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All Chief Officers

12 May 1975

Dear Chief Officer

46955

BUILDING RESEARCH ESTABLISHMENT CURRENT PAPER No.3/1975 ;
FIRE HAZARDS OF PLASTICS IN FURNITURE AND FURNISHINGS :
CHARACTERISTICS OF THE BURNING.

1. Following my recent letter, No.16/1975, on the subject of research reports, I wish to draw your attention to a report published on 20 February 1975 by the Building Research Establishment as Current Paper No.3/1975.
2. The Current Paper, entitled 'Fire Hazards of Plastics in Furniture and Furnishings: Characteristics of the Burning' reports the second year's work of the three year research project being carried out by the Rubber and Plastics Research Association, under the direction of the Fire Research Station, into the burning behaviour of plastic foam and other materials used in furniture and furnishings. It contains information which, I am sure you will agree, is of considerable interest and importance from the point of view of the fire service.
3. The Department of Prices and Consumer Protection now has primary responsibility for this project, which is expected to be completed in the summer of this year, but the Home Office and the Central Fire Brigades Advisory Councils' Joint Committee on Fire Research nevertheless retain a close interest in the work and I thought you would be interested to have the following information which is taken from a Press notice issued by the Department of Prices and Consumer Protection at the time the Current Paper was issued :

"The report deals with the burning characteristics of items of upholstered furniture (traditional and modern) both by themselves and in a fully furnished room representing a typical sitting/dining room. The findings confirm one of the main results of the first year's work (which concentrated on studies of the ignition behaviour of plastic foam) that improved protection against fire can be obtained by the use of covering fabrics which are less readily ignitable. This underlines the importance of the recommendations which were circulated to furniture manufacturers a year ago by the British Furniture Manufacturers Federated Associations that the use of upholstery fabrics which are easily ignited should be avoided in the construction of furniture containing polyurethane foams.

Other findings of particular interest are:

- (i) In general, traditional furniture was more difficult to ignite and burned more slowly with a more gradual buildup of smoke. But it provided a considerable fire load, was prone to delayed smouldering and could scatter burning material which would cause adjacent furniture to ignite.
- (ii) Semi-modern and modern furniture containing rubber latex foam and

polyurethane foam respectively, were relatively easy to ignite and burned rapidly with a high rate of heat and smoke generation and consequent high temperature. They did not, however, sustain smouldering to the same extent as traditional furniture.

(iii) More work is needed before final conclusions can be established on the relative fire hazards of different types of furniture.

(iv) The use of 100% cotton wadding immediately beneath covering materials presents a smouldering hazard; at the request of the Department of Prices and Consumer Protection, the British Furniture Manufacturers Federated Associations have agreed to recommend that the use of these waddings in this way should be avoided.

Other findings relating to curtains, carpets and bedding are :

~~(1) Most curtain materials ignited easily and burned rapidly. Fabrics which melt can produce a molten deposit on the floor which may continue to burn.~~

(2) Large ignition sources can, in the case of carpets, ignite carpet backing or underlay which then contributes to fire spread.

(3) Some carpets made from synthetic fibres such as polypropylene, acrylic and nylon, particularly those with a latex foam underlay or backing, can cause fire spread.

(4) Once ignited, the extent and rate of burning of made-up beds is governed by the type of blanket. A woollen blanket gives considerable protection against the spread of fire; whereas acrylic, cotton or polypropylene blankets give rise to serious fires with all mattresses tested."

Yours sincerely



K L Holland

No. 23 /1975

The Fire Service
College



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