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NOISE IN THE U.K. TEXTILE INDUSTRY

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Introduction

A survey of the noise levels in the U.K. textile industry has recently been completed for the Commission of the European Communities. This paper contains a summary of the main conclusions which were presented as part of the final report of this study. For the purposes of the investigation the textile industry was assumed to comprise all the operations which are required to produce cloth from natural or man-made fibres. This meant that the making up process and the production of synthetic filament was excluded. It proved convenient to divide the industry into different processes rather than use the starting material as the basis for sub-division of the industry. Although the machinery used is not generally transferable many of the processes which occur are common to cotton, woollen and man-made fibres. An outline of the major process routes is shown in the figure.

Measurement Programme

Clearly in the time available it was not possible to investigate every manufacturing plant, but an attempt was made to make measurements on every type of machine used in a particular process. Furthermore, the aim was to visit different manufacturers using similar machines and for this purpose they were divided roughly into three groups:-

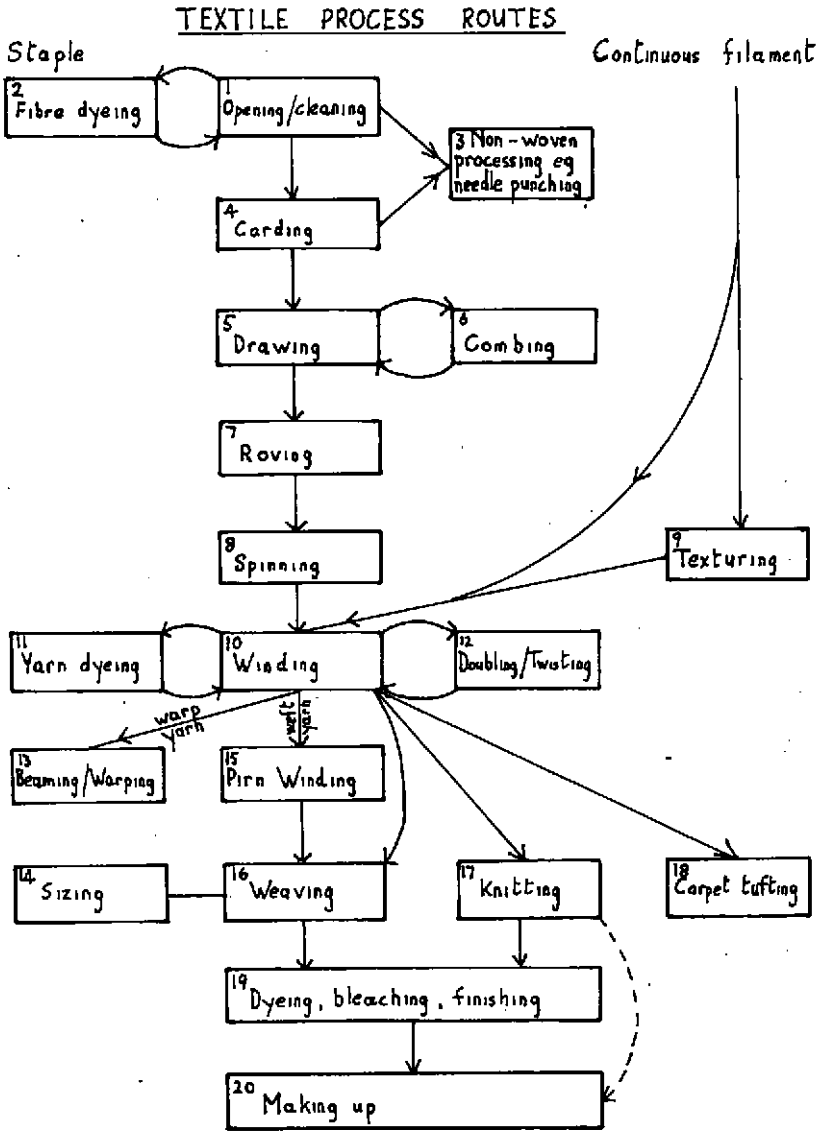
1) Large manufacturers with high volume production.

2) Small manufacturers of high quality products and low volume production.

3) Small manufacturers of low quality products with low volume production.

All measurements had to be performed while normal production was in operation. This meant that it proved impossible to make noise measurements of a single machine running in isolation. Consequently the noise levels which were recorded as relating to a particular machine had a degree of uncertainty associated with them due to the presence of other machines in their vicinity.

The main objectives of the study were concerned with the identification of areas which could be regarded as presenting a hazard to the hearing of workers in the industry and also the establishment of the extent to which different employees were actively practising hearing conservation programmes. Where possible, information on the major sources of noise was provided with a view to making suggestions on possible courses of action which might form part of a noise reduction programme.


TEXTILE PROCESS ROUTES
Staple
Continuous filament
2 Fibre dyeing
1 Opening/cleaning
3 Non-woven processing eg needle punching
4 Carding
5 Drawing
6 Combing
7 Roving
8 Spinning
9 Texturing
11 Yarn dyeing
10 Winding
12 Doubling/Twisting
warp yarn
weft yarn
13 Beaming/Warping
15 Pirn Winding
14 Sizing
16 Weaving
17 Knitting
18 Carpet tufting
19 Dyeing, bleaching, finishing
20 Making up

Results of the Study

It was clear that the extent to which a hearing hazard existed within various sections of the textile industry varied considerably. There was also evidence that companies'attitudes to the problem differed. Some larger organisations were making attempts to draw workers' attention to the dangers of noise and were giving detailed consideration to the implementation of hearing conservation programmes. On the other hand, some smaller firms appeared to be doing little towards alerting their employees to the hazards of noise nor were they making much of an attempt to reduce their exposure to the noise. One or two processes produced noise levels in excess of 100 dB(A) e.g. texturing, some types of twisting machines and some forms of conventional looms, but there were many more instances of machines which produced levels of between 85 and 90 dB(A) and could therefore be regarded as presenting a marginal hazard to hearing. At these levels the recent discussion document published by the Health and Safety Executive (1) recommends that consideration be given to the introduction of routine audiometry to monitor the hearing levels of noise-exposed workers. None of the factories visited were actively engaged in any sort of audiometric programme.

Apart from these machines there were many other processes which produce noise in excess of 90 dB(A) and could also therefore be regarded as presenting a hearing hazard. It is clear therefore that there could be many sections of the textile industry where there could be difficulties in striking a balance between expenditure on hearing conservation and on control of the noise.

However, at this stage there appears to be little immediate prospect of overall improvement in the noise environment in much of the textile industry. It would appear that some degree of improvement might be achieved if more careful attention were given to good maintenance of equipment. In this way excessive noise caused by such things as shaft and bearing rumble, loose gear or drive mechanisms, foundation vibrations and worn spindles,could be reduced.

Other courses of action which have been attempted include -

1) The fitting of enclosures to some machines.

2) The provision of acoustic refuges for workers where prolonged attention to machinery noise was not necessary.

3) The use of vibration isolation and damping materials.

4) The reduction in rotation speed of, for example, winding machines. Clearly this can only be undertaken in the light of production economics.

The overriding impression gained from the study was that particularly in smaller companies the whole organisation of hearing conservation programmes was being administered on a fairly casual basis. An effective hearing protection programme is not assured merely by making hearing protection available to workers who are exposed to high level noise. Ideally a single individual could be given the responsibility of ensuring that the programme is properly co-ordinated and followed through in order to maintain both managements' and workers' interest. Only in some of the larger organisations was it apparent that an approach of this kind was being made.

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It is recognised that the ideal solution of reducing the level of noise at source is most likely to come from manufacturers being able to produce quieter machines. There is evidence that some machines which produce less noise are being produced but the benefits to be gained from them are often negated by production economics. It is probably true to say that there is no simple solution to the noise problems in the textile industry but an improvement in the working environment can only be brought about by giving consideration to more than one of the different courses of action which have been cited in this paper.

Reference

1. Audiometry in Industry. Discussion document HMSO 1978.