fibrocement dust is closer to that of cement than that of pure asbestos. According to the author, the following general conclusion can be drawn. **"One should not consider that everything which applies to virgin asbestos also applies to asbestos-cement dust. It would be interesting, however, to make similar investigations of dust produced in other circumstances and from end-use products of other compositions or which have been processed in a different way".**

Dr. P. Sébastien

Furthermore, during the discussion following the addresses, Dr. Patrick Sébastien (France) also stressed the importance that the data on the biological effects related to the fibre's physico-chemical characteristics could have on epidemiological studies: **"We already have evidence showing that the dose mechanisms, such as deposit, purification, translocation, durability, cell penetration, are controlled by, among other things, certain physico-chemical characteristics of the fibres. Unfortunately, the epidemiologists have not been able up to now to incorporate these data into their studies. The only data available to them was the level of pollution expressed in millions of particles per cubic foot – which information might not be specific enough".**

In addition, he stressed the importance of analyzing tissues for assessing exposures. **"I'd like to mention that there are methods inspired from biological monitoring which, by characterizing and determining the quantity of fibres in human biological samples, enable to better document asbestos exposures and particularly, past exposures".**

On this same subject, Dr. Alison McDonald, Program Director at the Institute of Occupational and Environmental Health, in Montréal, pointed out that recent laboratory results from the analysis of series of lung tissues, agree with the findings of other epidemiological studies.

The Industry's Position

While stressing the importance of the progress achieved in the field of asbestos over the past ten years, the Symposium made it possible to better assess the work which remains to be done. In view of this, the industry reiterated, through its representatives, that it would fully assume its responsibilities.

This was in essence the message of Mr. Jean Dupéré, AMAQ President, and of Mr. Etienne van der Rest, Chairman of the Board of the AIA.

Asbestos International Association

"The first duty of industry is to take all necessary precautions so that, at the stage of extraction of fibres from the mines, of manufacture of products using asbestos as a raw material and, finally, of utilisation of the finished products likely to release the fibres, there is no socially unacceptable risk.

"In the light of current knowledge, industry is working on the basis that there is a socially acceptable risk when the fibre level is kept below 2 f/cm3, a level which today has been adopted in most countries.

"Industry feels that it is one of its duties to keep an open, objective and constructive discussion going with governmental, trade union, medical, scientific and consumer interest circles and to seek with them suitable solutions which are acceptable to everyone."

— Etienne van der Rest —

Association des mines d'amiante du Québec

"The debate on asbestos is not over yet. The case remains open... because the evaluation of the positive and negative aspects of asbestos cannot be done in isolation, without weighing the positive and negative aspects of substitution, which still remains entirely to be evaluated, whether with regard to the health and safety of the workers and the public, product safety or environmental protection.

"The industry I represent unreservedly supports the principle of applying standards and regulations that would govern asbestos and its usage. What is more, it recently even took the initiative of setting up an information centre devoted to promoting the safe use of asbestos, one of the essential tasks of this centre being to make countries still without laws and regulations of this nature aware of the importance of doing so without delay.

"What we ask of the legislators and regulatory bodies is that they recognize the progress made in the last 20 years, in resolving the problems related to asbestos and in developing techniques and products that are in every way the equal, as regards safety, of thousands of products that are used daily and that no one would ever think of questioning.

"What we also ask, inasmuch as the objective of the laws and regulations is to protect the workers and the public and not to destroy an industry or a product at the expense of another industry or product, is that asbestos be viewed in terms of the potential and limitations for its safe use today and not in terms of the conditions under which it was produced and used 25, 30 or 40 years ago. This is all we ask. Nothing more. Nothing less."

— Jean Dupéré —

Editor's note:
Quotations of Drs. Bluzat and Sébastien are translations from French.

Bulletin

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