

Leave it at the Door: A Guide to Reducing Contaminants in Your Home

Revised by Pamela R. Turner, Ph.D., Associate Professor and Extension Housing Specialist, University of Georgia Cooperative Extension

What's in the dust in your home?

There may be insect fragments, lead dust, pesticides, pollen, dust mites, animal dander, hair, human skin flakes, fungal spores, or cigarette ash in household dust. Around 30 to 40 percent of the contaminants inside your home are brought in from outdoors, and studies indicate that the cockroach exoskeletons and droppings found in household dust can trigger asthma.^{1,2} Dust gets into your home on shoes and clothing, or pets can track contaminants in on their paws and fur. Not surprisingly, the greatest concentration of household dust is found in carpeting near the entryway.³

Children are at greatest risk of exposure to contaminants found in household dust. This is because they are more likely to be sitting and crawling on floors and placing their hands in their mouths. Numerous studies confirm that the greatest number of environmental exposures and risks, especially for young children, occur inside the home.^{4,5,6,7} Children are not the only ones at risk. Anyone with asthma, other respiratory problems, or a weakened immune system should make every effort to reduce household dust.

What you can do to reduce contaminants indoors.

The first four steps you take inside your front door bring in close to 85 percent of the outdoor contaminants found inside your home.⁸ By taking a few simple steps you can improve the health of your home and reduce the time spent cleaning.

- The first step is to place doormats by exterior doors and the door between the garage and house.
- The EPA recommends establishing an entry system that captures soil, pollutants, and moisture at the door. Your entry system should consist of a hard surfaced walkway, such as a paved sidewalk, a grate-like scraper mat outside the entry door, and a highly absorbent doormat that will trap soil and water below shoe level placed just inside the door.
- If you have space, add a second doormat as a finishing mat. The purpose of this mat is to capture and hold any remaining particles or moisture from the bottom of your shoes.
- Take an additional step. Remove your shoes and leave them at the door. The carpet inside your home acts like a doormat, scraping off debris and dirt with every step you take. Removing your shoes at the door not only leaves contaminants behind, it reduces wear and tear on your floors and time spent cleaning.
- To prevent slips and falls indoors, choose an indoor shoe, slipper, or sock with a non-slip sole. If you have balance issues or a tendency to bump into things, choose a hard-soled shoe with good traction to wear indoors.

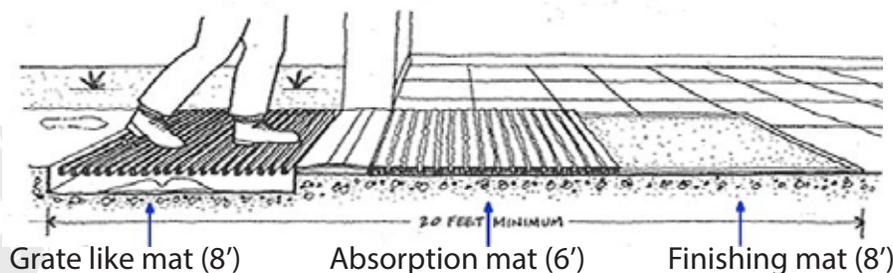


Photo Source: <http://www.epa.gov/iaq/schooldesign/controlling.html#Entry%20Mat%20Barriers>

A clean doormat is a good doormat.

Doormats help reduce tracking-in contaminants. Findings from an EPA study indicated that when a doormat was used and shoes were not worn, lead dust and other chemicals in the home were reduced by about 60 percent.⁹ Leaving contaminants and shoes at the door has time, economic, and health benefits. Adding a doormat reduces the time and effort needed to clean your home. You will save money by reducing wear and tear on your carpets and floors. The health benefits come from reducing your exposure to pesticides, lead dust, and asthma and allergy triggers.

Key features of a good doormat:

- Stores soil and water below shoe level
- Has a non-slip backing
- Made with a reinforced surface to avoid wearing out quickly



Project: Create a Shoe Storage Unit

- Keep outside shoes out of the way
- Store inside shoes near the door
- Provide guests with slippers to wear inside



References

1. Ferguson, J. E., & Kim, N. D. (1991). Trace elements in street and house dust: sources and speciation. *Science of the Total Environment*, 100, 125-150.
2. Kim, J., Merry, A. C., Nemzek, J. A., Bolgos, G. L., Siddiqui, J., & Remick, D. G. (2001). Eotaxin represents the principal eosinophil chemoattractant in a novel murine asthma model induced by house dust containing cockroach allergens. *The Journal of Immunology*, 167(5), 2808-2815.
3. Nishioka, M. G., Burkholder, H. M., Brinkman, M. C., Gordon, S. M., & Lewis, R. G. (1996). Measuring transport of lawn-applied herbicide acids from turf to home: correlation of dislodgeable 2,4-D turf residues with carpet dust and carpet surface residues. *Environmental Science and Technology*, 30(11), 3313-3320.
4. Lewis, R. G., Fortmann, R. C., & Camann, D. E. (1994). Evaluation of methods for monitoring the potential exposure of small children to pesticide in the residential environment. *Archives of Environmental Contamination and Toxicology*, 26(1), 37-46.
5. Quirós-Alcalá, L., Bradman, A., Nishioka, M., Harnly, M. E., Hubbard, A., McKone, T. E., & Eskenazi, B. (2013). Pesticides in house dust. In T. A. Myatt & J. G. Allen (Eds.), *Environmental health: Indoor exposures, assessments and interventions* (pp. 181). Boca Raton, FL: CRC Press.
6. Roberts, J. W., Wallace, L. A., Camann, D. E., Dickey, P., Gilbert, S. G., Lewis, R. G., & Takaro, T. K. (2009). Monitoring and reducing exposure of infants to pollutants in house dust. *Reviews of Environmental Contamination and Toxicology*, 201, 1-39.
7. Wilson, N. K., Chuang, J. C., Hand, K. M., Brinkman, M., Tefft, M. E., Finegold, J. K., & Wilson, L. K. (2004, October). Organophosphate and pyrethroid pesticides in environmental and children's personal samples collected at 50 homes of infants and toddlers. In *Proceedings of the 2004 annual meeting of the International Society of Exposure Analysis* (pp. 17-21). Philadelphia, PA: ISEA.
8. Environmental Protection Agency. (2009). Controlling pollutants and sources. *IAQ design tools for schools*. Retrieved from <http://www.epa.gov/iaq/schooldesign/controlling.html#Entry%20Mat%20Barriers>
9. Roberts, J. W. & Ott, W. R. (2006). Exposure to pollutants from house dust. In W. R. Ott, A. C. Steinemann, & L.A. Wallace (Eds.), *Exposure analysis* (pp. 319-345). Boca Raton, FL: CRC Press.

*Originally published February 2010 by Pamela R. Turner, Sharon M.S. Gibson, and Ambre Latrice Reed.
For more information on healthy homes, visit www.fcs.uga.edu/extension/HealthyHomes.*



extension.uga.edu/publications

Circular 1070 (Formerly HACE-E-81)

Revised September 2015

The University of Georgia and Fort Valley State University, the U.S. Department of Agriculture and counties of the state cooperating. UGA Extension offers educational programs, assistance and materials to all people without regard to race, color, national origin, age, gender or disability.

The University of Georgia is committed to principles of equal opportunity and affirmative action.