



Local/Regional » News Item

Monday, October 06, 2003

Study plays down quake risk in W. Kentucky  
Construction rules called too restrictive



Mail this page

**By JAMES MALONE**  
jmalone@courier-journal.com  
The Courier-Journal

**Subscribe!**  
Click [here](#)  
to get the  
C-J delivered  
your door ea  
morning.

PADUCAH, Ky. The Kentucky Geological Survey is challenging the conventional view of the earthquake risk that the New Madrid fault poses to Western Kentucky.



**BY NICK TOMECEK,  
SPECIAL TO THE  
COURIER-JOURNAL**

Zehnming Wang, an assistant professor at the University of Kentucky's Department of Geological Sciences, right, and John Kiefer, assistant state geologist, discussed seismic activity in the state.

In a newly released study, the survey a state-funded agency that primarily produces maps and researches resources and geology argues that "overly conservative" hazard assessments in the region prepared by the U.S. Geological Survey mean new buildings are subjected to unnecessarily strict design standards, even exceeding California's.

**About Top Jobs**

The 22-page study is being criticized because it was released without being peer-reviewed and it fails to disclose that a state-funded consortium of businesspeople and economic development officials with an interest in lowering earthquake hazards funded the study and paid for new earthquake monitors.

State geologist Jim Cobb defended the study's conclusions, although he acknowledged they mirror the sentiments of the people who wanted it done. "That's the way it turned out," he said. "But we can't always control the source of our funding."

Reducing an area's earthquake hazard has significant implications, because a high risk can drive up design and construction costs for infrastructure such as roads and bridges. A high risk also means higher insurance premiums and, some argue, it can hinder economic development.

Recent studies in the region show there have been major seismic events along the fault about every 500 years going back to the year 900, said Gary Patterson, a geologist and information services director at the Center for Earthquake Research and Information at the University of Memphis.

"Whether the New Madrid fault extends up there is a matter of debate," he said. "But the

real question is whether a seismic hazard exists up there from New Madrid, and the answer is without a doubt. You don't have to be on top of the fault when there is a very large fault nearby. ... The real point is if you have a large earthquake in New Madrid, the whole region is going to be shaken silly, shaken very hard."

The region's high earthquake hazard also has become an issue in Kentucky competition with Ohio for the \$1.5 billion replacement of the Paducah Gaseous Diffusion Plant. More than \$50 million was spent on seismic upgrades at the Paducah plant in the late 1990s.

In 1811 and 1812, the New Madrid fault from Arkansas to Southern Illinois produced three of the strongest earthquakes in U.S. history, toppling chimneys as far away as Maysville and causing the Mississippi River to flow backward. Historical studies show a major quake has occurred there about every 500 years.

Since 1996, 196 earthquakes measuring from magnitude 2 to 6 have occurred along or near the fault. Every one-point increase in magnitude means a quake is 10 times stronger. A magnitude of 2.5 to 3 is generally the smallest that people can feel.

"NEW MADRID really scares me," said Jim Wilkinson, director of the Memphis-based Central United States Earthquake Consortium, an eight-state emergency preparedness group. "If New Madrid goes on the scale that we think it will ... we are going to impede the entire country.

"All of the commerce, all of the oil and gas pipelines, everything comes right through the central U.S.," Wilkinson said. "You drop the bridges across the Mississippi and Ohio and Missouri rivers and the river locks and you've frozen this country."

But Cobb disagreed with the level of risk. Kentucky officials want to assemble their own earthquake data from a string of new monitors. From that, they hope to either lobby the federal government to change its maps or produce their own set of maps.

Cobb wants the additional seismic monitors to acquire more and better data for far Western Kentucky. But the \$500,000 the group is requesting over two years from the General Assembly to do that comes at a time when the state is facing other critical financial needs. The Kentucky Department of Emergency Management doesn't even have the money to fill its vacant earthquake program manager position.

"It's vitally important to the economic development of Western Kentucky," said state Rep. Charles Geveden, a Democrat from Wickliffe. "One of the reasons we may lose the (uranium) plant is because of the probability of a major earthquake.

"If we can put in these extra monitoring devices we can probably get information to show we are not actually part of the Madrid fault and the probability of a major earthquake is not as great as once thought," Geveden said.

Kentucky officials are basing their assumptions on a lower risk on six months of data that included a small earthquake in July near Bardwell. And they argue that economic development is not pushing the science.

"The premise that we did it for an economic purpose is incorrect," Cobb said.

A Kentucky geologist who worked closely with the study said that even with 20 to 30 years of data collected from across the Midwest, there is still a debate on whether an extension of the New Madrid fault reaches to McCracken County, where the uranium plant is located.

"The data on whether we are in the New Madrid fault is inconclusive," said John Kiefer, assistant state geologist.

Kiefer bases his view that the region is not above the fault extension in part on recent quakes along the fault. Those quakes were 10 times deeper than recent ones observed in Western Kentucky.

Earthquake hazard is a balanced risk, he said. "How much risk you are willing to take and how much protection you are willing to pay for," he said.

Even though the U.S. Geological Survey recently lowered the probability of a major New Madrid earthquake, there is a 10percent probability that a magnitude 7 to 8 earthquake could occur along the fault in the next 50 years, and a 25percent to 40percent probability of up to a magnitude 6 earthquake.

The movement to lower risk estimates of a major central U.S. earthquake began in 1999 with the publication of a controversial study that used Global Positioning System data to show that the area around New Madrid wasn't moving. The study suggested the 1811-12 earthquakes were unique.

Though the science of earthquake prediction is widely debated, no one disputes that it has caused construction costs to increase. And that has brought with it concerns from states about stifling economic development.

"The maps aren't conservative. They are what they are," said Eugene "Buddy" Schweig, program director for the U.S. Geological Survey in Memphis.

AS STATES revise or adopt building codes, "There is certainly a perception that the new codes will cost a lot of money ... and that becomes the issue," Schweig said. "...That's the political end."

When Kentucky adopted new building codes in 2002, the original earthquake design standards brought protests from structural engineers.

"Under that, we would not have been able to build a two-story brick veneer home in far Western Kentucky," said Terry Slade, acting director of building code enforcement for the Kentucky Department of Housing, Buildings and Construction.

So Kentucky based its codes on a lower hazard that still called for additional bracing and support, stronger foundations and the virtual elimination in far Western Kentucky of some backyard fixtures such as sunrooms, carports and decks.

In Paducah, building inspectors, who have been working with the building codes for a year, say the extra expense is marginal, probably 1 percent or less for residential construction.

"There is steel required in foundations and there are additional fastening and bracing requirements," said Joel Scarbrough, director of the city's inspection department. "There was a learning curve when we started, but we have heard very little objection lately."

Requests for building permits in Paducah after a year under the latest code are running ahead of the previous year, an indication to Scarbrough that homeowners and builders have learned to work with the system.

About 30 houses are built within the city each year. Scarbrough estimates about 400 new homes out of about 7,000 in the city have been built under stronger earthquake codes since 1988.

Asked whether he thinks states should lobby to relax earthquake standards, Patterson, the Memphis geologist, said, "I would certainly say not." Previous building codes were designed to take 40 percent of normal gravitational acceleration, he said.

"We routinely measure accelerations in big earthquakes at double that," he said. "Building codes are a minimum standard, and it's time the minimum standard was brought up."

**^^ Back to top**

[Home](#) · [News](#) · [Sports](#) · [Business](#) · [Features](#) · [Louisville Scene](#) · [Classifieds](#) · [Jobs](#) · [Cars](#) · [Homes](#) · [Marketplace](#) · [Contact Us](#) · [Search](#)

Copyright 2003 The Courier-Journal.  
Use of this site signifies your agreement to the Terms of Service (updated 12/18/2003).  
Send questions and comments to The Webmaster.

