DUST EXPOSURE RESULTS IN 359 ASBESTOS-USING FACTORIES FROM 26 COUNTRIES

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Mr. Chairman,
Ladies and Gentleman,

PART I: DESCRIPTION OF THE SURVEY

It is a great pleasure for me to present, on behalf of the Asbestos International Association (A.I.A.) and for the first time at an international scientific conference, the results of an inquiry carried out from investigations in the member countries of this Association. The prime object of A.I.A. is to encourage protective measures to eliminate risks to health arising from exposure to asbestos and I believe that such an inquiry is also a helpful part of the motivation and the emulation necessary to achieve it.

The 1986 survey is the third one so conducted by sending out a questionnaire prepared by an A.I.A. Dust Advisory Panel (D.A.P.) including experts in the field of industrial hygiene. For 1986, twenty-six members out of 32 (Figure 1) provided useful figures, which is an increase of 3 as compared with the previous returns.

Furthermore, another inquiry was carried out in order to evaluate the representativity of the survey. This was achieved through a comparison between the number of asbestos workers whose exposure is known and the total number of asbestos workers exposed among the company members from 24 national associations. Altogether about 75% of the factories within the national associations took part in the inquiry, which corresponds respectively to 78% of the asbestos workers. Of course, one should remain very cautious on such an evaluation as there is obviously no one national or international binding rule for a company to become a member or take part in the activities of an industry association. This point is primarily important to consider in connection with some of the small but numerous companies using asbestos at some stage and which are usually not members of the national asbestos association.

As a conclusion of this first part of my presentation I wish to say that our prime objective remains that all the A.I.A. members should be very soon in a position to contribute to the survey.

As we shall see during the second part of my talk, significant progress has already been achieved on the issue. However, as an introductory warning to that second part, I must point out that the results which I am going to present now cannot be extrapolated to become a worldwide picture of the situation and should be cautiously understood within the limited investigations that any national association may undertake in this field.

Also, I would like to mention that an annual detailed report of the survey is distributed by A.I.A. to all its members, disclosing their individual code country number.

Within the limited time which is left now, I shall try to comment on the main findings so far available.

ARGENTINA	GERMANY	NIGERIA
AUSTRIA	GREECE	REP. OF SOUTH AFRICA
BELGIUM	INDIA	SPAIN
BRAZIL	IRELAND	SWEDEN
CANADA	ISRAEL	SWITZERLAND
CHILE	JAPAN	UNITED KINGDOM
DENMARK	KENYA	U.S.A.
FINLAND	MEXICO	ZIMBABWE
FRANCE	NETHERLANDS	

Figure 1. Countries contributing to the 1986 survey.

PART TWO: EVALUATION AND RESULTS OF THE SURVEY

Five categories of asbestos activities have been selected and classified into the following groups:

- Manufacturing of asbestos containing products (including asbestos cement, friction materials, textiles and others)
- Asbestos production (mines, mills)

Figure 2 shows the number of factories contributing to the 1984, 1985 and 1986 survey respectively for the various activities described above. Altogether, a significant improvement has been achieved since the initial 1984 survey (130/302/359) and it can be anticipated that this trend will be confirmed through the next inquiries.

Looking now at the corresponding numbers of asbestos workers (Figure 3) whose exposure results will be described later on, more significant progress in the 1986 returns can be observed with 45,696 results available which is a one third increase as compared with the previous year. Most of the results originate from the asbestos production activity, the asbestos-cement and the friction material product group.

SAMPLING AND COUNTING STRATEGIES

The method used for monitoring of the workplace is always the so-called "membrane filter method" allowing for a fibre counting among the particles deposited onto a filtering media after sampling of a determined air volume during the working time.

Several international initiatives (such as ISO and the EEC) have been undertaken to harmonize the various procedures applied and even though some few divergencies remain, these are in general much less consequent upon the results than variations due to the sampling strategies themselves.

As shown in Figure 4, most samples are personal samples,

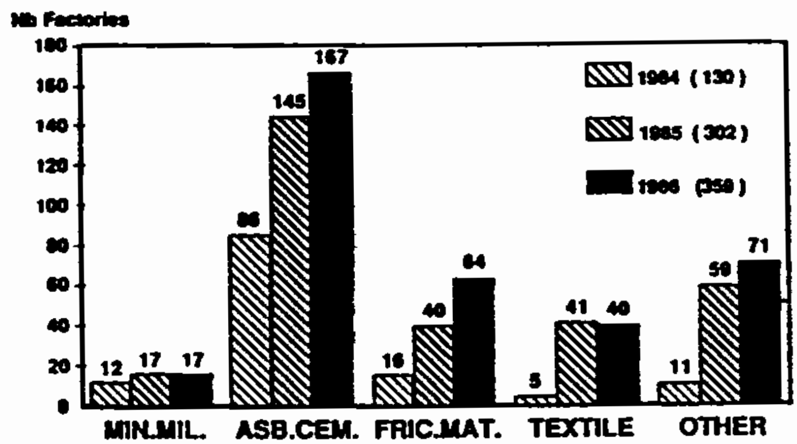

Figure 2. Number of factories covered by the A.I.A. survey (from 1984 to 1986).

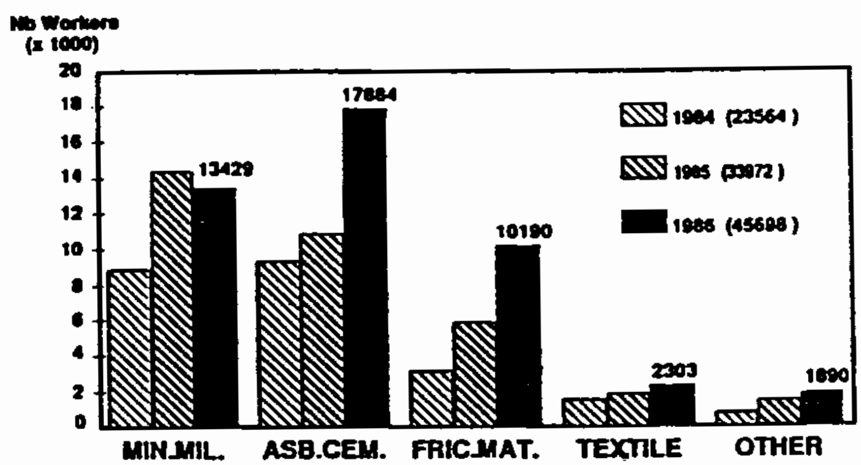

Figure 3. Number of workers covered by the A.I.A. survey (from 1984 to 1986).

but the proportion of static samples still remains rather important mainly for the asbestos-cement group as well as for the mines.

The survey has also revealed further observations pointing out that the sampling strategies have been different among the factories and/or countries. These variations originate mainly from the selection of a workplace to become representative of a job group as well as from the annual sampling frequency in use. In order to reduce the main divergencies on these matters, some recommendations have been prepared by the Dust Advisory Panel of A.I.A.; however, it should be acknowledged that defining and harmonizing the sampling strategies in general remains a rather complex issue.

It is probably through a periodic exchange of views with the main partners involved on the working site that the best practical decision will be achieved in the future.

RESULTS OF INDIVIDUAL EXPOSURE

Figure 5 illustrates the global situation among 45,696 workers from 359 factories included in the survey.

At this stage no distinction was made between the various product groups and the data were simply distributed within

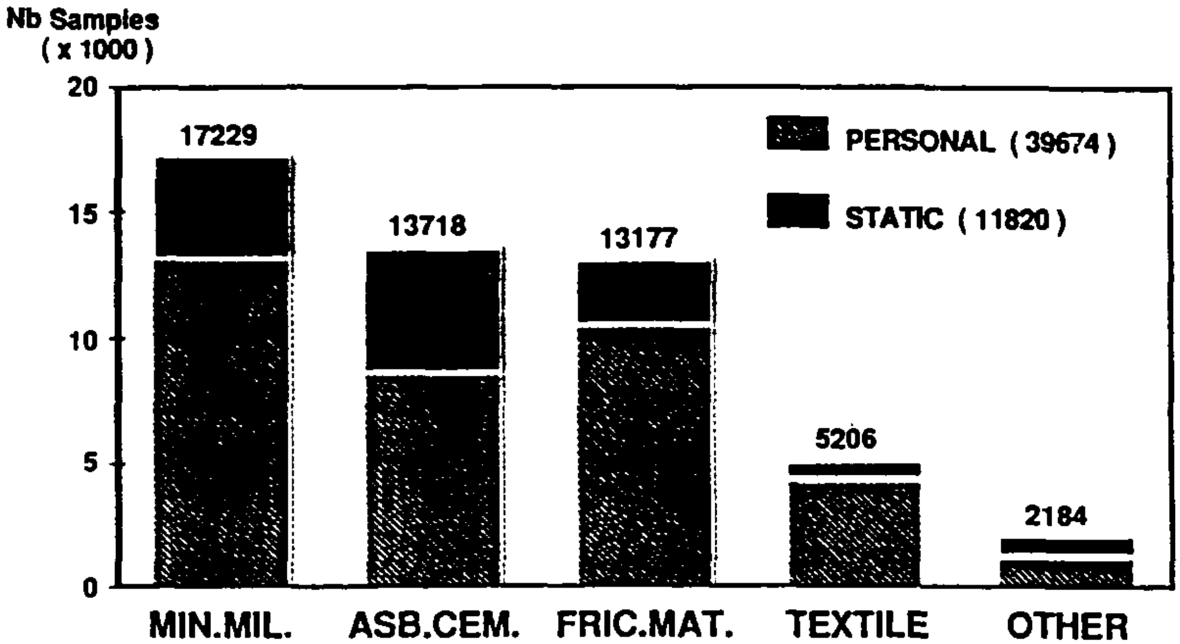

Figure 4. Yearly personal and static samples (total number by product group).

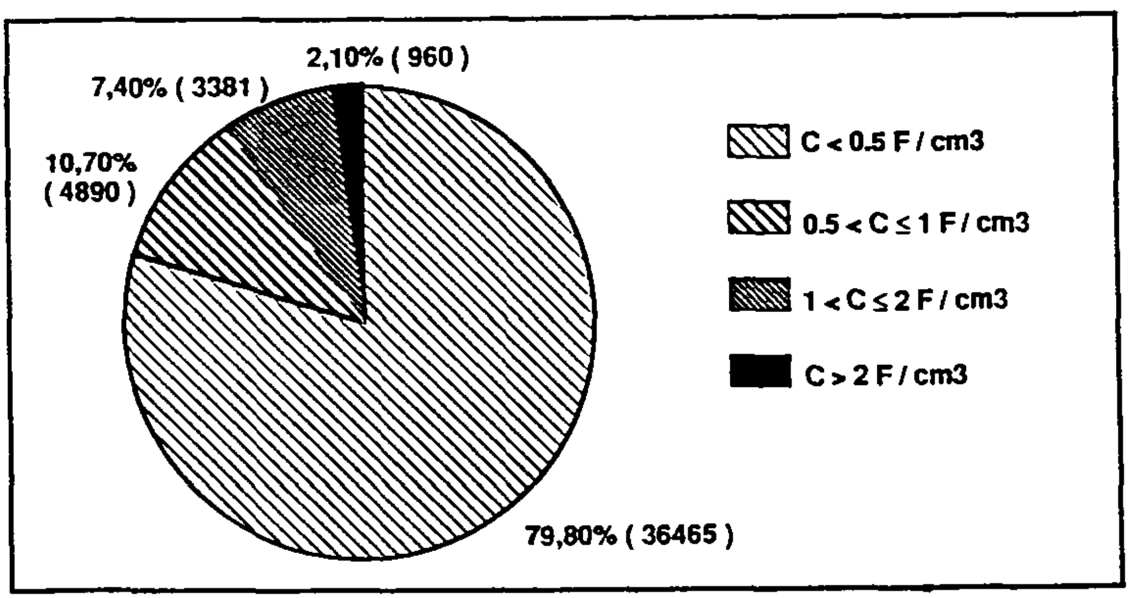

Figure 5. Asbestos worker exposure—1986 (26 countries—45,696 workers under survey).

four ranges.

C < 0.5 f/ml 79.8%
0.5 < C ≤ 1 f/ml 10.7%
1 < C ≤ 2 f/ml 7.4%
C > 2 f/ml 2.1%

By reference to a 1 f/ml T.L.V. currently often adopted, it can be seen that it is effectively enforced for more than 90% of the workers.

By reference to a 2 f/ml T.L.V. which had been the first international guideline recommended by an I.L.O. group of experts in 1973, it can be seen that a little more than 2% of the workers have an asbestos exposure above this value.

Figures 6 to 10 evaluate more specifically the mean situation observed in the various industrial activities.

The **mines and mills** group (Figure 6) has provided A.I.A. with results:

— for 13,499 workers,
— in 17 production sites
— from 6 countries

showing:

— 82.6% of results < 1 f/ml
— 16.0% of results between 1 and 2 f/ml
— 1.4% of results > 2 f/ml

The **asbestos-cement** group (Figure 7) has provided A.I.A. with results:

— for 17,884 workers,
— in 167 factories
— from 23 countries

showing:

— 95.5% of results < 1 f/ml
— 3.3% of results between 1 and 2 f/ml
— 1.2% of results > 2 f/ml

The **friction material** group (Figure 8) has provided A.I.A.

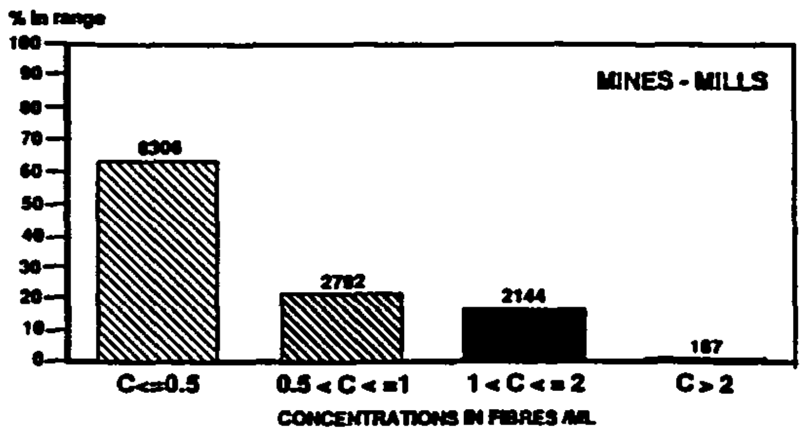

Figure 6. Asbestos exposure of workers under survey (6 countries—17 sites—13,429 workers).

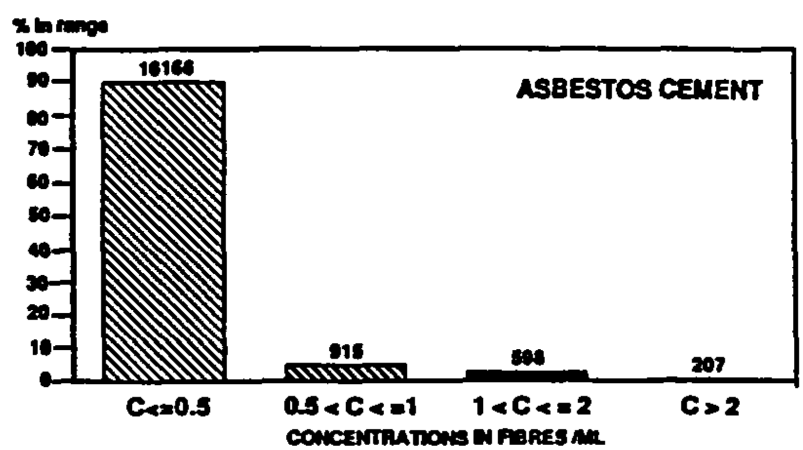

Figure 7. Asbestos exposure of workers under survey (23 countries—167 factories—17,884 workers).

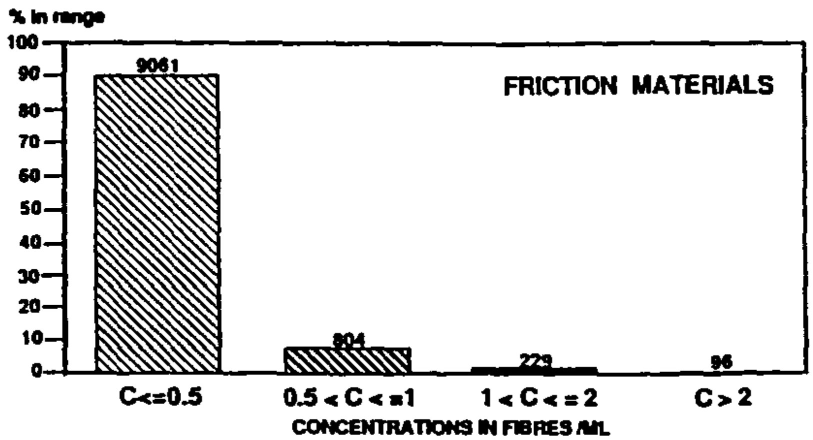

Figure 8. Asbestos exposure of workers under survey (10 countries—64 factories—10,190 workers).

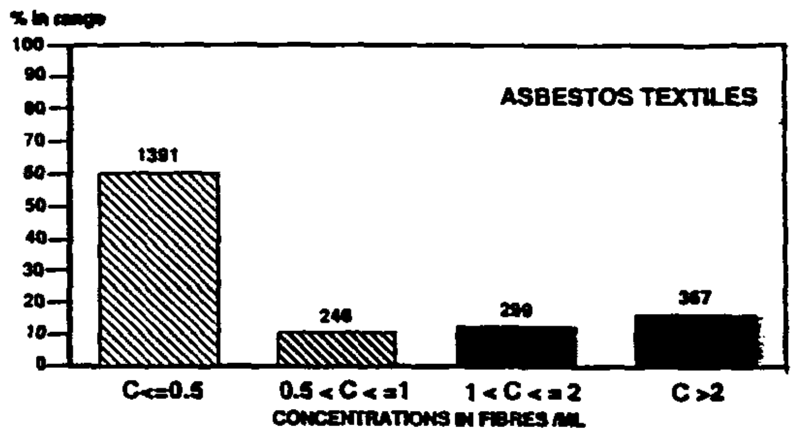

Figure 9. Asbestos exposure of workers under survey (7 countries—40 factories—2,303 workers).

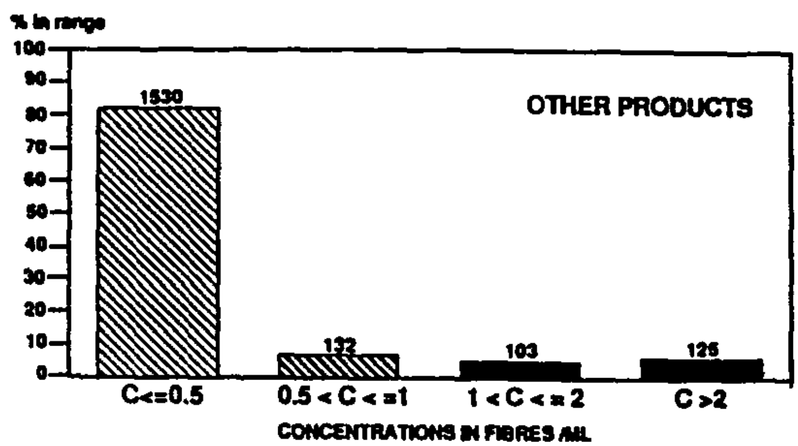

Figure 10. Asbestos exposure of workers under survey (10 countries—71 factories—1,890 workers).

with results:

— for 10,190 workers,
— in 64 factories
— from 10 countries

showing:

— 96.8% of results < 1 f/ml
— 2.2% of results between 1 and 2 f/ml
— 1.0% of results > 2 f/ml

The **textile** group (Figure 9) has provided A.I.A. with results:

— for 2,303 workers,
— in 40 factories
— from 7 countries

showing:

— 71.1% of results < 1 f/ml
— 13.0% of results between 1 and 2 f/ml
— 15.9% of results > 2 f/ml

The **other products** group (Figure 10) has provided A.I.A. with results:

— for 1,890 workers,
— in 71 factories
— from 10 countries

showing:

— 87.9% of results < 1 f/ml
— 6.1% of results between 1 and 2 f/ml
— 6.0% of results > 2 f/ml

By comparison, as shown in Figure 11, it can be observed that the textile activities involved in the survey generate the widest distribution of results with a proportion above 1 f/ml about three times higher than the mean (29.9% against 10%) and still much higher when compared with each one of the groups.

In practice, when looking at the textile situation among the limited number of countries which provided results for this product group, it can be assumed that the workers' exposure levels remain highly contrasted in this activity.

With more time available it would have been possible to show more detailed information extracted from this survey. However, I believe that this talk was sufficient to underline the most interesting aspects of such an inquiry. I just wish to add that further work is being carried out in this connection, mainly to improve the reliability of the data collected.

These are relevant on the one hand to the sampling strategies as I mentioned before and to the fiber counting activities on the other hand through an annual microscope international slide exchange and the preparation of specific training slides.

Finally, before closing my speech, I would not like to conclude without pointing out again the most important warning which I made at the beginning: although we feel quite convinced that this A.I.A. report is a major step ahead towards the improvement in the protection against the risks arising from exposure to asbestos, those results are still not complete enough to allow their extrapolation, in one way or the other, to all situations where asbestos can be used in most countries around the world.

The non existence of results might well be an indication that the risks are simply ignored, which should then be imperatively reversed and any further relevant existing results made available to A.I.A. to improve the quality of this survey will certainly be most appreciated and useful.

Thank you for your attention.

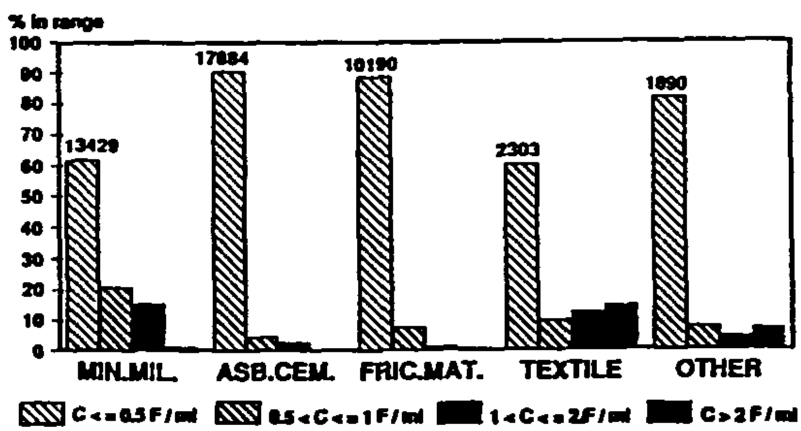

Figure 11. Asbestos exposure of workers under survey (26 countries—359 factories—45,696 workers).

Proceedings of the VIIth International Pneumoconioses Conference Part
Transactions de la VIIe Conférence Internationale sur les Pneumoconioses Tome
Transaciones de la VIIa Conferencia Internacional sobre las Neumoconiosis Parte

II

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Pittsburgh, Pennsylvania, USA—August 23–26, 1988
Pittsburgh, Pennsylvanie, Etats-Unis—23–26 août 1988
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November 1990

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DHHS (NIOSH) Publication No. 90-108 Part II