

## Response to the “Triangle of Life”

The following information has been compiled to help address the e-mail that has been circulating around for several years called the “Triangle of Life”. **This includes official responses from local, state and federal agencies outlining why we will be staying with the duck and cover procedure to follow during earthquakes.**

This document includes the following components:

- Excerpts Triangle of Life e-mail
- Response from the State of California Governor’s Office of Emergency Services
- Response from the American Red Cross
- Draft memo that you can adapt and send to internal staff
- Website links including one to the Albuquerque Journal with articles about Doug Copp

### Excerpts from the e-mail

**Subject:** Triangle of life

POINTS FROM DOUG COPP’S ARTICLE ON THE "TRIANGLE OF LIFE",

My name is Doug Copp. I am the Rescue Chief and Disaster Manager of the American Rescue Team International (ARTI), the world's most experienced rescue team. The information in this article will save lives in an earthquake.

In 1996 we made a film which proved my survival methodology to be correct. The Turkish Federal Government, City of Istanbul, University of Istanbul, Case Productions and ARTI cooperated to film this practical, scientific test. We collapsed a school and a home with 20 mannequins inside. Ten mannequins did "duck and cover," and ten mannequins I used in my "triangle of life" survival method. After the simulated earthquake collapse we crawled through the rubble and entered the building to film and document the results.

The film showed there would have been zero percent survival for those doing duck and cover. There would likely have been 100 percent survivability for people using my method of the "triangle of life."

The first building I ever crawled inside of was a school in Mexico City during the 1985 earthquake. Every child was under their desk. Every child was crushed to the thickness of their bones. They could have survived by lying down next to their desks in the aisles. It was obscene, unnecessary and I wondered why the children were not in the aisles. I didn't at the time know that the children were told to hide under something.

Simply stated, when buildings collapse, the weight of the ceilings falling upon the objects or furniture inside crushes these objects, leaving a space or void next to them. This space is what I call the "triangle of life".

...My entrapment occurred during the earthquake of 1972 that killed 70,000 people. I survived in the "triangle of life" that existed next to my brother's motorcycle. My friends who got under the bed and under desks were crushed to death. I am the living example of the "triangle of life". My dead friends are the example of "duck and cover"....

## Response from the State

State of California  
MEMORANDUM

Governor's Office of Emergency Services

TO: OPERATIONAL AREA COORDINATORS

FROM: Richard Eisner, Coastal Regional Administrator  
Stephen Sellers, Southern Regional Administrator  
Charles Wynne, Inland Regional Administrator

DATE: September 7, 2004

SUBJECT: DUCK, COVER AND HOLD PROCEDURE

Recently, you may have received information via email and other sources promoting a protective measure called the "triangle of life" and questioning the "duck, cover and hold" procedure recommended for use during earthquakes here in California and in other areas of the United States.

Because buildings constructed in California are built to much stricter codes and standards than those in the rest of the United States and those in other countries, including Mexico, Iran and Turkey, collapses here are very rare.

Extensive research into the causes of earthquake injuries and deaths supports the use of the Duck Cover and Hold procedure recommended by OES, the California Seismic Safety Commission, the American Red Cross and the Federal Emergency Management Agency.

Most injuries in California earthquakes occur when building occupants attempt to exit buildings or move to a different location in the building. In the recent San Simeon earthquake, two people were crushed by falling debris when they exited the building. Studies of the 1979 El Centro, 1987 Whittier, 1989 Loma Prieta and 1994 Northridge earthquakes confirm this pattern of injuries, and that use of the Duck Cover and Hold procedure reduces the likelihood of serious injury from a collapsed building and falling objects.

After each disaster, OES attempts to learn from behavioral research and other studies, and apply lessons learned into safety action recommendations.

There is, of course, no guarantee that people will not be injured in an earthquake. Earthquakes can shake buildings violently and cause extensive damage. The key to injury prevention is making sure buildings are safe, contents are secured, and occupants are trained to duck cover and hold.

Please share this information with jurisdictions and special districts within your operational area. Feel free to contact one of us if you have any questions or need additional information.

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,

Rocky Lopes, PhD  
Manager, Community Disaster Education  
Preparedness Department  
American Red Cross National Headquarters  
202-303-8805

## Draft Memo for Internal Use

### **MEMORANDUM**

From:  
To:  
Date:

#### Why we will continue to practice “Duck, Cover and Hold”

Every month, at every school in the \_\_\_\_\_ Unified School District, students and staff practice the “Duck, Cover and Hold” drill. They, and their teachers, practice getting under desks and chairs to protect themselves during an earthquake. This drill is an essential element of the district’s and each individual school’s Safe School Plan. To see why we do it, one only needs to look at our most recent earthquake history.

After both the 1994 Northridge Earthquake and the 1987 Whittier Narrows Earthquake, the local emergency rooms were filled with people who had been injured during the quake. These people had been hurt by things in their immediate environment that had broken or become air-born. Emergency response personnel saw people cut by broken glass, hit by falling objects and hurt by the simple, normal objects that surround us all.

\_\_\_\_\_ USD personnel work every day to make sure \_\_\_\_\_ USD classrooms are as safe as possible. The District has attached school furniture to the walls so that students would not be injured in an earthquake. Despite our best efforts, we have glass windows and other objects that could possibly hurt students if they break or go flying.

Students and staff practice the “Duck, Cover and Hold” drill to protect themselves from being injured by objects in their classroom. Our first responsibility is to prevent or to reduce the number of injured students at any event.

Schools in California are built to a higher construction standard; it is mandated by the Field Act, passed as a response to the 1933 Long Beach Earthquake. During the Northridge quake we did not see school buildings suffer from total structural failure (collapse). School buildings are designed to stay up so that people will be able to escape. At some schools we did see buildings flex, crack, shift and become unusable, but we did not see total building failure because that is the way they are designed.

Remember, the “Duck, Cover and Hold” drill is only one part of an earthquake survival program. Parents, students and staff also need to have an emergency kit in their home, car and desk. (For assistance see the Red Cross Web Site <http://www.redcross.org/>) We also need to have a plan that helps us stay calm and gives us assurance that we will be reunited with our loved ones. Schools have plans, individuals and families need them as well. Time and again it has been shown that the people who do the best during

any emergency are the ones who are prepared. Let's all work to become prepared to help us respond to and recover from disasters. Feel free to contact me if you have any questions or concerns.

### Website Links

Link to a series of articles that appeared in the Albuquerque Journal on Doug Copp, promoter of the Triangle of Life procedure.

<http://www.abqjournal.com/terror/>

The Federal Emergency Management Agency (FEMA) has posted information on its Web site that affirms the earthquake safety advice "Drop, Cover, and Hold On" and provides accurate illustrations showing the proper procedure.

<http://www.fema.gov/hazards/earthquakes/nehrrp/hold.shtm>.

The National Disaster Education Coalition also has a statement about this issue, titled "Triangle of Life," on its Web site at:

[http://www.disastereducation.org/guide\\_tech\\_issues.html](http://www.disastereducation.org/guide_tech_issues.html).