

## Why Trust Anyone Else?

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### Controlling Dust Mites



I often hear people say, “I’m allergic to dust.” They really mean to say, “I’m allergic to dust mites.” Or, if you’re an indoor air nerd, you tell the people they are allergic to “terrestrial invertebrate arachnids.”

Dust mites are a concern because they can trigger an allergic reaction in sensitive individuals. The Third National Health and Nutrition Examination Survey, found that 27.5% of the population had a positive skin test response for dust mite sensitivities. Now for the gross part... the allergic reaction is from allergens in the dust mite feces. 95% of the mite allergens is in the feces which has a mean diameter of about 22 microns. In other words REALLY, REALLY small.

People come in contact with dust mite allergen via the air or a surface. Because of the fecal pellet’s size, it isn’t airborne for very long. Fluffing a pillow with a large number of dust mites will make the allergen airborne, but just for a few minutes before it settles out via gravity. Dust mites like the ecology of dust, especially where there is a high percent of skin scales (think skin cells from dandruff). Pillows, mattresses, and sofas in front of the TV are good habitats for dust mites.

There are a lot of ways to control dust mites. These include chemical control, cleaning and vacuuming, mattress and pillow covers, and removal of carpets. The control measure I want to highlight is indoor humidity.

Most indoor air quality professionals measure indoor humidity with the variable “relative humidity” (RH). When scientists talk about dust mites, they often use the term “critical equilibrium activity” (CEA). This is the water activity below which dust mites lose water and die because they are unable to regulate their water balance. Fortunately, the critical relative humidity can be derived from the CEA. *American house dust mite* has a critical relative humidity of 73% at 77°F.

So to be safe, it is best to keep relative humidity below 50% RH. That is easy for me to do in Milwaukee in the winter, not very easy to do in the summer. But let me make matters worse. Your home can be below 50% and dust mites will still grow because of something called microclimates. Sure, the air in your bedroom may be 45% RH. But if you are all warm and snuggled under a blanket, your perspiration and respiration can make the RH exceed 75%!

For most people, a multi-faceted approach is needed to control dust mites. Yes, control your RH, but also consider improving your cleaning procedures and getting mattress and pillow covers. A majority of people don’t have these sensitivities and therefore live in a happy coexistence with dust mites (and their feces).

To top it all off, these small creatures survive a washing as well. The hot water must exceed 130 degrees to put them out of their misery. Most water heaters are set at 120 degrees. In addition, bleach only turns them white.