Occupational Health and Hygiene following a Fire in a Warehouse with an Asbestos Cement Roof

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Summary
This paper deals with the occupational health and hygiene advice that was given in the immediate aftermath and clean-up period of a major fire in a large warehouse with an asbestos cement roof.

Work on site was carefully monitored and we believe that no health hazards occurred subsequent to the fire, in particular only very low levels of asbestos were detected during the clean-up. In addition, the need to disseminate information as widely and as rapidly as possible to the workforce and others following such a disaster is emphasized.

Introduction
On 25 April 1988 fire gutted a large ordnance warehouse. Occupational health and hygiene advice was sought once the fire had been put out, and this advice began when damping down was still in progress. The advice was divided into an initial assessment and subsequent advice and action.

Initial assessment
An initial site visit and enquiries of the site management revealed the following.

The Building
The warehouse had an area of 40,000 square metres, and was of steel construction with a brick lower skin and a roof of corrugated asbestos cement containing approximately 10 per cent chrysotile asbestos. The building was entirely gutted apart from a motor vehicle workshop and a storage area.

The Immediate Environment
Around the building there was a heavy deposit of large pieces of asbestos cement sheeting. Samples were urgently analysed and confirmed the presence of chrysotile asbestos. Downwind of the building small irregular fragments of asbestos sheeting had fallen of progressively smaller size with increasing distance from the building. Some material had also landed downwind of the site, presumably carried by the smoke plume.

Contents of the Building
The contents mostly consisted of general engineering stores. An inventory was available which allowed the small number of hazardous items to be identified quickly, and their position determined so that safe clean-up arrangements could be made.

Subsequent advice and action

Safety of the Warehouse
Because of doubts about its structural safety, the warehouse was cordoned off and entry barred for all personnel until a structural survey had been undertaken.

The Environmental Clear-up
Contractors were engaged to clear up the asbestos cement debris and used a variety of methods including brushing, vacuuming and picking up fragments by hand. Initially there was uncertainty as to how much free asbestos fibres would be generated by clear-up activities. Thus the contractors initially wore full personal protective equipment and their working areas were cordoned-off so that persons not wearing protective equipment would not run the risk of being exposed to free asbestos fibre.

Atmospheric monitoring was undertaken immediately downwind of the clear-up zone and such monitoring showed that free asbestos fibre levels were negligible.

In addition, personal monitoring of the contractors for asbestos fibres was satisfactory and these results, when taken in conjunction with the environmental monitoring, allowed the need for personal protective equipment of the contractors to be relaxed.

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Contents of the Building
The warehouse contained tens of thousands of items, but the most useful document that was immediately available was an inventory of stores. This was studied exhaustively and, where necessary, was supplemented by further information from manufacturers, although full clarification of potential hazards took several days, during which time access to potentially hazardous stores was restricted.
When the building had been declared safe by a structural engineer, controlled access for further evaluation and clean-up was permitted. Those entering were required to wear personal protective equipment, including approved respirators, and an extensive programme of monitoring inside the building was undertaken. This included monitoring for asbestos fibres in air, contact samples and personal sampling of those initially assessing damage and then working in the warehouse (see Table II). Times of entry and exit from the building were logged for each person during this initial phase.

When the results of personal monitoring were known, this allowed exposures to be quantified and action levels to be calculated. Advice could then be given about appropriate personal protection of those who needed to enter the warehouse.

Staff Counselling

There was widespread dismay among the staff (this was the second such fire at the depot in 5 years) coupled with anxiety about possible adverse effects on health from asbestos and the contents of the warehouse. It was therefore important to be seen to be taking account of their health and safety as well as the operational needs of the site and to make available as much information as possible to staff, as early as possible. Management were already aware of this need and had issued initial bulletins. Further information was disseminated by meetings with trade unions, issuing the results of monitoring, ‘walkabouts’ by the occupational health and welfare staff, and finally, by instituting a confidential counselling service by occupational health nurses and staff welfare officers.

Conclusion

Thorough air monitoring of the aftermath of a fire involving an asbestos cement roof revealed extremely low levels of asbestos fibres in air. This information may be of help to those who may in the future be involved in dealing with such fires, such as fire brigades, and those called on to deal with their aftermath. It was our assessment that exposure to these extremely low levels, for a transient period, did not pose a hazard to health. This conclusion was consistent with a study of workers making asbestos cement made almost exclusively of chrysotile fibre and with a major review on the effects of asbestos on health.

Postscript: was it all worth the trouble?

Subjectively, there was positive feedback from staff, their representatives and the local management at the trouble taken to assess and explain possible hazards. Objectively, a strategy based on monitoring led to precautions commensurate with risk. Similarly, it has been noted that following other major disasters (eg the Bradford Stadium fire) motivational changes may occur among those directly affected by the fire. This may show itself as a rise in sickness absence.

Following this fire, there was no rise in absence attributed to sickness, which may have been due to the efforts of the occupational health team, although this may equally have been because the disaster was not serious enough to provoke such a rise.

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REFERENCES


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