Field studies were carried out in occupied houses in this estate in Harrow.

CONDENSATION AND MOULD IN HOUSING

Problems caused by dampness affect a surprisingly large number of dwellings in Britain and, although the situation is at its worst in rented properties, all sectors are affected. Condensation is earmarked as the major cause by all the available evidence. C. H. Sanders, BSc., MSc, DIC, looks at the problem and some possible remedies.

result in a saving in the capital cost of the heating system.

Extract fans are far more effective when controlled by a humidistat than by the occupants. Dehumidifiers can be useful in warm houses where condensation is caused by excessive moisture production. In cold conditions they tend to simply act as small heaters. In order to be effective, dehumidifiers need to extract at least 2 litres of water per day.

Condensation in domestic pitched roofs has increased in recent years as ceilings have become better insulated. Many problems can arise as a result of this: rotting roof timbers; water dripping onto ceilings; insulation getting soaked or corrosion of metal connectors.

The BRE Scottish Laboratory has undertaken a large number of field studies to investigate the causes of this problem. Results suggest that there is no reason why improved insulation should be accompanied by condensation problems if the following measures are implemented:

Always provide cross-ventilation of the roof space; ensure that the insulation covers the wallhead but does not block ventilation at the eaves; weatherstrip and weight the hatch cover to reduce moisture ingress from the house; plug any holes at ceiling level to prevent moisture transfer in roofs; ensure that water tanks are properly covered.

More information

Information gained from the studies at PRL has helped in the development of test methods for assessing the effectiveness of fungicidal paints and washes. PRL offers an assessment service and can provide information on products which performed well under laboratory conditions.

The results of these studies have been drawn together into a BRE video/slide tape package which provides advice for housing managers, designers etc. A 12 minute video for householders is also available.

Literature supporting the audio visual material and a wall chart have also been produced.

The following BRE Digests give further information: No 270 — Condensation in insulated domestic roofs, Feb 1983; No 297 — Surface condensation and mould growth in traditionally built dwellings, May 1985. Information Paper IP 11/85 covers Mould and its control and was produced in June 1985.

Table 1: Estimate of the number of dwellings in England affected by dampness

	Owner occupied 000s	%	Private rented 000s	%	Local authority 000s	%	Total 000s	%
No damp	7667	82	1300	52	3489	67	12456	73
Slight damp	1187	13	486	19	827	16	2500	15
Severe damp	450	5	709	29	882	17	2041	12
Combined total	9304	100	2495	100	5198	100	16997	100

CONDENSATION

As is shown in Table 1, at least 4.5 million dwellings have problems caused by dampness. Private and public sector rented properties are equally affected.

In the past housing owners, and particularly local authorities, have been reluctant to spend large sums of money on remedial measures when there is little indicaton of their likely success. The Building Research Establishment (BRE) has carried out a study of the effectiveness of remedies in traditionally built housing. Areas examined were: improved insulation; improved heating; improved ventilation and the use of dehumidifiers.

Field studies

Field studies were carried out by BRE Scottish Laboratory in occupied flats at Stirling and Inverclyde, and by BRE Garston in two-storey terraced and semi-detached houses at the London Borough of Harrow. The measures under study were as follows:

Improved insulation. The flats at Stirling had external wall cavities filled and solid walls dry-lined. Houses at Harrow had solid walls insulated externally.

Improved heating. Gas group heating systems (serving 16 flats) or individual electric storage heaters were installed at Stirling. Partial gas central heating (downstairs only) was installed at Harrow.

Improved ventilation. At both Stirling and Harrow extract fans were installed in kitchens and bathrooms (either tenant or humidistat control).

Dehumidifiers. Different sized machines were tested at Inverclyde.

The Princes Risborough Laboratory (PRL) have been undertaking complementary studies of the types of moulds and numbers of spores that occur in housing. These will provide improved guidance on the environmental conditions necessary to prevent mould growth. Laboratory and field trials have been used to assess the effectiveness of fungicidal paints.

Results

This work has produced a number of important findings. Insulation alone may help in the bedrooms of two storey houses where heat rises from the heated room below. However, in the bedrooms of flats and bungalows some heat is required. When heating systems are being upgraded insulation should also be improved so that occupants can afford the new running costs. As was found at Harrow, this may