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BY DOCTOR MEREDITH:

Doctor Rhoads, Ladies and Gentlemen: I am greatly honored to be invited to attend this erudite meeting which has now, by virtue of the diverse and inspired work of my old friend, the late Doctor LeRoy Gardner, and Doctor Vorwald, become an international event.

Now, only a foolhardy criminal would speak after the most stimulating papers of this morning, but I'll endeavor to do my best, and I shall not detain you long.

All I have been able to do in the short time available is to bring up to date our mortality and pathological data on this matter and lay them before you in the confident hope that if there is an explanation of them, and there are deductions to be drawn from them, I shall obtain them during this conference.

Frankly, I'm puz led and disturbed at the possibility which may emerge, not only in connection with the

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question of an etiological relationship between cancer of the lung and asbestos, but also between cancer of the lung and other local illness.

In 1946, I made a note of the deaths from asbestosis, asbestosis with tuberculosis and either of these with also cancer of the lung, recorded in the United Kingdom from 1924 to 1947. I placed alongside them for comparison, the corresponding data we have from silicosis and cancer of the lung. These were factual data which speak for themselves insofar as they go, but I attempted to make deductions since I felt the asbestosis deaths were too few for the purpose. I have now brought these figures up to date.

The corresponding figures for silicosis deaths amount to several thousands. They were, I think, sufficiently large to show that there is no etiological relationship between silicosis and cancer of the lung and in this I'm fortified by the data produced by the South African experts. I will not weary you, therefore, with the additions in the last three and a quarter years to our silicosis figures.

Briefly, therefore, our latest figures are recorded deaths from asbestosis, asbestosis with tuberculosis, or either complicated with cancer of the lung, with cancer, are 306. I am excluding ten of these where there is also cancer of sites other than the lungs. Our net figures are,

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therefore, 296 deaths and of these forty-eight or 16.2 percent were associated with cancer of the lung. This shows an increase from a 13.2 percent disclosed by our earlier figures. This means that, as more deaths from asbestosis come to hand, the cumulative percentage of deaths with complicating cancer of the lung is rising rather than falling.

Now, where do we go to from here? Are these figures sufficient to indicate a causal relationship between the retention of asbestos dust in the lungs and subsequent cancer of the lung? The small numbers certainly dictate caution. Nevertheless, they represent the great majority of the deaths from asbestosis which have occurred in the United Kingdom during the past quarter of a century.

Nowadays, because of the greatly increased awareness of workers, doctors and others in the neighborhood of asbestos plants, of the disease, because of the duty of Coroners to investigate with autopsy and to report to my department, deaths suspected to be due to occupational disease, whatever it may be, the compensation benefits accruing to cases of pneumoconiosis, the system of factory inspection, our periodical check-up of the death certificates provided by the Registrar General, and for other reasons, it is likely that very few deaths from asbestosis escape notice.

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Therefore, with confidence, I think we can say that the figures point to the necessity for the collection of similar data from other communities with an asbestosis hazard, so that by means of statistical examination of the global figures so obtained, we can settle the question of whether cancer of the lung is an additional risk of asbestos exposures.

Now, I should mention here that the figures in United Kingdom, that these figures include all of them, because they come to me, so that we must not add up excess figures and - the X figures and Y figures and Z figures, and think that they're all additional cases of asbestosis, with carcinoma of the lung. One can add up, of course, different countries, but one must be very careful adding up or duplicating the same cases in the same countries.

There is another point that was brought up this morning, that the population risk of asbestos is small relatively to other industries and it fluctuates. A war brings a great increase of people, because obviously, there is a great demand for high class asbestos insulation for use in war ships and other types of work, and then it drops off again, so that one could never really get a population, for instance, to which one could relate a particular case of asbestosis, assuming that asbestos is a factor in this matter.

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Now, another thing is the reverse which I think has got to be brought in mind, into mind, that when one is considering a hazard in an industry and one wants, as the statisticians always do want, something like a world population before they give us anything very satisfactory about the matter, that you - you say that, for all purposes, the population of an industry is say two hundred thousand, your very risk may be lost in the mass of the population.

That occurs, for instance, in coal carbon trade, where I tried a number of years ago, a relatively small portion of people exposed to tar or tarry vapors, and they're lost in the whole population of the trade, but when you limit them to the people who are exposed to tar and tarry vapors, you find there is six times the risk of cutaneous cancer. In other words, the risk was lost in the overall numbers assumed to be at risk.

And, it is something like that in the asbestos trade. A lot of people don't have much exposure to asbestos at all. Now, as far as the rate in asbestos, I haven't got into that yet, but following a remark made this morning, I will try and do so.

Then Doctor Lynch did say, what is the degree of asbestosis. Now, all these people have been autopsied and all of them died primarily of asbestosis, whether they had tubercle or cancer later.

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Now, I won't weary you with the statistical approaches. Besides that, I'm very frightened of statisticians. They're going to die if I find an error in this. Not quite as bad as a psychiatrist, of course. I'm looking for the day when we have a statistical psychiatrist. Well, just another page of this, sir, then we'll be ready to throw me out.

Of the 296 deaths we are considering, 172 occurred in males and 126 in females. Eighty-two or 27.7 percent, half males and half females, were associated with pulmonary tuberculosis. The mean age of death was 48.2 years, with a range of 24 to 73 years for the cases of asbestosis. 39.3 with a range of 17 to 66 years, for the cases of asbestosis for or with tuberculosis and 53.4 years with the range of 32 to 77 for the cases of asbestosis and cancer of the lung.

The mean duration of exposure was 15.7 years with a range of one to forty-eight for deaths from asbestosis. Some took a hell of a long time to die -- 11.1 with a range of 133 - no, I put the wrong one, I'm sorry, 11.1 years, with a range of 33 years with asbestosis with tuberculosis and 19 years with a range of 2 to 49, 2 to 42 years for asbestosis with cancer of the lung.

The mean duration of life between cessation of exposure and death was 6.5 years with a range of 1 to 32 for asbestosis, 417 years - that should be 4.7 years with

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range of 1 to 21 for asbestosis with tuberculosis, and 5.8 years with a range of 1 to 26 for asbestosis and cancer of the lung.

You see the ranges are very wide indeed, which is of some interest. They say with tubercle, you can get tubercle any time. It can come on them at any time and kill them at any time. Now, there are indications, from our data, that our preventive regulations which came into full operations in 1932, twenty years ago, are having an effect and this may be the explanation of why the incidence of complicating cancer of the lung appears to be rising.

Today, we do not encounter cases of extreme massive fibrosis and gross bronchiectasis and even a sarcoma 'nutmeg' liver with death, and complicated with tuberculosis or cancer of the lung at an early age, within five to seven years from the commencement of exposure. Those cases don't seem to occur. The duration of exposure which results in death from asbestosis is lengthened, the age of death is increasing and the degree of fibrosis found at autopsy is less.

This means that cases of asbestosis are limited to the cancer occurring age period, and if - and I say if there is a relationship between asbestosis and cancer of the lung and if irritation, let us surmise from the asbestos fiber is a co-carcinogen with a long exposure period, then

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we would expect an increased incidence of cancer of the lung over that found in the general population to become afterwards.

Regarding these cancer cases, the mean age of death, I said was 53.4 years, so I put this in for - since I found I'd be kicked off if I didn't. Now, the occupations involved are somewhat interesting. They're always different, as you know, because sometimes two occupations carried out in the same room with different dust exposures or with other different factors, but it is a little interesting to see that the majority of these forty-eight cases, that the more dusty the process, of course, it's most fallacious, but still we watch with care, for instance, weaving. Weaving is notoriously dusty, one case there with ten of these cancer lung cases, one case also associated with tarding and spinning that the man had done, andone case mixing and sorting, disintegrating and mixing, either - well, eight pipe and boiler coverers, including mixing; seven, and mattress making, six and all the rest are below that, and all those are dusty jobs.

Well, what then is the etiological factor, if any here? And, I'd be most grateful for your views. I know that physical irritation as a direct carcinogenic agent has been rather debunked by the cancer experts, but I remember that some recent work by a United States expert,