

VENTILATION AND INDOOR AIR QUALITY IN NEW HOMES

D. Crump, D. Ross, V. Brown, R. Squire, S. Dimitroulopoulou, M. White,
B. Pierce, H. Mann
Environment, BRE, Watford, UK

The need for adequate ventilation of buildings is recognised as part of the Building Regulations in the UK, and for England and Wales, guidance on meeting the requirements is given in Approved Document F (ADF). Provision of adequate ventilation in homes is primarily based on the need to control moisture. This is normally achieved by local air extraction from 'wet' rooms, together with provisions for background ventilation throughout the home, such as the use of trickle ventilators, and additional rapid ventilation. The current provisions allow the occupants to achieve a whole-house air exchange rate of about 0.5 air changes per hour (ach). This paper reports results of a study investigating ventilation and IAQ in homes in England built since 1995, which is the date of the last revision of Approved Document F (ADF). The main part of the project involved a winter and summer period of monitoring of nitrogen dioxide, carbon monoxide, formaldehyde, volatile organic compounds, particulates, temperature and humidity in 37 homes. Concurrent with pollution measurements were measurements of the rate of air exchange of the indoor air with the outdoors using a perfluorocarbon tracer (PFT) technique. The air tightness of the structure was also determined for each home using a pressurisation test. Subsequently more detailed measurements of pollutants and ventilation were undertaken in five homes. The mean whole-house ventilation rate was 0.44 ach in winter and 0.62 ach in summer. The relationships between house characteristics, occupant behaviour, ventilation rate and concentration of pollutants are discussed and the indoor air quality evaluated with respect to available guidelines.