

BUILDER'S GUIDE TO ENERGY EFFICIENT HOMES IN LOUISIANA: MOISTURE AND MOISTURE MANAGEMENT - PART 1

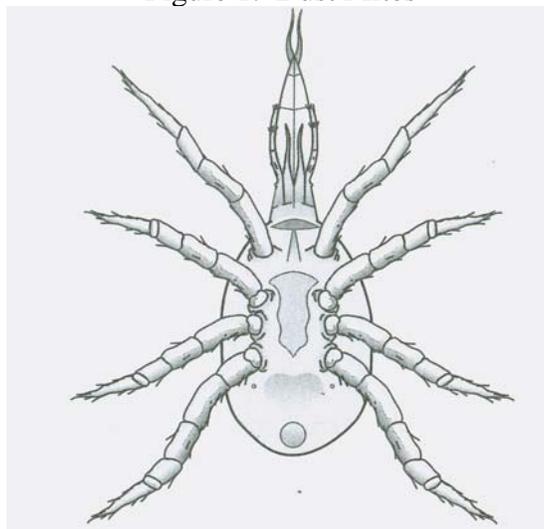
by
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The *Builder's Guide to Energy Efficient Homes in Louisiana (Builder's Guide)* is being updated to reflect new code requirements. This is the seventh in a series of articles that will summarize the information in the guide and highlight updates.

“Moisture in American homes causes billions of dollars in property damage and millions of cases of respiratory disease each year.”¹ Moisture and condensation problems are troublesome and destructive to residences during all seasons of the year. Moisture and condensation inside the home should be controlled as much as possible at its source. Homeowners may choose one of several types of whole house ventilation systems to reduce or eliminate moisture and condensation from the home. Exterior moisture should be controlled, shed, and drained away from the home as rapidly as possible. Water corrodes metal, dissolves glue, warps wood and weakens mortar.

Moisture and water condensation lead to building deterioration by biological pests. These biological pests, which include bacteria/viruses, cockroaches, fungi, pets, and termites, can often cause a serious threat to the respiratory health of the buildings' occupants. Cockroaches, fungi, pets, dust mites, and termites all insert dust particles into the air. Contaminated dust particles are responsible for most allergy and asthma symptoms. “Dust mite population increases as relative humidity and wetness increase inside the building envelope. The feces of dust mites are one of the most powerful allergens known to man.”¹ High relative humidity and the moisture condensation it causes, encourage the growth of dust mites, cockroaches, termites, and fungi (mold and mildew). Infestation by these pests in wall cavities will eventually cause deterioration and future structural damage.

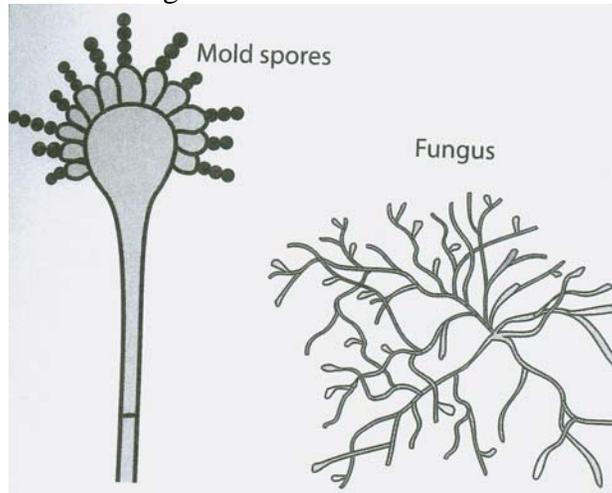
Figure 1. Dust Mites



SOURCE: See Footnote 1

¹ John Krigger and Chris Dorsi, *Residential Energy: Cost Savings and Comfort for Existing Buildings*, Saturn Resource Management, Inc., Montana, 2004.

Figure 2. Mold and Mildew



SOURCE: See Footnote 1

Water intrusion into a home is destructive because water greatly reduces the thermal resistance (R-value) of insulation and can permanently damage it. This could play havoc with the thermal boundary of the house, the wall cavities, and all of the safeguards which serve to protect the building envelope. Degrading or a major reduction of the insulation R-Value will allow warm air infiltration through the wall cavities in the summer time; and will allow thermally conditioned air to escape out of the building envelope in the winter time. Both of these undesired conditions will affect the health and well being of the occupants. These undesired conditions will also have very deleterious effects on the interior finishes of the house, and will have unseen negative effects on the wall cavities and structure of the house over an extended period of time. For every cubic foot per minute (cfm) of air leakage out of the house, an equal number of cfm of air must enter from outside to make up for the loss. Humid and unconditioned air from outside will be brought indoors during the heating & cooling seasons. Humid and unconditioned air and condensation in the homes' wall cavities is highly attractive to termite colonies as well as other pests.

Outside air infiltration may also bring stack gasses, outdoor odors, and other impurities into the space from the outside.

More information on energy savings features, and the full text of the *Builder's Guide*, can be found on the DNR Technology Assessment Division website at URL: <http://www.dnr.louisiana.gov/tad> and click on the *Builder's Guide* link.