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Representing Eternit Building Products Limited:

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ETERNIT BUILDING PRODUCTS LIMITED WEDNESDAY 08 JUNE 1977

MR VAN DER MEET: I would like, first of all, to underline what everyone else has said here: that asbestos, just like most other raw materials - like coal, lead, copper - may be dangerous for the health, if the necessary precaution is not taken. That is something which we recognise - but we also know that asbestos is contributing to our daily comfort, to modern life, and to our security. It is because you here in the UK have been one of the first countries - if not the first - in the world to be convinced about the importance of this balanced advantage from one side and the possible hazard to health from the other, that you have been, and still are, the leader in the asbestos and health problem throughout the world.

I would like to tell you that the Company to which I belong, being sure that the best way to help the developing countries is to erect factories in their countries, with their help and their co-operation, has erected asbestos cement factories nearly all over the world - in South America, in Asia, and in Africa - because in fact asbestos cement is the normal follower of a cement factory, to help them to solve their housing problems in these developing countries. This means that the decisions which you have to take today may have an influence on these countries, and if there is no real medical proof than the norms are to be more strict than they are today, it will have a real influence on these foreign countries where the problem of employment is of such real importance.

Our submission only refers to asbestos cement, and that is for a good reason - that we are involved only, here in the UK, in an asbestos cement factory in Maldreth - the former Atlas Company, in Maldreth - and that is the reason why we limit our presentation to the asbestos cement problem.

First of all, we had to take a little time to see what is the advantage of the product. I will not take this opportunity to turn this Meeting into a publicity meeting! - which may be a temptation! - but I hope you will permit me to underline the main advantages of the product: asbestos cement is light, it is fire-retardant, its mineral structure makes it practically indestructible - and I must also thank the Secretary of the Advisory Committee for the fact that he must indeed consider the product to be indestructable, because he has changed the name of our Company on page 75 of the written evidence to "Eternal Building Products" - and we are happy to see that you are already convinced yourself! So I need not spend too much time on that problem!

I would like also to mention the resistance of the product to rodents and insects; the very low conductivity to heat - and last but not least, that it is an inexpensive product, which can help people in their solutions to the problem of housing - because in this country, as in other countries, construction is becoming more and more expensive, add the fact that you have at your disposal good material at a cheap price will certainly be of great interest.

The publicity part of the Expose being finished - and I apologise for it! - I think we have now to look at the other side of the balance, the disadvantages - which are the possible hazards; and with your permission, I would like to cover that in three parts: first, what exactly is the danger within the factory? - second, what is the eventual potential hazards for health for the dealers - the man who cut, drill, polish, the finished product, if necessary? - and third, what is the eventual risk for the general public?

First: in the factory. You know, we can make a lot of philosophy; we can try to make a number of extrapolations; but I really do think that what your Committee wants is facts - and I will give you three examples of factories manufacturing asbestos cement, with the exact figures, for your information.

The first, of course, is the factory at Baldreth. Since the time it began operation, there has only been one known case of asbestosis, and the average number of employed since 1929, when the factory began, is, let us say, around 350-400. Secondly, we have an example of greater importance, and that is our factory in Belgium, at Kapelle op Denbos: that factory has existed since 1923. There are about 3,000 people, on average, living there - 2,500 workers, and four to five hundred clerks in the office. Because this is - as far as I know - the largest factory located in one place in the world, it is, I think, very interesting to look at the figures there. In the time that records exist, since we first started checking this, we have 23 cases of asbestos and one case of mesothelioma - Mr Tait quoted three cases, but I think that there must be a misunderstanding here, it is only one case; we are of course at your disposal, to show you the real figures when you visit Louvain - and seven cases of cancer. But don't jump onto those seven cases of cancer - in fact, we have a population of 3,000 people, and the normal national expectation of cancer of the lung for that figure should be 14, and not seven - so you can almost forget about that figure of seven cases of lung cancer!

Because some people may say "yes, but those figures are provided by the industry itself", because of the size of the sample we felt it was of great importance to have somebody independent to check those figures; and that is why we have asked Dr Lacquet, who is a Lecturer at the University of Louvain, to take this study and to give the real figures. With your permission, I will now ask Dr Lacquet to explain to us in a few words those figures for the factory of Kapelle op Denbos.

DR LACQUET: Our Chest Department, for the last thirteen and a half years, has been Consultant to Eternit concerning problems related to asbestosis. May I have Slide No. 1? There you see the sort of population on which I report now the findings which relate to the last 13½ years. The time's population is about 2,800, which is 100%, as you can see in the fourth column these are composed of workers and clerks. In the last column, you see how this population is distributed with regard to levels of exposure.

Let me explain these levels of exposure, which I have numbered from zero to four. Zero is the level for those who are out of the factory - that is, people who work for the factory, but not in the factory. Level One would be those who are just present in the factory - a clerk, for instance. Level Three would be the handling of dry finish asbestos cement products - rough handling, like drilling, cutting, etc. And level Four is the handling of pure asbestos cements. If you look at the last column, you will see that the great majority of the population - 60% in fact - is in level of exposure Two, which is the actual manufacturing area; 15% are exposed to the finished product, which is being drilled, or handled in a rough manner; and 3% are exposed actually to the raw mineral.

On Slide No. 2: the Chest Department found 23 cases of asbestosis, and our finding is based on yearly physical examination and X-ray, and, as needed, additionally, pulmonary function tests like spirometry and transfer-factor tests.

SLIDE NO. 1

DUST EXPOSURE AMONG EMPLOYEES* IN AN ASBESTOS-CEMENT FACTORY, Belgium - 1970

exposure	1 workers N	2 clerks N	1 + 2 N	%
0	26		26	1%
1	179	409	588	21%
2	1636	41	1677	60%
3	427		427	15%
4	90		90	3%
	2358	450	2808	100%

* male and female

SLIDE NO. 2

PREVALENCE OF ASBESTOSIS IN ASBESTOS-CEMENT WORKERS, Belgium

yearly population about 2,400; yearly examined 2,104 ± 369

fibre-years	1963-76	1963-67	1968-72	1973-76
- 99				
100-199	1			1
200-399	1			1
400-799	9	4	7	5
800-1599	9	6	6	4
1600-	3	3	1	
total	23	13	14	11
% of all workers:		0.54	0.58	0.44

SLIDE NO. 3

INCIDENCE OF MALIGNANCY IN AN ASBESTOS-CEMENT FACTORY, Belgium

BASED ON YEARLY ROENTGENOGRAMS OF 1871± 328 MALE WORKERS

PERIOD: 1963 - 1975

fibre years	LUNG	PLEURA	GI
- 49	4		2
50- 99			
100-199	2		
200-399			
400-799			
800-1599			
1600-	1	1	
total over 13.5 yrs period	7	1	2
expected N	14.6		3.5

The total number for the period 1963-1976 is 23; and those 21 people, of course, have not been present in the factory at any given period - it is a cumulative number over those 13½ years. In the first column, I have calculated the exposures that those workers underwent, expressed in fibres per cc times years, or fibre years. At the level of exposure of less than 100 fibres per cc, we did not detect any cases of asbestosis. We had one in the level of exposures of between 100 and 200, and in the second column, if you follow the figures down, there were nine in the area 500 to 800, nine in the area 800-1600, and three who really had an exceptionally high level of exposure. I have cut down these 23 cases in short periods, to give an idea of the prevalence in any relatively short period of time: a period which covers three to four years: 1963 to 1967, 1968 to 1972, 1973 to 1976 - and as you can see, the number present in the first period was about 13, which is about 56%; the number of cases of asbestosis present in that second period was about the same - 14; which is the same percentage; and in the most recent years, there are still 11 people, which is about 48% of our total working population.

So much for asbestosis or fibrosis. With Slide No. 3, we come to the prevalence of malignancies for that same population of workers, also related to their exposure expressed in fibre years. There have been malignancies of the lung: there has been one case of pleural malignancy, mesothelioma, and two cases of GI - gastro-intestinal-malignancy, stomach and small intestine, excluding the colon. The malignancies of the lung number seven over that 14.5 period of years - that is, seven malignancies of the lung - and one pleural mesothelioma, which is eight - and the expected number of malignancies for Belgium is 14.6 for that period of time. This would also include mesothelioma in Belgium - I have no figures for mesothelioma separately for our country. So, that is eight observed, against 14.6 expected. As you see, there is no relationship with the exposure expressed in fibre years. Four happened to have the least exposure - less than 49 fibre years. I have documented only one case of mesothelioma for that period of 13.5 years - that is, documented with the technique which I have outlined - yearly chest X-rays, physical examination, reviewing of all hospital records for our faculty, which includes an area covering Kapelle op Den Bos. I think that the figure which Mrs Tait mentioned - about three a year - is actually the number of mesotheliomas which we observe in the services: every year there are about three cases of mesothelioma. But they come from everywhere, of course, and are not related to Eternit, except for that one case.

The gastro-intestinal cancers - yes, we have observed two. Also, in two workers who had relatively small levels of exposure, and that also is below the expected number suggested for that kind of population - namely, 3.5.

MR VAN DER REST: I would only like to underline the point, that the cases of asbestosis which Dr Lacquet referred to were people who have been working within our Company for many years; and I must confess that twenty, twenty-five years ago the conditions of work - due to lack of knowledge of the potential hazards - was not the same as they are today.

The last example - because I do not want to burden you with too many figures - we have had the figures of Meldreth, and just now, with Dr Lacquet's assistance, the figures for Kapelle - we have now the figures of Eternit Holland, which is a factory employing 650 people, which has been in existence for 40 years, since 1937. Up to the present, there is no known case of asbestosis, no known case of cancer, no known case of mesothelioma, neither by our own Medical Inspectorate nor from outside, from the State.

How can we explain these rather favourable figures? I do not like to use the word "favourable", because only one case is one case too many - but related to others, it seems to be reasonable. So, what is the explanation for these relatively good figures for asbestos cement?

Firstly, I think that the quantity of asbestos included in asbestos cement is only about 12%. Secondly, the asbestos cement process is a wet process - that is to say, the asbestos is put into the water as soon as it is opened. And thirdly, we may perhaps have been lucky - but we have been able to ensure that asbestos and cement are at least what I might call a "very lucky marriage". When asbestos and cement stick together, they are not like those modern couples who separate after a while: we believe that the marriage of asbestos and cement is a good marriage, which should be an example to all of us.

In order to check that - because it was a point of real importance - we asked Professor de Ruyttere to make some special physical and chemical study on the differences between asbestos cement dust from the one side, and pure asbestos from the other side. I shall now ask Professor Deruyttere to give us a small resume.

PROFESSOR DERUYTTERE: In asbestos cement products, the asbestos fibres are locked in the cement. But what about the dust generated, for example, by sawing a sheet of asbestos cement? One can consider three possibilities. First, the dust contains no asbestos. The asbestos will have been altered in its nature due to reaction with cement and water, or due to the heat developed in sawing. Our X-ray defraction work clearly shows that the substance of asbestos - for example, chrysotile - is present in the dust, without any detectable alteration. So the first possibility is ruled out. However, X-ray defraction does not indicate the shape of the asbestos, or whether or not it is bound to other substances. So the second possibility: the dust is a mixture of pure asbestos particles, and pure cement particles. Our work with the light microscope shows that most particles in the fine, or inhalable dust fraction, for example 10% of the total dust - most particles in this fraction are pure cement - for example, 60% - that a minority of particles - for example, 10% - look like pure asbestos fibres, and that the balance - for example, 30% - are a mixture or an aggregate that means asbestos fibres, to which more or less large particles of cement are attached: in other words, grossly contaminated asbestos fibres. So the second possibility also does not apply.

The third possibility - and it is the real one - is that the dust contains (a) pure cement, (b) mixed aggregates of cement and asbestos, and (c) what we call "optically pure" asbestos fibres. So, for example, 1% of the total dust content of them may be longer than five microns.

Now - what are "optically pure" asbestos fibres? We have defined them as fibres which do not have adhering particles which are larger than the diameter of the fibres themselves. So this definition is quite arbitrary: all pure fibres may have attached to them particles smaller than their own diameter, as they may be contaminated.

Incidentally, these are the fibres which Mrs Tait referred to this morning. We therefore examined those so-called "pure" fibres with two kinds of electron microscopes: first, with the scanning electron microscope, with an attachment for X-ray fluorescent analysis. This shows that "pure" fibres have a thin coating containing calcium - calcium which can only come from the cement, as pure asbestos does not contain calcium. The scanning microscope could not tell us the exact nature of the coating, nor whether it is a continuous layer or not, or made up of small closely spaced particles.

Secondly, we examined with the transmission electron microscope, also with attachments for electron defraction and X-ray fluorescent analysis. This instrument, which has a still larger resolving power than the previous one, led us to the conclusion that the coating on the fibres likely consists of individual particles, having a diameter of less than one-tenth to two-tenths of a micron.

Thus, fibres in asbestos cement dust are different from pure asbestos: either they are grossly contaminated with large cement particles, or they are contaminated with very fine particles. This applies to all fibres in some products, but in the dust from an autoclave product we have found that some fibres appeared really pure.

The difference between asbestos dust and asbestos cement dust is confirmed by the following experiments.

First, when the dust is put into water, there is a different behaviour. The so-called protosolysis of magnesium of the asbestos is slowed down by the calcium-containing coating, which itself dissolves gradually. Secondly, the absorption by three kinds of dust - namely, pure asbestos, pure cement, and asbestos cement - of two different substances from cigarette smoke, which are considered to induce cancer, has been studied. It appears that in both cases the asbestos cement dust behaves very much like pure cement, and not like pure asbestos.

In conclusion, from our study we cannot say whether asbestos cement dust is dangerous or not; but we can say that physically and chemically the two kinds of dust are different, and therefore it would be unjustified to apply automatically to asbestos cement every conclusion which is arrived at for pure asbestos.

MR VAN DER REST: We made a third study with the Batell Institute in the States, with hamsters, to let those hamsters inhale asbestos cement dust, as a complementary study to that made by Professor Denuyttere. But, due to the fact that we only received that report last week, I will resist the temptation to produce it now, because I think it only right that we should have time to study it.

I will only say that the results are positive, and after the Meeting we will give you a resume of the study which has been prepared by Dr Lepeutre.

Now that we have dealt with the problem within the factory, the two last points to be treated - very quickly - are the problem of the people in the field, and the problem of the final customer.

On the problem of the people who are supposed to be doing drilling or cutting in the field: we would first underline the fact that most of the cutting takes place within the factory, and it is rather exceptional that it is cut on the site. But even so, if it has to be cut on the site, after Professor Denuyttere's expose, where you see that cement dust has other properties, it certainly limits the risk. Another reason why the risk is limited is that everyone accepts that the risk associated with asbestos is time- and does-related, and someone who is cutting on the site is not exposed as much as a worker who is working eight hours a day all around the year in a factory. In any case, when we give recommendations to our customers, due to the fact that we are convinced that inhaling dust from any kind of dust is not good for the health, we give all the necessary instructions, so that they take all the necessary precautions.

The last point, which is great interest - the final customers: I really do think that the fact that the asbestos is locked in, in the asbestos cement product, means that one can say that for the final user who is not working, or cutting, there is no danger at all, whatsoever, for finished asbestos cement products. When they are fixed; and to confirm this point of view I have two letters, which I shall hand to the Secretary of your Committee. The first is from Professor Dr A Gyselen, of the Academy Ziekenhuis Pellenberg, who says: "If asbestos fibres have been fixed with cement and produced to sheets, and if these sheets do not need any further finishing such as sawing, sanding, and used as wall-cladding or ceilings, there is evidently no risk for inhabitants of such buildings." Professor Gyselen is a very well-known specialist in lung diseases.

I also have the pleasure of being able to quote an opinion from Dr Selikoff, whom I met recently in Mexico, in his letter, he says, "On the other hand, the 'bound in' state of the asbestos within the cement provides presumptive evidence of our ability to avoid asbestos contamination from this source ... If hazard to workers is avoided, I know of no data which have established a health risk resulting from environmental contamination associated with erosion. I recognise that studies capable of evaluating such risk would be difficult to design and conduct. Nevertheless, in the order of things, I see no immediate problem in this regard." I would like to conclude my introduction with this statement by Professor Selikoff, who is of course well known to all of us.

THE CHAIRMAN: May I start by asking you, Mr Van der Rest, a question about the hygiene standard? Turner and Newall presented their evidence yesterday, and they indicated that their factories, which were engaged in making construction materials, were working to below one fibre per millimetre. The TUC in their evidence yesterday, also said that some factories have got down as far as .5 fibres, working in this same field. In view of these very remarkable figures which you have presented to us, would you have difficulty conforming to a standard of .5 to a fibre?

MR VAN DER REST: I will be very sincere - as all of us have been - and I will say that in Meldreth, we are in the factory there below the 2 fibre per cc, and I think that is because the UK has been a leader in the asbestos and health problem. But to show that the problem is difficult: even with all our staff of engineers, even in the biggest factory in the world - if you will permit me to describe Kapalle in that way! - we are still above 2 fibres per cc. We are making all the necessary investments, to stop that - but this really shows that remaining below the 2 fibres per cc, even if you want to do it, is not an easy job. And I should say that one must not forget that the 2 f/cc is a maximum - so this really means that whatever you are doing in your factory, in whatever part of it you are, even opening the bag, you are asked to stick to 2 f/cc as an average. It is easy to put on paper, "all right, we have two, now we will have 1.7", but the people in the factory have to make up their mind to try and find a solution. I think today it is impossible to be always sure that one is below a level set at 2 f/cc. Meldreth is a good example of this. We will try to copy some of the installations there - for instance, a bag opener, because, as Dr Lacquet pointed out, it is in the actual opening of the bag that the problem really arises.

So, to answer your question: we are really of the opinion that if there is a level below that of 2 f/cc, that level will have to be followed; and it is because I am personally not sure that we would be able to follow a level more strict than 2 f/cc that I personally would insist on sticking to the 2 f/cc. Let us be severe on that - but I think it would be a real problem to be sure that one was always at a level lower than 2 f/cc.

THE CHAIRMAN: So you are not claiming, as Turner and Newall are, that in their construction materials factories they are working below one fibre - you are not saying this?

DR VAN DER REST: No - I am honest with you. I should say that in 97% of the points where we measure in our big factories in Belgium, we are below the 2 f/cc. But in some places we are above the 2 - and we will take all the necessary steps to stop that as soon as possible. In the meantime, of course, the workers are given masks, so there is no danger to their health.

THE CHAIRMAN: But the fact that you cannot say categorically that you are below one fibre - is that because you are just content to be below two?

MR VAN DER REST: Do you want me to answer that question on the medical point of view, or on the 2 f/cc .....?

THE CHAIRMAN: No - I just want an explanation. We find a very large company here, who have demonstrated that so far as they are concerned, even though the hygiene standard is 2 f/cc, they have been able to get a product which in their opinion seems to be the most controllable, down to below one fibre in that particular division. Now, you are telling us that Meldreth you are below two - and we do, as you know, have a requirement that although the hygiene standard is two, everything possible has to be done to reduce it below this level.

MR VAN DER REST: I should say "everything possible" - I one hundred per cent agree with you, Mr Chairman, and every new investment in the factory is being made, of course, to try and bring the standard as low as possible. But I say again: in our condition, today, we are not able to guarantee that in all our factories we should be able to go - for technical reasons, not financial reasons or anything of that kind, but technically - we are not able to guarantee that we are able to go below the two fibres. And we want you to know that we want to follow that responsibility, and to tell our engineers that two fibres is within the possibilities, and we want you, all over the world to respect that. If we had to go lower - you asked my personal opinion, and my personal opinion is that we would face great difficulties, maybe even the closing of some factories.

MR LEWIS: In the written evidence that the Committee has received from your Company - and indeed, the verbal presentation which you have made this afternoon - there appears no explicit reference to possible alternatives to asbestos cement products. Does this really mean, Mr Van der Rest, that your Company is not concerned about alternatives, but rather to argue that the status quo should be maintained?

MR VAN DER REST: I would like first of all to answer that we are involved in researching other fibres, because I should say that asbestos of itself represents a very high percentage of the cost price - and of course for years and years we have been looking for substitutes. But up to now, I must recognise that we have not been able to find a substitute which gives the same resistance, the same quality to the final product - and once more, this has been underlined by preceding evidence. We are not sure that the fibre which we may eventually use to replace asbestos - for instance, glass fibre - we are not personally convinced that all the medical tests have been made to ensure that that would not be more dangerous than asbestos. We know that asbestos represents a danger - but after all the studies which we have made, with the Unions, with the medical world, and so on, and from the evidence we have from our own factories, we are convinced - perhaps we are wrong, but we are convinced that we are mastering the problem today, and because of that we really prefer for the time being, as long as we cannot find something else, to stick to a product which we know very well - we know its weaknesses and its strengths. As someone said yesterday - and I found the sentence so nice that I remember it! - it is "going from known to unknown". So, as to substitutes, I would say this: we are looking for it, but up to now we have not been successful in finding one.

DR BLOOMFIELD: I was interested in Dr Lacquet's table which covered the period 1963 to 1976 - I was intrigued that the fibre years ranged up to 1600, and I am trying to reconcile the 100 fibre year limit which we are trying to work to - I was wondering whether the counts which are listed are weighted by the contaminants as well as the actual asbestos count; and, as you quoted the 10% pure asbestos fibre, Dr Lacquet, in the counts, should these be reduced by an order of ten in order to bring them to our acceptable level? - or are they actually reflecting asbestos fibres per millimetre, weighted by 50 years?

DR LACQUET: First of all, I don't think these figures are acceptable - they are just figures that happened to come out of calculations. That is a fibre year which has accumulated over a long period of time. I don't say they are acceptable - but

they are good. Because, where do they come from? They are based on actual measurements of fibres with filter membrane methods, which we have been doing in the factory since 1969. For the years before that, there are some data by different methods - impinging methods, which are not so good, but there are some figures; and for the years before 1950 there are actually no data, but we have some educated guesses, as I think you mentioned some time ago. Actually, these figures may be wrong guesses - much too high.

THE CHAIRMAN: I think they are not only unacceptable - they seem a bit unbelievable; in fact.

DR BLOOMFIELD: The earlier table - your first tests - showed the percentage of the work force in the different concentrations, and about 60% of the work force seemed to be in the middle group, which seems to be above the hygiene standard which we are thinking of, or which we are working to at present. Am I mistaken on that?

DR LACQUET: The factory can be regarded as having four areas, but the fibre years that correspond to, or that one finds in, these areas, have been changing over the years; so if you have a certain fibre count of, say, two or three, or four, in Area Four, five years ago one should multiply that by two, and ten years ago, again by two, roughly; and for the years immediately after the War, we feel that a fibre count of something like 100 may have existed. Of course, no-one has measured them - but when you reproduce a similar atmosphere of dustiness, that roughly corresponds to 100 fibres per cc. That is where these high counts come from. I agree, they may be 20%, 30%, off - but not 100 magnitude, I think.

MR BRADBURY: To follow up your point: I am a little confused about the position at this very large factory, about working to the limit of two. I understood that there were certain problems in opening, where it was difficult to keep to that limit; but what I am not clear about is: in a very large factory, whether there are some areas where they do run consistently well below two - maybe one, or even .5; or whether in fact the whole factory is struggling to keep under two. I am only seeking information on the general position in the factory. My second question is more specific, on a rather detailed point; but one on which I would like to clear my mind: It says on page 76 of your evidence, under "Bridgewater Panels Ltd," "It is perhaps relevant to note that the bulk of their cutting is done under water' thus virtually eliminating dust" - which seems to be the aim. Could that in time become standard practice? - or are there technical difficulties? - because I thought there was a fair amount of cutting, and this looked rather encouraging.

MR VAN DER REST: In answer to your first question: if I understood it correctly, you wonder why we still have some places in the factory where we are able to work below the two fibres, and other places where it is not possible. The only place in the factory where we are facing this problem of too high concentration is the place where we open the bags, and it is a technical problem. The mine industry, instead of having standard packing - they are working on that now, but they used to send some bags in paper bags, some in plastic bags, some in jute, and the difficulty was to find a machine which was adaptable to all kinds of raw materials and packing. I think it is a good point for the UK industry, I must confess, that you have been in that particular field technically quicker than we have been. Needless to say, we are now running as fast as we can to catch up with you technically on that, and I hope that if we have the pleasure of seeing you at our factories one of these days, you will then see that we also will be, in every place, below the two fibres. But I insist on the fact that, due to the wearing of the masks, there is no danger. But we are making all the necessary investment to ensure that the entire factory is within the two fibres, and not just some parts of it.

On your second question, regarding the Bridgewater Panel cutting, I would like to ask Mr Gillham to answer.

MR GILLHAM: This is a slight misnomer, because in fact it is not "under water" - it is the use of double spraying, double jets, at the actual cutting blade, when it goes through the sheet. "Underwater" implies submarine activity - that is not true.

MR BRADBURY: I'm not bothered about the technicalities - if there is a double jet, could that not be used in a more wide-spread way, to reduce the dust in all cutting, as a general practice?

MR GILLHAM: The decision to install the wet cutting process was made in the early 1950's, when Kapalla produced dense, thick material, and the only facilities at that time was a wet cutting facility that would be able to give not only the edge, but the accuracy. But since that time, the development of dry cutting methods and techniques have enabled independent cutters and converters to adopt that procedure: that is making the wet actual process, if not obsolete, slightly at a disadvantage. But it was in fact a process that was expedient at the time, that gave us the facility to cut big volumes quickly and with accuracy. But events have now overtaken that, and most of the cutting is done independently, with dry procedure. There is no material advantage - at the time it was commercial necessity, there was not the alternative method available.

MR BRADBURY: But the dry cutting is more dusty?

MR GILLHAM: The dry cutting creates it - but in fact the procedures for dust extraction are very adequate.

PROF STAIRMAND: I had two questions, but my first you have just answered - because I was very surprised that you could cut asbestos sheeting under water. But that has been dealt with. My second question is: you mentioned that one of the benefits of asbestos cement was that it did not deteriorate. Now, I think that there are certain cases where after a number of years - especially if it is an outside garage which they want to paint - a workman, or a do-it-yourself man, will brush it down in order to get the old paint off, and there is quite a lot of loose dust. Is that still encapsulated? - is it still protected? - or is now free asbestos fibres?

MR VAN DER REST: I should say that, following the studies made in Louvain, this is certainly encapsulated. Apart from that, I would like to say that this is one point of real importance. Secondly, I would like to underline once more the observation by Dr Selikoff, which, if you remember, precisely mentioned what you say: he was talking about erosion from asbestos cement, and he said that he knew of no one case of people being involved with an asbestos-related disease by erosion of asbestos cement. I think one of the reasons for this is, first, the locked-in aspect - it is encapsulated - "contaminated", to use Professor Denyytterd's word; and secondly, the dose-related aspect, because the quantity which is liberated by that is certainly on the very low side.

PROF DENYTTERE: If I may, Mr Chairman - I would be less affirmative than Mr Van der Rest - I think it should be investigated, whether this dust is really as encapsulated as the dust which we have been studying.

DR GILSON: I note that on page 76 you mention that blue fibre is not now used in the UK, or in any imports into this country. Is it indeed so, that the blue has not been used in your plant in this country, at Meldreth Plant, at all? - or was it used up to a certain time? - and if so, when was it discontinued?

MR VAN DER REST: As far as we know - and, as you know, we only took over a year ago - as far as we know, blue has not been used in Meldreth. As far as the importation goes, we have stopped putting blue asbestos into the product. As you know, Belgium is a very small country - unhappily we have a very small "limide"

market, and most of our industry is living from export. So we are accustomed to adapt our product for export to the country to which we are exporting it; if the UK market, in its own judgment, for reasons which it considers necessary, prohibits blue asbestos as an import in their products, needless to say our export product also will not include blue asbestos - and that is the case today. That does not mean that we are one hundred per cent in agreement with all the theories about blue asbestos - even in this country, as you know, there are divergent opinions. Our opinion on blue asbestos is based on facts - we have one factory which is a very good example, again our factory in Holland; there we have in the same production hall two pipe machines, and two sheet machines. We are using blue asbestos for the pipe machine. But this blue asbestos is in one building and, as you have seen, after forty years we have not had one known case from either asbestosis, cancer, or mesothelioma. So our opinion on the blue, based on those facts, is with this fibre, if we respect the two f/cc (which is entirely the case in Holland), that there would be no risk for the health of the workers.

MR GILLHAM: Mr Chairman, I think there may have been a slight misunderstanding in the interpretation of the question. Was the question, at any time was it used at Meldreth? - it was. It was used between 1958 and 1965. That is on record, to the Committee - I think there was a misunderstanding, as to whether it is used now. I thought I should clarify that.

THE CHAIRMAN: Does that make any difference to what you wanted to say, Dr Gilson?

DR GILSON: I have just one other question, which I would like to know: what about the records at the Meldreth factory? - are they very complete, over a very long period?

MR VAN DER REST: I don't want to open an umbrella, because that is not my habit! - but we say that we took that factory over only one year ago, and as far as we know there is only one known case of asbestosis, and we know that the inspections are normally made. I could go into more detail, as far as this factory is concerned - again, Mr Gillham, who knows more about it, could certainly add something.

MR GILLHAM: Perhaps this is a result of bad communications! - what more detail is in fact required? We sent, as a result of your supplementary questionnaire: the question of dust measurements, the detailed analysis of people - was there any particular item? We have got data, but I think you have received everything.

DR DUNCAN: Yes, we have this data - thank you. May I follow up Dr Lacquet's data about the people between 1961 and 1976? There are several points about that - Against that apparently high fibre years of exposure, you have these very low results. But even apart from asbestos exposure altogether, the lung cancer figures are very small. Can you tell me: was that the report of annual re- examination of existing staff in the factory? - that is Point One. What happened to those who left during those 13 years? - were they included among the studies? - and what happened to those who have retired during that time.

DR LACQUET: These figures pertain only to the 13.5 years of observation, of the workers present in the factory.

DR DUNCAN: It purports only to workers actually still present in the factory?

DR LACQUET: Yes - these figures that I have shown.

DR DUNCAN: So all those who left, or retired, would not show?

DR LACQUET: No. I tried to trace them, some years ago, but I ran into considerable difficulty; but nevertheless, of 673 retired people who are still alive, 54 were still working in the factory, and those are people who have been working in the factory before 1940, the years when the situation was probably much worse, really bad. So 54 were still working. I was able to examine another 104, and I found a few pleural plaques and things like that, but no asbestos, and no cancer. Those of course are people who are still living, and were working there before 1940.

THE CHAIRMAN: May I ask you a question about dust emissions from your factory? In paragraph 2.4 on page 77 of your evidence, you deal with disposal of waste, but you don't mention how dust emissions from the factory are prevented. Can you tell us how this is achieved? - and how you monitor these dust emissions?

MR VAN DER REST: You mean, the dust emissions coming out of the factory into the outside world?

THE CHAIRMAN: Yes.

MR VAN DER REST: I am sorry to again give you the figures we have for Belgium, but we have made some measurements from the dust content just in the parking area around the factory, and we have found there figures of .04 fibres, to .Co - that was in the factory at Zapelle, and in the factory in Holland we have an even lower figure, of .001 up to .0016. So the concentration of fibre, I should say, outside the factory - if that is the question you raise .....

THE CHAIRMAN: Yes.

MR VAN DER REST: ..... is absolutely at a lower level than inside the factory. It may be of interest, too - because this is medically connected with this problem, "are there any diseases around the factory rather than in another rural area?" - I would like to mention - it is a limited study, which is why we did not mention it in our references, but we have made a study of the number of diseases of the people living ten kilometres (about six and half miles) around the factory from one side, and the number of diseases - lung cancer, or any cancer - of people living in a rural area which is 200 kilometres away from the factory - which is about the maximum distance you can go in Belgium, without leaving my country! - and in both cases, the number of diseases was on exactly the same national level. So we didn't find any more asbestos-related diseases in the region of the factory, than are found in the rest of the country.

DR MOLINEUX: Mr Van der Rest, you have noted certain physico-chemical characteristics of asbestos cement and it raises the possibility that, weight for weight, the risk due to asbestos in cement is less hazardous than free fibre. Can you perhaps give us your views on how necessary it might be to treat this material separately from other asbestos-containing materials? Should there be a more appropriate method of sampling? Should there be a hygiene standard for all asbestos cement materials?

MR VAN DER REST: This is rather a delicate question... If I understand you correctly, you would like to know what is our opinion, as we consider that asbestos cement is not so dangerous as other materials, should there be different rules for asbestos cement than for other materials - is that your question?

DR MOLINEUX: Yes, it is.

MR VAN DER REST: It is a rather difficult question to raise - I must confess that I am a little confused about the answer which I should give you. I should say diplomatically that any measure which is medically proved to be necessary - but I

insist on the fact that "medically proved" should be taken, and as regards asbestos cement, which is of course the industry which we have studied in detail, we are convinced that with the 2 f/cc there is no danger. But in my opinion, with the other industries, if they are also respecting this 2 f/cc, I don't see any reason why the danger should be greater for them than it is for us.

DR MOLINEUX: So I am to conclude you are happy to use the same sort of sampling technique for asbestos fibre in air, which is present in the asbestos cement, and that you are happy to use the same hygiene standard?

MR VAN DER REST: Yes.

THE CHAIRMAN: Would you like to make some final remarks to the Committee now, Mr Van der Rest?

MR VAN DER REST: This is not intended to influence you - but I would only like to repeat that we today are not living separately in the world, but each one of us is part of a larger world; and I would like to say once more that the decision which you take here, for the UK, will have its influence all over the world, and many people will be bound by the decision which you take. It is easy for countries who have seen how carefully you have studied the problem to say "the UK has studied this, it has made its decision, I don't need to make any study, I can just copy it".

We are convinced today, that the 2 f/cc is safe - I gave you the figures for Meldreth, I gave you the figures for Kapelle - where we accept that we do have some disease, due to the fact that the people there have been exposed to higher levels than the 2 f/cc. We have no cases in those 23 cases of people suffering from asbestos disease who were below the 2 f/cc, and we have none in the factory of Goor.

I have read a lot about this, and I have not seen any study which proved really that it is necessary to go below 2 f/cc. I have seen a lot of extrapolation - but, not being a medical man, I really believe that extrapolation in this field, going from small numbers to large numbers, is something which can lead to real misunderstanding.

So, our final recommendation is that one should stick to the actual norms. I fully agree with the people who say that 2 f/cc have to be respected, and I would suggest that your Committee should make the law more strict, to ensure that everyone respects the 2 f/cc. We will save more time, and be more effective, if we use our energy, not to study new norms, but to make sure that the norms which you have put as an example for the world in the UK, which has been studied, which is giving full satisfaction and is not presenting any exaggerated risk to people - I would recommend, let us stick to the actual norm of 2 f/cc.

But let us reinforce the control which you call - and I agree with this rather funny technical word - "control the cowboys"?

If I may say in conclusion: that coming from the Continent, I really admire the way in which this meeting has been conducted - it has not yet, of course, finished. I was deeply impressed by the way in which the Unions, the medical world, and the employers, are working together. I really think that the way in which you are facing this problem here in the UK, and taking it in hand, can be an example for the future.

That is my hope: that in the future we will remember the asbestos-and-health problem as a problem which has been solved by everyone making an effort to understand the point of view of others, in the way which has been shown here during the last few days.