TRIANGLE OF LIFE

Typically, after significant earthquakes make the news headlines, we get questions about an email circulating from Doug Copp, which advocates what he calls "The Triangle of Life," as the best way to protect yourself in the event of an earthquake. In short – This is bad information and following it could put you at greater risk of injury or death during an earthquake. There are a couple of kernels of good advice in what he advocates, like don't stand in doorways and stay away from stairs; but overall his recommendations are more dangerous than helpful.

The proper response to an Earthquake is Drop, Cover, and Hold on.

Background

Mr. Copp has been pushing for recognition of the Triangle of Life since the early 1990s and every time a major earthquake hits the news, his emails pop up once again. There have been no scientific studies conducted on his theories, while studies and research by the Red Cross and other organizations still support the use of Drop, Cover, and Hold-on. Drop, Cover and Hold-on is particularly relevant in the US where buildings are less likely to catastrophically fail and most injuries and fatalities are from falling debris and objects.

Additional Information (for those interested):

- A scientific response to the claims – http://www.cert-la.com/RejoinderToDougCopp.pdf

- American Red Cross Response to Triangle of Life - http://www2.bpaonline.org/Emergencyprep/arc-on-doug-copp.html

- USGS – FAQs – What is the Triangle of Life? http://www.usgs.gov/faq/categories/9830/3373

Response from Rocky Lopes, PhD
Manager, Community Disaster Education, American Red Cross

From: Lopes, Rocky
Sent: Wednesday, August 25, 2004 1:18 PM
To: Lopes, Rocky
Subject: FW: Earthquake Safety in the U.S.

Information for: those involved in earthquake education. This message may be forwarded to others who are concerned.

Recently it has been brought to my attention that an email from Doug Copp, titled "Triangle of Life," is making its rounds again on the Internet. This message, below, originally distributed on July 14, 2000, remains the same. Its content has been reviewed by the U.S. Geological Survey and the Federal Emergency Management Agency for concurrence.

"Drop, Cover, and Hold On" is CORRECT, accurate, and APPROPRIATE for use in the United States for Earthquake safety. Mr. Copp's assertions in his message that everyone is always crushed if they get under something is incorrect.

July 14, 2000 (with update on August 25, 2004)

Recently, the American Red Cross became aware of a challenge to the earthquake safety advice "Drop, Cover, and Hold On." This is according to information from Mr. Doug Copp, the Rescue Chief and Disaster Manager of American Rescue Team International (a private company not affiliated with the U.S. Government or other agency.) He says that going underneath objects during an earthquake [as in children being told to get under their desks at school] is very dangerous, and fatal should the building collapse in a strong earthquake. He also states that "everyone who gets under a doorway when a building collapses is killed." He further states that "if you are in bed when an earthquake happens, to roll out of bed next to it," and he also says that "If an earthquake happens while you are watching television and you cannot easily escape by getting out the door or window, then lie down and curl up in the fetal position next to a sofa, or large chair."

These recommendations are inaccurate for application in the United States and inconsistent with information developed through earthquake research. Mr. Copp based his statements on observations of damage to buildings after an earthquake in Turkey. It is like "apples and oranges" to compare building construction standards, techniques, engineering principles, and construction materials between Turkey and the United States.

We at the American Red Cross have studied the research on the topic of earthquake safety for many years. We have benefited from extensive research done by the California Office of Emergency Services, California Seismic Safety Commission, professional and academic research organizations, and emergency management agencies, who have also studied the recommendation to "drop, cover, and hold on!" during the shaking of an earthquake. Personally, I have also benefited from those who preceded me in doing earthquake education in California since the Field Act was passed in 1933.

What the claims made by Mr. Copp of ARTI, Inc., does not seem to distinguish is that the recommendation to "drop, cover, and hold on!" is a U.S.-based recommendation based on U.S. Building Codes and construction standards. Much research in the United States has confirmed that "Drop, Cover, and Hold On!" has saved lives in the United States. Engineering researchers have demonstrated that very few buildings collapse or "pancake" in the U.S. as they might do in other countries. Using a web site to show one picture of one U.S. building that had a partial collapse after a major quake in an area with thousands of buildings that did not collapse during the same quake is inappropriate and misleading.

According to the Centers for Disease Control and Prevention (CDC), which collects data on injuries and deaths from all reportable causes in the U.S., as well as data from three University-based studies performed after the Loma Prieta (September, 1989) and Northridge (January, 1994) earthquakes in California, the following data are indicated:

Loma Prieta: 63 deaths, approximately 3,700 people were injured. Most injuries happened as a result of the collapse of the Cypress Street section of I-880 in Oakland.

Northridge: 57 deaths, 1,500 serious injuries. Most injuries were from falls caused by people trying to get out of their homes, or serious cuts and broken bones when people ran, barefooted, over broken glass (the earthquake happened in the early morning on a federal holiday when many people were still in bed.)

There were millions of people in each of these earthquake-affected areas, and of those millions, many of them reported to have "dropped, covered, and held on" during the shaking of the earthquake. Therefore, we contend that "Drop, Cover, and Hold On" indeed SAVED lives, not killed people. Because the research continues to demonstrate that, in the U.S., "Drop, Cover, and Hold On!" works, the American Red Cross remains behind that recommendation. It is the simplest, reliable, and easiest method to teach people, including children.

The American Red Cross has not recommended to use a doorway for earthquake protection for more than a decade. The problem is that many doorways are not built into the structural integrity of a building, and may not offer protection. Also, simply put, doorways are not suitable for more than one person at a time.

The Red Cross, remaining consistent with the information published in "Talking About Disaster: Guide for Standard Messages," (visit http://www.disastereducation.org/guide.html) states that if you are in bed when an earthquake happens, to remain there. Rolling out of bed may lead to being injured by debris on the floor next to the bed. If you have done a good job of earthquake mitigation (that is, removing pictures or mirrors that could fall on a bed; anchoring tall bedroom furniture to wall studs, and the like), then you are safer to stay in bed rather than roll out of it during the shaking of an earthquake.

Also, the Red Cross strongly advises not try to move (that is, escape) during the shaking of an earthquake. The more and the longer distance that someone tries to move, the more likely they are to become injured by falling or flying debris, or by tripping, falling, or getting cut by damaged floors, walls, and items in the path of escape.

Identifying potential "void areas" and planning on using them for earthquake protection is more difficult to teach, and hard to remember for people who are not educated in earthquake engineering principles. The Red Cross is not saying that identifying potential voids is wrong or inappropriate. What we are saying is that "Drop, Cover, and Hold On!" is NOT wrong -- in the United States.

The American Red Cross, being a U.S.-based organization, does not extend its recommendations to apply in other countries. What works here may not work elsewhere, so there is no dispute that the "void identification method" or the "Triangle of Life" may indeed be the best thing to teach in other countries where the risk of building collapse, even in moderate earthquakes, is great.

Sincerely,

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