



DUST, TOXINS, PESTICIDES AND HARMFUL POLLUTANTS! WHAT YOU SHOULD KNOW TO PROTECT YOUR FAMILY

When we conducted our research to develop Dr. Doormat we consulted with several organizations and experts including the American Lung Association, seasoned home environmental expert's, microbiologists and engineers. For over 30 years, hundreds of field studies have been conducted on this subject and the results published. We have combed through volumes of data and created a list of meaningful information that an average consumer can use to educate their family members and friends on the subject of track-in and the health risks associated with house dust, toxins, pesticides and harmful pollutants. Credit for the data and research includes the following organizations: The Environmental Protection Agency, The American Lung Association, Southwest Research Institute, Clemson University, Microlabs Northwest, Engineering Plus, National Exposure Research Laboratory, Envirometrics, Harvard University School of Public Health.

DUST/TOXINS

- Tracked in carpet dust is one of the major sources of home exposure to lead, allergen, bacteria, fungi, volatile organic compounds and pesticides.
Quantitative analysis of road & carpet dust on shoes, Page 1, paragraph 2, 3rd line
- Track-in from shoes is the largest source of home dust in most U.S. Homes
Quantitative analysis of road & carpet dust on shoes, Page 1, paragraph 2, last line
- Road dust is a large source of house dust.
Toxic Metals in Deep & Surface Dust in Carpets. Page 2, paragraph 1, last sentence
- 94% of the mass that sticks to the shoe after two steps on road dust was tracked off by two steps on clean carpet.
Quantitative analysis of road & carpet dust on shoes, Page 1, paragraph 2, last line
- Up to 95% of house dust and some toxics found in rugs appear to be tracked in on shoes.
Cleaning Up Home Toxics: Air and Dust. Page 8, second paragraph, line 6
- The most powerful weapons against dirt and dust are a doormat to keep dust from being tracked in and a high quality vacuum cleaner to remove dust and dirt in the home, Roberts advises.
House Dust as Health Hazard; Winter is a dirty time and what we track in is harmful. Page 1, last sentence
- Removing shoes before entering the home, wiping your feet on a quality doormat, and using an efficient vacuum cleaner can reduce fine dust levels in the rugs by 99%, or 100 times.
Reducing Health Risks from Dust in the Home. Page 2, last sentence
- Both road and carpet dust contain probable human (B-2) carcinogens.
Quantitative analysis of road & carpet dust on shoes, Page 1, paragraph 3, 1st line



- Benzo(a)pyrene was found in house dust in 89% of 362 homes that participated in the field study.
Quantitative analysis of road & carpet dust on shoes, Page 1, paragraph 3, 2nd line
- PAHs (polycyclic aromatic hydrocarbons) & other pollutants in road & house dust may cause gene mutations & cancer.
Quantitative analysis of road & carpet dust on shoes, Page 1, paragraph 3
- Dust from 12 out of 29 Seattle homes was mutagenic & 20 out of 29 dust samples interfered with DNA repair
Quantitative analysis of road & carpet dust on shoes, Page 1, paragraph 3, 5th line
- A large number of metals, organic compounds, bacteria, and viruses in house dust are known or suspected of being carcinogens, allergens, neurotoxicants, and endocrine modifiers.
Toxic Metals in Deep & Surface Dust in Carpets. Page 2, paragraph 1, line 10 & 11
- 70% of mice exposed to road dust on their cage floor and in the air developed skin cancer during their lifetime; 74% developed lung cancer. When the study was repeated & the organics removed from road dust, skin cancer was eliminated & the lung cancer rate dropped to 45%.
Quantitative analysis of road & carpet dust on shoes, Page 1, paragraph 3, 9th line
- “Children ingest 12 times as much dust as adults, weight for weight.” John Roberts, Engineer and Home Environmental Expert.
Article: House dust as health hazard; Winter is a dirty time and what we track in from outside can be harmful. Page 3, last sentence.
- The temperature, moisture, and nutrients in carpets may also magnify dust mites, gram negative bacteria from tracked in fecal material, and molds. Viruses may also survive for days in moist fecal material in dust.
Quantitative analysis of road & carpet dust on shoes, Page 2, paragraph 2, 10th line
- The pollutants found in urban soil, road dust, and house dust include lead (chemical symbol Pb), bacteria, viruses, allergens, pesticides, and other toxic chemicals.
Chapter 4. Reducing Health Risks from Dust in the Home, Page 1, paragraph 2, first sentence
- Americans spend 95% of their time inside
Everyday Exposure to Toxic Pollutants, page 5, 2nd column, line 2.
- Infants & Toddlers receive a broad & significant range of exposures to many pollutants in house dust. We hypothesize that the control of dust track-in, track-off, and track-on of small particles in the house will be cost effective in reducing the total exposure, risks, and health effects for preschool children. Reducing toddlers’ exposure to lead (Pb), carcinogens, bacteria, molds and allergens will reduce risk of (Pb) poisoning, cancer, infections, allergy, and asthma.
Quantitative analysis of road & carpet dust on shoes, Page 4, paragraph 2 before Acknowledgements
- Infants and Toddlers receive a broad and significant range of exposures to many pollutants in



house dust. Many of the metals are respiratory irritants, carcinogens, endocrine modifiers, or neurotoxins. Exposures of a fetus or infant to Pb or Hg can cause profound and irreversible effects on the nervous system as well as the physical and mental health of children such as lower I.Q. and growth, attention deficit, poor hearing, memory loss, and psychiatric disorders. The development of the human nervous system is an integrated and sequential process which begins in the first trimester of pregnancy and continues for years after birth. Interference with any of the stages of development can alter subsequent processes since the nervous system has limited ability to repair the damage done at an earlier stage. We hypothesize that the control of track-in, inside sources, and accumulation of metals in house dust will be cost effective in reducing the total exposure, risks, disease, and health costs for preschool children. Reducing toddlers' exposure to Pb, As, Cd, Cr, Hg, Ti, and other metals will reduce risk of lead poisoning, cancer, nervous system disorders, and modification of the endocrine system. *Toxic Metals in Deep & Surface Dust in Carpets. Page 5, last paragraph*

PESTICIDES/INSECTICIDES

- Some of the most frequently used pesticides used in agriculture are also the pesticides of choice in lawn care.
 - 2,4-D postemergence herbicide
 - pendimethalin (preemergence herbicide)
 - diazinon and chlorpyrifos (insecticide)
 - permethrin
 - carbaryl*EPA Project Summary, Simulation of Track-in of Lawn Applied Pesticides, Page 1, last paragraph.*
- Numerous pesticides have been identified in house dust and indoor air. The presence of insecticides in the home can be from the use of indoor foggers and sprays. Materials applied originally to foundations. Track-in on shoes
EPA Project Summary, Simulation of Track-in of Lawn Applied Pesticides, Page 2, 2nd paragraph
- Once pesticides are brought indoors, carpeting, carpet dust and home furnishings may become long term sinks
EPA Project Summary, Simulation of Track-in of Lawn Applied Pesticides, end of 2nd paragraph
- The field study revealed that the volatile insecticide, chlorpyrifos was found on the entry-mat. The entry-mat appeared to serve as a pool or sink from which residues were carried onto the carpeting.
EPA Project Summary, Simulation of Track-in of Lawn Applied Pesticides, page 2, 3rd column, 1st paragraph
- The study demonstrates that track-in on shoes, is a reasonable mechanism, by which lawn applied pesticides are carried into the home.
EPA Project Summary, Simulation of Track-in of Lawn Applied Pesticides, page 2, 3rd column, Conclusions & Recommendations
- 362 Midwestern homes participated in a study. In more than half of the homes the

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concentrations of seven toxic organic chemicals called polycyclic aromatic hydrocarbons (compounds produced by incomplete combustion which cause cancer in animals and are thought to induce cancer in humans) were above the levels that would trigger a formal risk assessment for residential soil at a Superfund site.

Everyday Exposure to Toxic Pollutants, Page 5, column 1, paragraph 2

- Investigators found that indoor air contained at least 5 but typically 10 times or more higher concentrations of pesticides than outside air-and those residues included insecticides approved only for outdoor use. Evidently, potent chemicals targeted against termites in the foundations of these houses had found their way indoors. Such poisons can be tracked in on people's shoes.

Everyday Exposure to Toxic Pollutants, page 4, Column 2, line 5

- Because of the high correlation between PAHs (polycyclic aromatic hydrocarbons) in the doormat & the carpet, it appeared that track-in was the cause of rug PAH's in the Columbus, OH study

Quantitative analysis of road & carpet dust on shoes, Page 1, paragraph 3, 7th line