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June 13, 2008 Issue # 3

Dear Jeffrey,

This month's edition of buildingscience.com e-news features Joe's Lstiburek's article on concrete floor problems. Also, look for an upcoming announcement soon regarding a new book from Andy Ask in our [bookstore](#).

Happy reading!



Jeff Melvin  
Editor  
Building Science Corporation

## Featured Article: Concrete Floor Problems

### BSI-003

Here is a pop quiz for you folks that are bored of Jeopardy. California is desert. Florida is a swamp. We build concrete slab-on-grade in both places. Which place has more slab moisture problems? Yes, you guessed it, California. Why? In California they place sand between slabs and plastic vapor barriers - In Florida they don't.

Perhaps it was the drug culture of the 60's that turned brains into coleslaw but it is hard to understand the lunatic practice of placing a layer of sand over the top of a plastic ground cover under a concrete slab in California. That this is an often recommended practice by geotechnical engineers results in sputtering frustration among those who know better but can do nothing about it because of the rock star status accorded the geotechnical engineer in California.\*

Almost everywhere (except "California") that slabs are placed on the ground-a plastic sheet-a vapor barrier-is located directly under the concrete slab and on top of the ground. This plastic sheet is in direct contact with the concrete-as it should be in a rational world. But when we get to California we end up with sand or granular material between the plastic sheet and the concrete.

This typically results in moisture problems with floor coverings. The sand layer becomes saturated with water from wet curing (water added to the top of the slab leaks down into the sand layer through service penetrations) or from irrigation (water added to the ground at the building perimeter enters the sand layer from the side or from underneath) or from rain (see wet curing and irrigation).

The sand layer cannot dry downwards by vapor diffusion because of the plastic sheet - it is a vapor barrier after all. In fact that's why we have it under the slab. We want a vapor barrier under the slab. We want to prevent water vapor from coming up from the ground into the concrete slab. But it works both ways-it prevents water vapor from going down as well. Bummer.

It gets worse . . .

To read the entire feature article and find a downloadable pdf version, click [here](#) to visit our web page.

## Come Learn From Dr. Joe and Dr. John

Joe's article on concrete floor problems is part of the handout material for [Building Science Fundamentals 2008](#).

Building Science Fundamentals 2008 is an advanced two-day seminar taught by Dr. Joe Lstiburek and Dr. John Straube about optimizing building performance. That is, designing buildings that perform as they should: efficiently and without assemblies that spall, decay, corrode, peel, blister, mold, condense water, leak air and water and otherwise annoy occupants, clients and authorities with jurisdiction. You will learn how to correct these problems in existing buildings and how to avoid them in new buildings.

You will learn fundamental building science principles (such as the control of heat, air and moisture and IAQ) as well as applications in disaster management, building investigations and sustainability.

Here is a list of remaining seminars for 2008:

[Dallas - June 18, 19](#)

[Philadelphia - July 9, 10](#)

[Vancouver - October 1, 2](#)

[Chicago - October 15, 16](#)

[Toronto - November 12, 13](#)

[Minneapolis - Dec. 3, 4](#)

In response to overwhelming demand, Dr. John and Dr. Joe have constructed an advanced class for all Building Science Fundamentals 2008 guests. Click on the link below for more information:

[Westford Expert's Session Dec. 17, 18](#)

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We are internationally recognized for our expertise in moisture dynamics, indoor air quality, and forensic (building failure) investigations. We are also on the leading edge of the design of sustainable communities and buildings.

We believe in promoting energy efficiency and environmental responsibility within the constraints of marketable and affordable building technology.

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