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TECHNICAL IMPLEMENTATION OF THE NEW ASBESTOS REGULATIONS*

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The new Asbestos Regulations were signed by the First Secretary of State on May 13 1969, and will therefore come into operation on May 14 1970. They are based on the concept that asbestos dust must be so controlled as to be at a level which will not be liable to cause injury to health.

For the purposes of our discussion today, I believe we should take this to be a level of 2 fibres/cm³ and 0·1 mg/m³ for chrysotile asbestos. A fibre is taken as being 5 μ or over in length with an aspect ratio of at least 3:1. This is of course the standard proposed by the British Occupational Hygiene Society (1968) and is based on time-weighed average concentrations. There is a practical limit on the time over which samples can be taken if the exercise is not to become unnecessarily cumbersome and expensive. On this basis, a sample of 4 hr duration seems a reasonable compromise. If we accept this, as a practical sampling time then the overall standard becomes 2 fibres/cm³ over this four hour sampling period.

We cannot, however, afford to ignore entirely peak concentrations which will occur during this period, and it seems reasonable to expect that a concentration of say 12 fibres/cm³ should not be exceeded during any period of 10 min, i.e. we might regard 12 fibres/cm³ as a ceiling value.

It must be remembered that we are using the fibre count not as an absolute measure of concentration but rather as a conveniently measurable parameter to indicate the total asbestos in the air. The work leading to the formulation of the BOHS Standard referred to above related to conditions in the textile industry and not enough information is yet available on the relationship between mass of asbestos and fibre counts in other industries. To further complicate the problem, it is not known what fibre sizes are biologically active and, even if this were known, appropriate elutriation (i.e. the rejection of material not biologically active) would be very difficult with a fibrous material such as asbestos. We, ourselves, are making both fibre counts and total mass determinations by X-ray diffraction analysis in industries, such as the motor industry, where degradation of the fibres may occur, resulting in a substantial change in size distribution.

Hickish and Knight (1969) have described conditions during the servicing of braking systems. The figures they have quoted are, to a large extent, reassuring in

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that they indicate that the levels likely to be found in many sections of the industry engaged in this work are below the level of 2 fibres/cm³, which is considered, in the light of past knowledge, a safe one for chrysotile asbestos. Their highest figures for the time-weighted average concentration over 4 hr, however, clearly show that over a period of 10 min we may have concentrations exceeding substantially the level of 12 fibres which are quoted above.

I was interested to hear of the increasing tendency to carry out brake overhauls on a production line basis. This, clearly, must increase the exposure of particular individual workers, making the development of adequate precautionary measures even more important and, in this connection, I hope the devices which will be described later to-day can be improved and developed to the point where they become universally acceptable to the operator. Certainly we should not be blowing out brake dust, even if it contains only a few per cent of asbestos.

In regard to this latter statement, perhaps I should say that work at our Industrial Hygiene laboratory confirms the figures indicated in the previous paper. We have found that samples of dust from brake drums, when subjected to X-ray diffraction analysis, contained between 1 per cent and 3 per cent of chrysotile asbestos although the original lining material contained more than 40 per cent asbestos. There seems little doubt that this is due to the considerable thermal degradation which occurs consequent on the high temperatures generated by friction at the interface between the lining and the drum.

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