

# Major quake could shake Southern California schools off their foundations

**Brian Charles, Los Angeles Newspaper Group, 12-2-10**

A magnitude-7 or greater earthquake in Southern California would level obsolete school buildings and kill hundreds of students, if California officials don't act soon to retrofit old facilities, an earthquake expert said Wednesday.

The chilling words came during the 2010 Earthquake Symposium held at UCLA. Engineers, seismologists and government officials converged on the Westwood campus to discuss how the Los Angeles area could survive quakes of the same intensity as those which rocked Haiti in January and Chile in February.

Kit Miyamoto, president of Miyamoto International, an engineering firm assisting with the rebuilding of the leveled Haitian capital Port-au-Prince, issued a stern warning about California schools.

"If we have 7.5 here we are going to lose some schools and some students," Miyamoto said. "They are going to collapse if we have an earthquake above 7.5 and we are going to lose 200 kids in one of those schools."

Like many engineers, Miyamoto warned of the dangers of buildings made without reinforced masonry, typical of many schools in Southern California.

"Some schools were engineered with 1950s and 1960s technology."

But Miyamoto said very few school buildings in the state have unreinforced masonry and upgrades to old facilities would not be difficult to make.

The news comes as California schools are struggling to balance budgets, according to school officials.

Frank Kwan, spokesman for the Los Angeles County Office of Education, said California's school building codes address seismic stability in public schools.

"All schools are subject to the Field Code," Kwan said. "I would be surprised that any classroom is being operated that doesn't comply with the Field Code."

The Field Code was adopted after the Long Beach Earthquake in 1933. While scientists agree that construction advances have been made in the 77 years since the quake killed more than 100 people, they point out that laws governing school construction have remained the same.

"The regulations have not changed in California, if they do, the schools will comply," Kwan said. "It just depends on what standard the state wants us to build to."

With buildings dating back to before World War II, Pasadena Unified School District has poured millions of its \$350 million capital improvement bond, Measure TT, into retrofitting its oldest building, according to district construction documents.

PUSD officials did not respond to a request for comment.

Earthquake scientists fear that changes to building codes will come after a major shakeout levels buildings and kills people.

"The teachable moments are very important in the earthquake business," said Thomas Heaton, director of Caltech's Earthquake Engineering Research Laboratory. "All of us dream that we can make changes without the accompanying tragedy, but the reality is that the tragedy is often necessary."

While the County Office of Education inspects nearly one-half of classrooms for safety, Kwan admits that the agency doesn't employ structural engineers to look at school buildings. But Kwan said schools are better prepared to deal with earthquakes than other large-scale disasters.

"We know how to deal with earthquakes, we are accustomed to that in Southern California," he said. "H1N1 is a different thing, that was a pandemic flu and it's hard to prepare for that."

The 2010 Haitian Earthquake killed 300,000 people and displaced more than 1 million more. California history of seismic activity offers the state an advantage over Haiti in preparing for a major quake, experts said.

"In California, the bad news is we have an earthquake every 10 years," Miyamoto said. "The good news is we phase out all the bad building practices after each quake."

In contrast, Haiti's last major earthquake was in the 1770s.

Scientists and engineers pointed to using ductile or flexible concrete versus non-ductile or brittle concrete and high tech braces on steel frame construction to minimize damage to buildings. The techniques to sturdy California buildings are well known, but without consensus from both the scientific community and the engineers, some claim California lawmakers will be reluctant to adopt new standards.

"My biggest frustration is in the lack of cooperation between the engineering community and the science community," Heaton said. "Until the science community and the engineering community begin to speak with one voice, the politicians won't listen."