WHY RESCUERS AND EXPERTS RECOMMEND *DROP, COVER, AND HOLD ON*

Trying to moving during shaking puts you at risk: Earthquakes occur without any warning and may be so violent that you cannot run or crawl; you therefore will most likely be knocked to the ground where you happen to be. So it is best to drop before the earthquake drops you, and find nearby shelter or use your arms and hands to protect your head and neck. "Drop, Cover, and Hold On" gives you the best overall chance of quickly protecting yourself during an earthquake... even during quakes that cause furniture to move about rooms, and even in buildings that might ultimately collapse.

The greatest danger is from falling and flying objects: Studies of injuries and deaths caused by earthquakes over the last several decades show that you are much more likely to be injured by falling or flying objects (TVs, lamps, glass, bookcases, etc.) than to die in a collapsed building. "Drop, Cover, and Hold On"will protect you from most of these injuries.

If there is no furniture nearby, you can still reduce the chance of injury from falling objects by getting down next to an interior wall and covering your head and neck with your arms (exterior walls are more likely to collapse and have windows that may break). If you are in bed, the best thing to do is to stay there and cover your head with a pillow. Studies of injuries in earthquakes show that people who moved from their beds would not have been injured if they had remained in bed.

You can also reduce your change of injury or damage to your belongings by securing them in the first place. Secure top heavy furniture to walls with flexible straps. Use earthquake putty or velcro fasteners for objects on tables, shelves, or other furniture. Install safety latches on cabinets to keep them closed.

Building collapse is less of a danger: While images of collapsed structures in earthquakes around the world are frightening and get the most attention from the media, most buildings do not collapse at all, and few completely collapse. In earthquake prone areas of the U.S. and in many other countries, strict building codes have worked to greatly reduce the potential of structure collapse. However, there is the possibility of structural failure in certain building types, especially unreinforced masonry (brick buildings), and in certain structures constructed before the latest building codes. Rescue professionals are trained to understand how these structures collapse in order to identify potential locations of survivors within "survivable void spaces."

The main goal of "Drop, Cover, and Hold On" is to protect you from falling and flying debris and other nonstructural hazards, and to increase the chance of your ending up in a Survivable Void Space if the building actually collapses. The space under a sturdy table or desk is likely to remain even if the building collapses-pictures from around the world show tables and desks standing with rubble all around them, and even holding up floors that have collapsed. Experienced rescuers agree that successfully predicting other safe locations in advance is nearly impossible, as where these voids will be depends on the direction of the shaking and many other factors.

The ONLY exception to the "Drop, Cover and Hold On" rule is if you are in a country with unengineered construction, and if you are on the ground floor of an unreinforced mud-brick (adobe) building, with a heavy ceiling. In that case, you should try to move quickly outside to an open space. This cannot be recommended as a substitute for building earthquake-resistant structures in the first place!

WHAT RESCUERS AND EXPERTS *DO NOT* RECOMMEND YOU DO DURING AN EARTHQUAKE

Based on years of research about how people are injured or killed during earthquakes, and the experiences of U.S. and international search and rescue teams, these three actions are not recommended to protect yourself during earthquakes:

DO NOT run outside or to other rooms during shaking: The area near the exterior walls of a building is the most dangerous place to be. Windows, facades and architectural details are often the first parts of the building to collapse. To stay away from this danger zone, stay inside if you are inside and outside if you are outside. Also, shaking can be so strong that you will not be able to move far without falling down, and objects may fall or be thrown at you that you do not expect. Injuries can be avoided if you drop to the ground before the earthquake drops you.

DO NOT stand in a doorway: An enduring earthquake image of California is a collapsed adobe home with the door frame as the only standing part. From this came our belief that a doorway is the safest place to be during an earthquake. True- if you live in an old, unreinforced adobe house or some older woodframe houses. In modern houses, doorways are no stronger than any other part of the house, and the doorway does not protect you from the most likely source of injury- falling or flying objects. You also may not be able to brace yourself in the door during strong shaking. You are safer under a table.

DO NOT get in the "triangle of life": In recent years, an e-mail has been circulating which describes an alternative to the long-established "Drop, Cover, and Hold On" advice. The so-called "triangle of life" and some of the other actions recommended in the e-mail are potentially life threatening, and the credibility of the source of these recommendations has been broadly questioned (see links at left).

The "triangle of life" advice (always get next to a table rather than underneath it) is based on several wrong assumptions:

- buildings always collapse in earthquakes *(wrong- especially in developed nations, and flat "pancake" collapse is rare anywhere)*;
- when buildings collapse they always crush all furniture inside *(wrong- people DO survive under furniture or other shelters)*;
- people can always anticipate how their building might collapse and anticipate the location of survivable void spaces *(wrong- the direction of shaking and unique structural aspects of the building make this nearly impossible)* ; and
- during strong shaking people can move to a desired location *(wrong- strong shaking can make moving very difficult and dangerous).*

Some other recommendations in the "triangle of life" e-mail are also based on wrong assumptions and very hazardous. For example, the recommendation to get out of your car during an earthquake and lie down next to it assumes that there is always an elevated freeway above you that will fall and crush your car. Of course there are very few elevated freeways, and lying next to your car is very dangerous because the car can move and crush you, and other drivers may not see you on the ground!