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T&A-21

18th July, 1961.

Dr. S. Holmes.

Health Hazards associated with the "Limpet"
Asbestos-Cement Spray Process

Three reports have now been issued to date on this subject. The following is a brief resume of the contents of each:-

1. J. W. Roberts Limited "Limpet" Asbestos Cement Spray Machine
J.S.Evans 17.3.50.

Mr. Evans work was carried out in October, 1949 using a Thermal Precipitator of unknown make, strapped in some cases, to the chest of the spray-operator. Sampling was carried out (30 minute test runs) in a small room, the asbestos-cement being supplied in a continuous manner. The author compares the results with those obtained in the Spinning Room at J.W.Roberts in 1938 and refers to a Report on a Conference between Employers and Inspectors concerning Methods of suppressing Dust in Textile Factories published in 1931. This apparently suggests a "dust datum" level as that given by "conditions arising from flyer spinning carried on without exhaust under good general conditions". From his results, Mr. Evans concludes that after pre-damping of the spray material in the opening machine, the exposure to asbestos fibre is approximately "that of a good flyer spinning room" and for material pre-damped in a drum the exposure (concentration) is less than "that in a flyer spinning room".

2. Turner Brothers Asbestos Co. Ltd. "An investigation of the Health Hazard associated with the "Limpet" asbestos-cement process"
W.G.Wright 17.10.60.

This report details preliminary work carried out by Physics Research Department at J.W.Roberts Ltd. (in the Spray booth) and two work sites (including S.S. Empress of Canada). The sampling instrument employed for this investigation was the Casella Thermal Precipitator, the suitability of which was queried for use in rapidly changing atmospheres. High dust concentrations were recorded at Horwich and at one of the working sites. In most instances, the effect of "damping" was disappointing.

3. Turner Brothers Asbestos Co. Ltd. "An assessment of the concentration of airborne dust resulting from the application of "Limpet" Asbestos-Cement Spray. R.Sykes 12.7.61.

This report gives an account of preliminary work carried out

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in the Spray booth at Horwich using the "Long Running Thermal Precipitator" as a sampling unit. The results, particularly using "undamped" material are rather variable, but the advantageous effect of damping is clearly indicated. The results are compared with those obtained from normal asbestos textile manufacturing processes, the latter being appreciably lower, in magnitude, than those resulting from the "damped" spray process. An apparent "shift" in size distributions is indicated by the additional use of "Calgon" to the damping medium.

Discussion of the above

The evidence, to date, is somewhat conflicting. Reports Ref. 1 & 3 above agree on the effect of "damping" but disagree on the assessment of the overall dust level. Mr. Evans claims he was readily able to differentiate between asbestos and cement particles, a problem not overcome by Mr. Wright whose report tabulates "overall counts" (i.e. asbestos + cement particles). Incidentally, Mr. Evans quotes medium sizes of cement particles that are significantly lower than a recent evaluation carried out by our department. Mr. Wright's results led him to doubt the suitability of the Casella Thermal Precipitator, but it is interesting to note the different size distribution, after damping, of the blue fibre. This tendency has been "echoed" in the tests carried out with the Long Running Thermal Precipitator. (Ref. 3)

The variability experienced in most of the tests conducted to date, is perhaps not so surprising when one considers the large number of factors influencing the process of assessment. The following is not intended to be complete, but relevant "variables" can include:-

- (a) The nature of the Asbestos-Cement Spray material.
- (b) The nature of the surface to be coated.
- (c) Type of spray equipment in use and operating conditions.
- (d) Damping techniques (if any) adopted.
- (e) Manipulation and orientation of equipment.
- (f) Site environment, (Humidity).
- (g) Type and working conditions of dust-sampling equipment; position of same relative to the working area.

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In the writers opinion, reproducible and more conclusive results can only be expected by the control and attainment of knowledge of the influence of the above factors. It is with great interest, therefore, that one hears of the proposed construction of a test tunnel¹ in order to carry out more realistic sampling. In addition to this, I consider periodic visits to Spraying sites with suitable dust sampling equipment would probably provide data of considerable value.