

# New Low Allergy Home Design Fights Affect of Asthma

by Ross Barnett

*In the last issue of Ceramic Tiles Today (Issue No. 6 - Summer 1995), we extolled the virtues of ceramic tile as a practical durable flooring, which can be used with equal success in both internal and external locations.*

*This important article by Mr Ross Barnett of the Asthma Foundation of Victoria, details the development of new low allergy homes which feature ceramic tile as an integral part of the overall concept.*

When asked to nominate the medical condition which affects more Australians than any other, the chances that many would choose incorrectly are extremely high.

Yet every Australian has an immediate family member, a relative, a neighbour, schoolfriend or work colleague who is affected by the condition we know as asthma.

More than 10% of the population is affected - yes, 1,500,000 Australians have asthma!

Asthma affected people of all ages. It is responsible for more reported incidents of absence from school and emergency admissions to hospital amongst children than any other illness. It affects adolescents and adults, with an increasing incidence amongst older members of the community.

Asthma is responsible for an estimated economic burden of \$720 million to Australia, with \$400 million lost in productivity due to absence from the work place of \$320 million spent on medication and emergency services such as ambulance and hospitals.

These are staggering statistics, but tragically they do not reflect the emotional impact on the community of an average 15 asthma related deaths each week. In 1993, there were 777 asthma related deaths in Victoria. It is estimated that half of these deaths could have been prevented with the proper diagnosis, management and understanding of the disease.

*Despite all efforts to have this tragedy acknowledged at the highest level, the Asthma Foundations located in each state generally receive little or no government funding for their core activities and must continue to seek community help to meet the asthma challenge.*

Asthma is a respiratory condition defined as narrowing of the airways in the lungs which is reversible either spontaneously or as a result of treatment.

About 30% of all Australians can be expected to have respiratory symptoms consistent with asthma at some time in their lives. Symptoms include coughing, wheezing, tightness of the chest and difficulty in breathing.

There is evidence of a genetic disposition to asthma, with exposure to a variety of different trigger factors leading to the onset of asthma and resultant attacks on exposure.

Trigger factors differ from one person to another. Identification and avoidance of trigger factors are an important part of an individual's asthma management plan.

There is a strong link between asthma and allergies. Some 95% of the population who are allergic or atopic react to dust mites and rye grasses. Overall some 40% of

the population react to allergens from these sources. Avoidance and elimination of these two trigger factors will have a beneficial effect on many families living with asthma.

Evidence suggests that significantly reduced exposure to these allergens can reduce asthma symptoms and may even prevent asthma from being initiated. Other factors such as chemical emissions can trigger asthma attacks, but are less of a problem and can be more readily managed.

The allergens produced in the faeces of dust mites appear to be the major cause of sensitisation and development of asthma. Since the domestic environment provides conditions in which the house dust mite thrives, careful house design and choice of furnishings are important factors in helping to reduce and eliminate house dust mites.

Research has been undertaken in Europe

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*Ken Warburton had no hesitation in recommending ceramic tile.*

*Ken is pictured at the Breathe Easy™ Home his company built at Greenhill Crt., Sunbury, Victoria*

on housing design to provide a living environment which does not expose its occupants to increased risks of asthma and allergic reactions.

Climatic conditions have a significant effect on the life cycle and survival rates of dust mites, and differences between Australia and Scandinavia must be considered in developing a suitable specification for an asthma friendly home.

Unfortunately the climate in Victoria, particularly in coastal regions, will support dust mite growth for most of the year.

The Asthma Foundation of Victoria, as part of its service to people with asthma, staffs an advice line to provide answers or directions for many of the questions raised by those with asthma or their carers.

The advisors received many calls on the affects of asthma in the family home, but until the early part of 1994, the handling of the questions and advice were considered in isolation.

It was only when the former state electricity supplier, Electricity Services Victoria, which has now been broken up into five separate businesses, approached the Asthma Foundation of Victoria about the range of calls they were receiving about potential asthma trigger factors in the home, that the issues, previously discussed in isolation began to all into place.

Dr Geraldine Elliott, Executive Director of the Asthma Foundations of Victoria acknowledges that the call from Charlie Cassar, a Residential Sales Manager with the then ESV was the catalyst for the approach to addressing the potential for triggering of asthma attacks in the home to be treated as one marketing and promotional issue.

"As a Foundation we were aware of the allergens such as dust mite, pollen, pollution and mould which were the cause of so many asthma problems", said Dr Elliott.

"But, until approached by Charlie Cassar, we hadn't reviewed the situation with an overall strategy."

"We then recognised that addressing the issues and developing the plan for a low allergy home criteria would create a greater awareness amongst home owners and the building industry to the potential health issues affecting 10% of Australia's population", said Dr Elliott.

With the assistance of Professor Dan Czarny and the Australian Allergy Foundation, available data was completed and a set of specifications prepared for the low allergy Breathe Easy™ criteria, the house dust mite was the main culprit.

House dust mites require a humid environment for survival and reproduction, and colonise sites such as mattresses, soft furnishings and carpets. These provide shelter, moisture and food such as skin flakes and fungi. They produce some 2,000 faeces during their life cycle which contain concentrated, highly soluble allergens. Faeces are of similar size to pollen grains, 10-40 microns in diameter, become readily airborne, and so are much more widely distributed around the house than the dust mites themselves. Allergen production increases as the relative humidity (RH) of the environment increases.

Dust mites are sensitive to extended periods of low RH, which at 21-23°C is 40-45%. This is at the lower range of the comfort zone for humans of 40-70%. Breeding occurs under conditions where the RH is above 55% and there are sufficient nutrients available such as dust, skin flakes and other proteins. When killed, recolonisation occurs within 5-6 weeks unless preventative steps are taken to prevent recontamination. This is the biggest problem for people with asthma and there are plenty of measures which can be undertaken to reduce and eliminate exposure.

Washing will kill dust mites only if the temperature is above 55°C, and this will also remove the water soluble allergens. Dry cleaning will kill the mites but does not remove or denature all of the allergens. Chemical treatments can again kill the mite but does not remove the allergens which can still circulate and cause problems.

In the Breathe Easy™ Home, flooring is an issue of great importance. The criteria states that hard impervious materials which can be regularly and easily washed to remove settled allergens are desirable.

While synthetic rugs can be washed and scatter rugs hung in the sunlight and beaten to remove dust mites and allergens, fitted carpets are a danger. They cannot be effectively cleaned and are quickly reinfested by dust mites from other sources.

Ceramic flooring tiles make an ideal surface for use in the house and can be used in combinations with timber, slate, cork or vinyl.

The Breathe Easy™ Home can now be viewed at three locations in Victoria and all have installed ceramic floor tiles to great effect.

The recently opened display home by Warburton Constructions as the Greer Gables in Sunbury near Melbourne, uses ceramic tiles throughout all bedrooms and entry hall, with in-floor heating. Built on a sloping block, other areas of the home have used polished timber with radiant ceiling heating.

Ken Warburton had no hesitation in using ceramic tiles for the hard wearing and easy to clean properties, with an aesthetic appearance which compliments the home.

Phil Timmis, joint Managing Director of Blunts Homes in Shepparton, builder of the first Breathe Easy™ Home has similar feelings with ceramic tiles used effectively throughout the wet areas, family kitchen and dining areas.

A third house at Roxburgh Park is nearing completion and is being built by Sainsbury Homes for the Asthma Foundation. The home will also feature ceramic tiles to great effect.

The Breathe Easy™ concept is to be introduced by the Asthma Foundation of South Australia shortly and will be progressively adopted by other states.

"The Foundation has been delighted with the acceptance by home builders and the building materials suppliers in Victoria in such a short period of time", said Dr Elliott.

"We have preserved the integrity of the criteria by registering builders and suppliers, of which the Ceramic Tile Association is one, with funds raised in this way protecting the concept, but more importantly, allowing the Foundation to fund more services for the 500,000 Victorians with asthma", said Dr Elliott.

More details on the Breathe Easy™ Home can be obtained from the Asthma Foundation of Victoria, 101 Princess Street, Kew, 3103, telephone (03) 853 5666, fax (03) 853 9196 or the Victorian Division of the Ceramic Tile Association Mr T Hynes (03) 748 8000. □