

**ESP**

**FOCUS**

## Landslides and Mudslides



### The ground can move without a quake!

When most people think about ground movement, they probably envision images of the ground below them moving from side to side, or up and down, during an earthquake.

It is important that residents who live on steep hillsides and in canyons be prepared for landslides. Areas that don't have grass, trees, shrubs and plants, such as after a fire, are more likely to have landslides. This includes sliding, falling and flowing soil, rock, mud, brush and trees, especially during or after heavy rains.

Slow-moving landslides can cause significant property damage, but they usually don't cause injury or death. Mudslides, however, are much more dangerous. According to the California Geological Survey, mudslides can easily exceed speeds of 10 miles per hour and often flow at rates of more than 20 mph. Because mudslides travel much faster than landslides, they can cause deaths, injuries and significant property damage.

Wherever you live, work, or play, take the actions on the reverse side of this Focus Sheet to help reduce your risk of death, injury and property losses from landslides, mudslides and other types of ground failure.



**DECEMBER**

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## Before the Landslide/Mudslide

You can reduce the potential impacts of land movement by doing the following:

- Assume that burn areas and canyon, hillside, mountain and other steep areas are more likely to have landslides and mudslides.
- Limit the height of plants near buildings to 18 inches.
- Use plants and bushes that are less likely to burn and keep them watered. This not only helps with landslides/mudslides but is also helpful for fire safety
- Water landscape to promote early growth.
- Eliminate litter and dead and dry vegetation.
- Inspect slopes for increases in cracks, holes and other changes.
- Build away from steep slopes.
- Build away from the bottoms or mouths of steep ravines and drainage facilities.
- Consult with a soil engineer or an engineering geologist to minimize the potential impacts of landslides.
- Develop a family plan that includes:
  - Out-of-state contact
  - Place to reunite if family members are separated
  - Routes to evacuate
  - Locations of utility shut-offs
- Store the following emergency supplies:
  - Food
  - Water
  - First aid kit
  - Flashlights and batteries
  - Battery-operated radios
  - Special medications/eye care products
- Store an evacuation kit that includes:
  - Cash (small bills and change)
  - Important documents
    - Birth certificates
    - Insurance policies
    - Marriage certificates
    - Mortgage documents
    - Irreplaceable objects
    - Games, toys for children
- Purchase supplies to protect your home:
  - Hammer
  - Nails
  - Plywood
  - Rain gauge
  - Sand
  - Sandbags
  - Shovel
- Contact your local public works department for information on protection measures.

## When it Rains

- Monitor the amount of rain during intense storms. More than three to four inches of rain per day, or 1/2-inch per hour, have been known to trigger mudslides.
- Look for geological changes near your home:
  - New springs
  - Cracked snow, ice, soil or rocks
  - Bulging slopes
    - New holes or bare spots on hillsides
    - Tilted trees
    - Muddy waters
- Listen to the radio or watch television for information and instructions from local officials.
- Implement protection measures when necessary:
  - Anticipate runoff and place sandbags in areas as needed
  - Board up windows and doors
- Prepare to evacuate if requested to do so.
- Respect the power of the potential mudslide. Remember, mudslides move quickly and can cause damage and kill.
- Prioritize protection measures:
- Make your health and safety and that of family members the number one priority.
  - Make your home the number two priority.

## Key Considerations

- Use permanent measures, rather than sandbags, if possible.
- Deflect, rather than stop or dam, debris.
- Use solutions that do not create problems for your neighbors.

*Extracted and adapted from the Los Angeles County Department of Public Works publication "Homeowners Guide for Flood, Debris and Erosion Control" and the California Department of Conservation publications "Hazards from Mudslides—Debris Avalanches and Debris Flows in Hillside and Wildfire Areas" and "Landslide Facts."*

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## Emergency Survival Program (ESP)

# YOU CAN'T PREDICT. YOU CAN PREPARE!

Use the Emergency Survival Program's new list of actions as your guide for personal and community emergency preparedness.

### January

#### *Then and Now*

In large regional earthquakes, such as the 1906 San Francisco earthquake, or the terrorism acts of September 11, 2001, emergency response agencies might be overwhelmed. You, your neighbors, co-workers and classmates may be forced to take actions on your own. Take time now to learn about what happened then and how it can prepare you for the safety actions to take now.

### February

#### *Make a Plan*

Planning for an earthquake, terrorist attack, or other emergency is easier than you think. Make sure that your emergency plan includes evacuation and reunion plans; your out-of-state contact person's name and number; the location of your emergency supplies and other pertinent information. By planning now, you will be ready for the next emergency.

### March

#### *Make Disaster Kits*

Everyone should have disaster supplies kits stored in accessible locations at home, at work and in your vehicle. Having emergency supplies readily available can reduce the impact of an earthquake, a terrorist incident or other emergency on you and your family. Your disaster supplies kits should include food, water, flashlights, portable radios, batteries, a first aid kit, cash, extra medications, a whistle, fire extinguisher, etc.

### April

#### *Floods*

Storms can cause flash floods, create power outages and damage homes. Assemble emergency supplies to include sand bags; identify safe routes; and teach children to avoid areas of potential flooding. When flooding occurs, listen to the radio or watch television for information and instructions.

### May

#### *Terrorism*

Fear is a major tactic used by terrorists to achieve political and social objectives. But the terrorists are not in charge. You can fight back by taking many of the same actions you would to prepare for earthquakes, fires, and other emergencies. Start by having a family emergency plan. Also assemble emergency supply kits at home, at work, and in your car.

### June

#### *Public Health Emergencies*

Public Health Emergencies may be related to outbreaks of infectious diseases, food and waterborne illnesses, and other threats to the public's health and safety. Pandemic flu is of concern and health experts recommend the following to prevent the spread of flu: wash your hands with soap and water frequently; cover your cough and sneeze; stay home if you are sick. Stay away from others so they will not become sick. In autumn, get the flu shot!

### July

#### *Heat Wave*

Although sun is necessary, exposure to ultraviolet radiation is potentially dangerous and can damage skin. Heat injuries that can occur include sunburn, heat cramps, heat exhaustion and heatstroke. If your home is not air-conditioned, spend time in public facilities like public libraries, malls, and community centers that are air-conditioned. Never leave children or pets unattended in hot vehicles.

### August

#### *Drop, Cover, and Hold On!*

Learn what to do during an earthquake, whether you're at home, at work, at school or just out and about. Taking the proper actions, such as "Drop, Cover, and Hold On", can save lives and reduce your risk of death or injury. During earthquakes, drop to the floor, take cover under a sturdy desk or table, and hold on to it firmly. Be prepared to move with it until the shaking stops. If you are at the beach, move to higher ground.

### September

#### *Back to School*

Schools should have emergency plans to meet the threat of terrorism, earthquakes and other emergencies. They should be updated and exercised regularly. Emergency supplies, such as water, food and other basic items, are also an important part of school preparedness. If you are a parent or guardian, know your child's school emergency plan and make sure they have your updated emergency contact information.

### October

#### *Earthquakes*

No one knows when the next earthquake will happen, but we can reduce its impact by being prepared. Identify hazards and remove or reduce them. Store emergency supplies and replenish them annually. Educate your family where to drop, cover, and hold on and take a first aid course. Conduct practice drills on a regular basis.

### November

#### *Fire and Ice*

Preparedness is the key to surviving wildland fires and lethal winter storms. Timely preparation, including structural and non-structural measures to avoid the impacts of wildland fires and severe winter weather, can help reduce heavy repair expenditures following an event. Also remember to keep your car and other vehicles fueled and in good repair in case you are asked to evacuate. Have your emergency survival kit ready to go with you, just in case.

### December

#### *Landslides and Mudslides*

Significant property damage can be caused by landslides and mudslides. Prepare an evacuation kit to include important documents and irreplaceable items such as photographs. When it rains, monitor the amount of rainfall and look for warning signs of landslides and mudslides such as new springs, tilted trees or new holes in hillsides.

Additional campaign materials are available through your local County Office of Emergency Management.

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