

SECOND INTERNATIONAL EARTHQUAKE CONFERENCE APRIL 6-10 1987, LOS ANGELES, CALIFORNIA, U.S.A.

P.D. Leslie*

EDITORS' NOTE: This article is based on a report that was made by Mr Leslie to the Management Committee. A selection of a few pages from some of the earthquake preparedness information collected by Mr Leslie (and referred to in section 11) is also included to give some idea of the range of material used in California.

1. The timing of the Second International Earthquake Conference in Los Angeles coincided with the study tour I was undertaking as part of the 1986 BRANZ award. This was to study overseas building control systems to assess their relevance for the revision of New Zealand's system of building controls. The conference was also timely as it was just one month after the New Zealand Edgumbe Earthquake. I had been a member of the Earthquake Society's reconnaissance team to Edgumbe and was therefore well placed to give a talk on the Edgumbe earthquake.

2. The main objective of the conference was "to design a conference for the overall spectrum involved in earthquake research, mitigation, response, disaster preparedness and public education. The conference provided a forum for policy makers and administrators, educators, scientists, engineers, community activists and members of the business and industry to interface with each other and to discuss present and future needs. A further objective was that the conference should be useful in giving a practical perspective on the complex social, technical, administrative, political and economic challenges of forecasts preparation, response and recovery associated with earthquakes."

3. The conference was truly international with some 400 delegates from 30 countries. The countries included Indonesia, Canada, Chile, Columbia, Costa Rica, Cuba, Denmark, Dominican Republic, Ecuador, Egypt, El Salvador, Guatemala, Guinea (Africa), Haiti, Iceland, Jamaica, Jordan, Mexico, New Zealand, People's Republic of China, Peru, Puerto Rico, Saudi Arabia, Switzerland, U.S.A., and Venezuela.

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4. The conference programme was divided into a number of themes each represented by separate sessions as follows:

- Assessment of seismic risk
- National earthquake programmes
- 8 concurrent "Break Out" sessions - Earthquake hazard analysis and mitigation - Response to earthquake prediction - Urban search and rescue - Life lines/mitigation and recovery - Hazardous buildings: identification and retrofit - Emergency medical services - School preparedness and education - Fire and hazardous materials
- Mexico City Earthquake of September 19 1985
- Media and Public Education
- Private Sector/Funding Educational Programmes
- Business and Industry Preparedness
- 7 concurrent "Break Out" sessions - Private sector funding - Protection of national treasures - Employee Education - At work/At home - Earthquake preparedness in high rise buildings - Company hazard reduction/Computer systems protection - Mass care and shelter - California seismic safety commission meeting
- Government response

5. At the beginning of the conference the Conference Chairman, Councilman Hal Bernson stated that it was not proposed to have a written record of the conference. However, audio tapes of the various sessions would be available at a total cost of US\$185. Unfortunately, these are of rather limited value because there are no diagrams or pictures to assist the explanation. It was further explained that in order to foster interdisciplinary communication that technical papers would not be published even if they had been prepared. Hal Bernson explained the conference committee's opinion that the requirement for the preparation of technical papers tended to dissuade some people from contributing. This was particularly so for people who may have only modest writing skills, yet have a valuable contribution to make concerning their experiences in an earthquake situation. Although there is some merit to

this view, on balance I did not think it was a good idea not to allow those people such as myself who had prepared papers to make them available. This case for written papers is particularly strong in the situation with "Break Out" sessions where there were eight concurrent sessions each with four or five speakers. It is obviously impossible to attend all presentations in

6. Although a relatively late entry, my presentation on "The Edgecumbe (New Zealand) Earthquake 1987" was included in the official conference programme. This paper was co-authored by John Hunt of Wellington City Council and John Morrison of Wellington Regional Council. There seemed to be considerable interest in the Edgecumbe Earthquake. In California there is a level of awareness and preparedness of earthquakes that is considerably higher than in New Zealand. Also news reports at the time of the Edgecumbe Earthquake were grossly exaggerated which appeared to heighten the interest in my presentation.

7. My presentation on April 6 was set down under the Session titled Hazardous buildings: Identification and retrofit. There were five speakers in this session. They included Earl Schwartz, Chief of the Resource Management Bureau, Department of Building and Safety, Los Angeles City, Dr Gary Hart, Professor of Civil Engineering, at the University of California, Los Angeles, Arq. Alberto Duque from the Department of the Federal District, Mexico, Michio Noma Director of the Association for Building Hazard Prevention in Japan and myself.

The papers were all interesting but unfortunately the chairmanship was substandard. Also all but one of the presenters had slides as part of their presentation, but the room could not be made sufficiently dark to do justice to the slides. My presentation was last and because of chairmanship problems somewhat restricted in time. However one advantage of being last was that by the end of the session efforts had been made to darken the room which made my slides somewhat clearer. It seems a poor show to me that at an international conference with speakers from three countries in my session alone that satisfactory facilities could not be provided for showing slides.

There was considerable interest in my presentation which was enhanced by the many excellent slides provided by BRANZ. At question time, because of time constraints I had time to answer only a small number of the questions.

8. As a result of this considerable interest in earthquakes in California and the Edgecumbe Earthquake, I was invited to appear on the CBS News programme. I appeared live for three minutes on the 6 o'clock news programme.

The interviewer was keen to learn the extent of damage caused by the recent New Zealand earthquake, the experience gained

and what lessons could be transferred to the California situation. Further, I was asked to comment on the measures being taken in California as compared with New Zealand in mitigating the risk from earthquakes.

Although I did not see it personally, apparently parts of the interview were repeated later in the evening. As a result New Zealand Earthquake Engineers were given a relatively high profile in this earthquake prone city. In several later Californian meetings related to my investigations on building controls, the people had knowledge of these television appearances.

9. Associated with the conference were a number of displays, of which I attended several.

One was a Yogi Bears Quakey Shakey van. This was a medium sized van which simulates earthquake motions by vibrating wildly when parked. It travels around the Californian state to various places, such as schools, factories, offices etc so that people who have not experienced earthquakes can gain first hand experience. It is a interesting educational facility and was also much fun for the conference delegates.

I also attended a disaster preparedness and response exercise. This was set up on a lot at Universal Studios and gave the conference delegates the opportunity to view a disaster exercise.

10. I was somewhat disappointed in the engineering seismic design and experiences content of the conference. However from a perusal of the conference themes detailed in section 4 of this report, it is clear the conference aim was to cover considerably more than just technical engineering aspects of earthquakes. The conference was very useful from the point of view of making contacts.

These contacts were most helpful for my studies of overseas building control systems. Also since my return to New Zealand these contacts have been most useful for other New Zealand engineers going to California to study earthquake engineering and related matters.

11. I mentioned earlier in this report the high degree of preparedness for earthquakes of this part of the U.S.A.

I have a number of publications which show the broad spectrum of available earthquake preparedness information.

The information is impressive being targeted at the different language groups. It is also aimed at all age groups. For children, comics have been written using "Yogi the Be-Prepared Bear" by Hanna Babara on such topics as "Earthquake Preparedness for the Family", "Preparedness for Children" and "Creative First Aid, Yogi Bear Facts". At the other end of the scale the quarterly publication prepared by the

Bay Area Regional Earthquake Preparedness Project is very informative.

Another example of material produced is the publication by The Federal Emergency Management Agency (FEMA) 46/October 1985 "Earthquake Safety Checklist". This appears to me to be a very useful publication which with minor adaptation to New Zealand conditions could be publicised throughout New Zealand by such agencies as Civil Defence Organisation or the Earthquake and War Damage Commission.

FEMA Publication No. 48 July 1986 - "Coping With Children's Reactions to Earthquakes and Other Disasters" is also a very worthwhile publication which helps to prepare people for these major upheavals.

The American Red Cross also produces a number of publications including "Safety and Survival in an Earthquake".

12. Although the incidence of earthquakes in New Zealand is not nearly as great as California I consider there is a need for greater preparedness. Disaster preparedness goes further than earthquakes and as the recent Gisborne/East Cape flooding experience shows, it is most necessary in a disaster situation to have

supply of food and water. As you can see the California produced information covers these aspects. Feedback on possible dissemination of this information would be appreciated.

CONCLUSIONS

The benefits gained from my attendance at the Second International Earthquake Engineering Conference sponsored by the City of Los Angeles are as follows:-

1. The contacts made at this conference have already been invaluable for the development of earthquake engineering and related matters by New Zealanders.
2. My presentation on the Edgumbe Earthquake was well attended and I am advised well received. This was no doubt assisted by the relatively high level of interest in earthquakes in California and by previous news reports of the Edgumbe Earthquake.
3. The New Zealand engineering profession's expertise on earthquake engineering was given a high profile by my three minute live interview on CBS News.

27 things to help you survive an earthquake

Californians are constantly aware of the potential of an earthquake creating damage and creating dangerous conditions. So if we don't properly prepare, the next quake may cause greater personal damage than necessary. Each item listed below won't stop the next earthquake but it may help you survive in a better way.

4 basics to do during an earthquake

1. STAY CALM
2. Inside: Stand in a doorway, or crouch under a desk or table, away from windows or glass dividers.
3. Outside: Stand away from buildings, trees, telephone and electric lines.
4. On the road: Drive away from underpasses/overpasses; stop in safe area; stay in vehicle.

6 basics to do after an earthquake

1. Check for injuries—provide first aid.
2. Check for safety—check for gas, water, sewage breaks; check for downed electric lines and shorts; turn off appropriate utilities; check for building damage and potential safety problems during after shocks such as cracks around chimney and foundation.
3. Clean up dangerous spills.
4. Wear shoes.
5. Turn on radio and listen for instructions from public safety agencies.
6. Don't use the telephone except for emergency use.

14 survival items to keep on hand

1. Portable radio with extra batteries

2. Flashlight with extra batteries
3. First Aid Kit—including specific medicines needed for members of your household.
4. First Aid book
5. Fire extinguisher
6. Adjustable wrench for turning off gas and water
7. Smoke detector properly installed
8. Portable fire escape ladder for homes/apartments with multiple floors.
9. Bottled water—sufficient for the number of members in your household
10. Canned and dried foods sufficient for a week for each member of your household. Note: Both water and food should be rotated into normal meals of household so as to keep freshness. Canned goods have a normal shelf-life of one year for maximum freshness.
11. Non-electric can opener
12. Portable stove such as butane or charcoal. Note: Use of such stoves should not take place until it is determined that there is no gas leak in the area. Charcoal should be burned only out of doors. Use of charcoal indoors will lead to carbon monoxide poisoning.
13. Matches
14. Telephone numbers of police, fire, and doctor

3 things you need to know

1. How to turn off gas, water and electricity
2. First Aid
3. Plan for reuniting your family

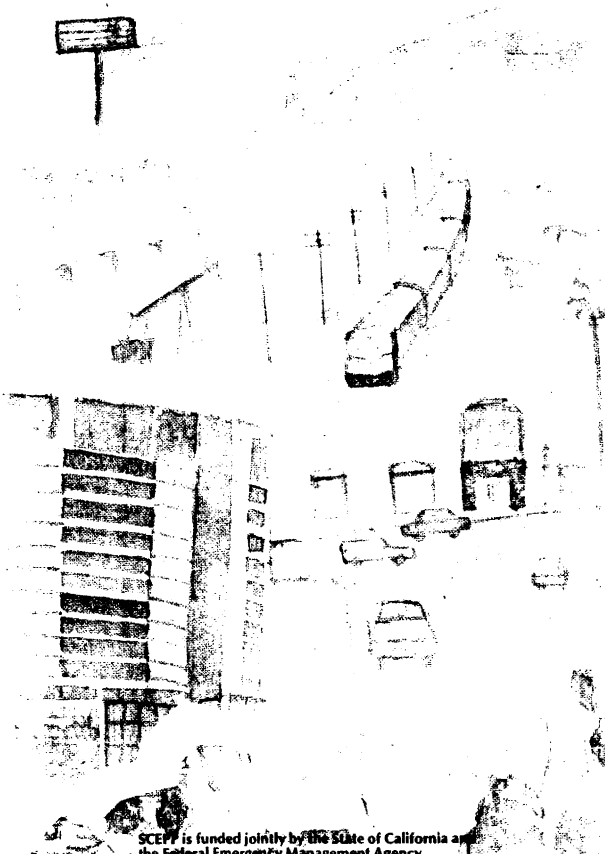
The best survival is a prepared survival

 **American Red Cross**

Los Angeles Chapter, 2700 Wilshire Blvd.,
Los Angeles, California 90057, (213) 739-5200

Form No. 915 (4-80)

THE SOUTHERN CALIFORNIA EARTHQUAKE PREPAREDNESS PROJECT



SCEPP is funded jointly by the State of California and the Federal Emergency Management Agency.

The Southern California Earthquake Preparedness Project (SCEPP) is a project of the Governor's Office of Emergency Services.

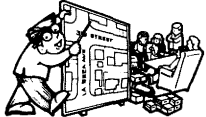


Initiating an Earthquake Preparedness Program in Your Community

The entire month of April is dedicated to Earthquake Preparedness. Don't Wait! Get ready for the quake! Now is the time to begin planning activities.

Each sector of the community can participate in an activity during Earthquake Preparedness Month by contributing unique talents and resources. By mobilizing the entire community to address the earthquake threat, resource shortfalls and duplication of effort can be avoided. Here are some community activities to consider:

Establish a Planning Committee
This committee is responsible for planning and coordinating the program. Before organizing the committee, think about who residents look to for direction? Who are the leaders within the community? What kinds of skills and representation is needed on the committee?



During Earthquake Preparedness Month...
 ■ Conduct a meeting which will bring together key members of the community and solicit their support and participation.

What Is Your Community Risk?

Survey the immediate community to obtain information on the types of potential problems the community may face in the event of a major earthquake. How earthquake safe are local buildings? Does your community have an older commercial district? Are there any hazardous materials facilities or chemical plants located within the community? Are there dams or reservoirs located near highly populated areas or near potential evacuation sites?

During Earthquake Preparedness Month...

- Review planning scenarios and maps that identify potential damage to your community.
- Conduct a survey of the special needs of community members, including local businesses, schools and residents.
- Conduct a survey of businesses whose activities may pose a potential hazard to the community and also,
- Identify those areas which may be at higher risk.

What Are Your Community Resources?

Community resources may include volunteers, money, equipment, materials and individuals with special skills and expertise. What is the status of earthquake preparedness planning within your community? Are there local businesses which supply hardware tools, emergency equipment, medical supplies, food, fuel and water? Which local schools within the community may serve as emergency shelters? Are there neighborhood residents trained in first aid, damage assessment or fire suppression?

During Earthquake Preparedness Month...

- Conduct a skills and resources survey.
- Conduct training in special areas of emergency preparedness and response.
- Encourage local businesses and chambers of commerce to display and promote goods and services which pertain to preparedness.
- Conduct a community forum to raise awareness.
- Conduct fundraisers to help purchase emergency equipment and supplies.
- Organize workshops and seminars on specific areas of preparedness and response.
- Encourage local media to print stories about earthquakes and preparedness.

Each sector of the community also offers unique opportunities for earthquake safety and preparedness. These sectors need to be self-sufficient. For example:



Neighborhood residents can help promote preparedness by dedicating Neighborhood Watch or homeowner meetings to discussions of earthquake safety. Neighborhood residents can...

- Develop a family plan and discuss it with neighbors.
- Conduct a hazard hunt of the home.
- Strap down water heaters.
- Put together an emergency kit.



Schools can participate by disseminating information throughout the community through students, PTA meetings, service clubs or by offering meeting space. Schools can...

- Conduct drop, cover and hold drills as well as drills to test school emergency plans.
- Conduct a hazard hunt in classrooms and office buildings.
- Remove and secure fixtures which may pose a hazard.
- Hold faculty meetings to discuss emergency policies and procedures.
- Send home information to parents and guardians regarding school policies.



Local Businesses can participate by offering goods and services that may be useful during an emergency, display terms in storefronts, and advertise in local newspapers. Businesses can...

- Discuss emergency procedures with employees.
- Secure heavy office furniture and equipment.
- Display emergency goods and information in storefront windows, lunch rooms, meeting areas etc.
- Give out discount coupons for emergency supplies and equipment.
- Put together an emergency kit for the office.

Los Angeles County to Adopt Five-Year Earthquake Preparedness Plan

Los Angeles County is currently developing a plan that will result in greater earthquake preparedness over the next five years. County officials are formulating the plan, which will be reviewed by Department Directors at a two-day workshop March 18th & 19th, and then submitted to the Board of Supervisors as part of the County's activity during Earthquake Preparedness Month in April. SCEPP is providing assistance to the County in the development of this plan.

In developing the plan, SCEPP staff are working with the County's Office of Disaster Services and Disaster Services Steering Committee, composed of representatives from each of the County's major departments. Planning will be accompanied by four Subcommittees dealing with a separate aspect

of earthquake preparedness, including Emergency Preparedness and Response, Earthquake Education and Community Self-Help, Earthquake Hazard Reduction and Post-Earthquake Recovery/Reconstruction.

The five-year plan will identify key objectives under each of these four general areas, describe current County programs and the degree to which they have addressed these objectives, and critical technical or planning information that should be considered in plan development. For each identified objective, new programs and actions will be identified to improve County preparedness over the next five years.

The County currently has a program of public education in process involving visits to public schools by the Yogi

Bear Schoolhouse earthquake simulator, and is considering adoption of a hazardous buildings ordinance to reduce structural earthquake hazards. SCEPP and County staff will identify other areas that should be addressed or where further steps can be taken.

During Earthquake Preparedness Month, the plan will be completed and submitted to the Board of Supervisors for appropriate action. The result will be a significant step forward in earthquake preparedness for the County and its nearly eight million residents

Research Study Compares Community Preparedness in Japan and California

Disaster research indicates that communities which have experienced a disaster or live in an area of risk will generally have a greater awareness of the threat and take preparedness actions. Hiromi Ohashi, an architectural engineer from Hokkaido University in Japan, is involved in a two year study of earthquake awareness and preparedness in Japan and California. In both regions there is a high probability of a major damaging earthquake.

SCEPP is assisting Ohashi's research efforts in southern California and has selected four model communities to take part in a survey. The four communities in southern California are Rancho Adolfo Mobile Home Park located in the City of Camarillo, Ventura County; Yucaipa, a community located in San Bernardino County; Desert Hot Springs in the County of Riverside and Los Angeles City Councilman Hal Bernson's 12th District. All four communities

have experienced small to moderate earthquakes and are currently organizing earthquake preparedness programs. These communities are also planning various preparedness activities for Earthquake Preparedness Month.

Community preparedness organizers believe that Statewide campaigns, such as Earthquake Preparedness Month, provide community leaders with a good deal of momentum in obtaining more support and interest for their programs. The Campaign generates media attention and provides community members with the sense that they are part of an overall effort. Activities now being planned range from community awareness meetings to staging drills and exercises.

Community participation in the survey questionnaire will be one of the activities building up to the April Campaign. The survey will be conducted from January through March and will serve as a reminder for the upcoming Earthquake Preparedness Month activities. The research project intends to draw comparisons between levels of awareness and preparedness among communities and cultures which share a similar earthquake risk. The results of the survey will help information providers gain a better understanding of the current level of awareness and preparedness among neighborhoods so that more effective programs may be developed.

During this same period, SCEPP will be conducting its own survey of participants of the October 30, 1986 Earthquake Preparedness Conference for Community Self-Help. We are particularly interested in whether the conference promoted participation in Earthquake Preparedness Month 1987. In early February, a questionnaire was sent to all Conference attendees. Results are expected to provide valuable feedback on community awareness and planning efforts and give direction to SCEPP's community earthquake preparedness programs.



update

SOUTHERN CALIFORNIA EARTHQUAKE PREPAREDNESS PROJECT
A project of the Governor's Office of Emergency Services

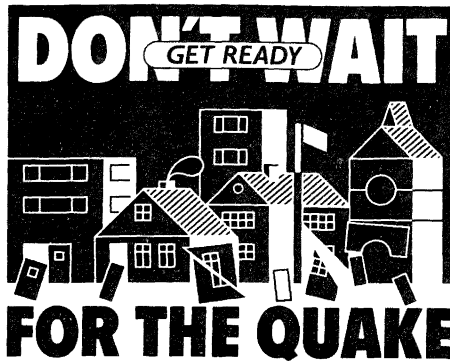
Governor George Deukmejian has proclaimed April, 1987 as California Earthquake Preparedness Month. The move to expand the campaign to a full-scale month was initiated to allow for greater participation of different groups and organizations in the campaign's activities, and to demonstrate the high priority of renewed earthquake preparedness efforts. The focus of this year's campaign is to educate the public on the importance of earthquake preparedness and to encourage individuals, communities, and organizations to initiate efforts that will ultimately prepare them for a major damaging earthquake.

In planning for this year's campaign, the Governor's Office of Emergency Services has awarded a contract to the PBN Company, a public relations and communications firm in northern California, to assist with the organization and implementation of Earthquake Preparedness Month. A major product resulting from this contract is a final workplan for the 1987 Earthquake Preparedness Month. Strategies and recommendations proposed in the workplan are partially based on information from a survey of individuals who have participated in previous earthquake preparedness campaigns.

The theme of this year's campaign, "Don't Wait...Get Ready for the Quake," accentuates the need for residents to take action to prepare their homes, businesses, schools, and other locations for a possible earthquake disaster. The July, 1986 earthquakes in Palm Springs, Oceanside, and Bishop, California reflected the increasing seismic activity in our state, and reinforces the need for on-going public awareness campaigns to promote earthquake preparedness in our communities.

This year's campaign will target eight constituencies: state and local officials; safety, health and emergency planners; school children, teachers and principals; persons with disabilities; busi-

APRIL 1987 CALIFORNIA EARTHQUAKE PREPAREDNESS MONTH



ness and industry (includes people who work in high-rise office buildings); government employees; people who work with toxic materials; and homeowners, mobile home, and apartment dwellers.

In order to help promote the campaign, OES, SCEPP and BAREPP will be distributing a program folder. The folder will include a series of eight generic fact sheets covering information on various subjects, including the earthquake threat, the importance of being earthquake prepared, information for apartment owners and high rise office managers and owners, and suggested local activities for school, business and government involvement in the Earthquake Preparedness

Month Campaign. Local participants will receive reproducible copies of the fact sheets or a limited number of printed fact sheets. OES will be distributing a poster depicting the campaign theme and logo, and a statewide list of activities that will be taking place during Earthquake Preparedness Month. This calendar will be included with all news media materials and will be sent to legislative and local government offices.

The primary strategy for outreach and dissemination of these informational packets and other earthquake preparedness materials will be conducted through the key associations and groups that represent each of the eight target groups, such as apartment and mobile home owners associations, various disaster relief organizations (such as the American Red Cross), special interest groups, state legislators, mayors and city council members, as well as many others. Through the participation and support of these groups, SCEPP, BAREPP and OES hope to reach their constituents with information about the earthquake threat and the many steps they can undertake to protect themselves and their families.

In order to provide continuity to the month's events, there will be a theme for each week of the month: Week 1: Wednesday, April 1 through Sunday, April 5 is "Statewide Earthquake Preparedness Month Kick-Off," promoting media coverage on the earthquake threat, and the history and science of predicting earthquakes. Week 2: Monday, April 6 through Sunday, April 12—"School Preparedness and International Cooperation Week." Week 3: Monday, April 13 through Sunday, April 19—"Business Preparedness Week." Week 4: Monday, April 20 through Sunday, April 26—"Home and Neighborhood Preparedness Week," which is intended for home and family earthquake preparedness for those who reside in apartments, mobile homes,

Continued on p. 7

BAY REGION EARTHQUAKE UPDATE:

Governor Signs Hazardous Building Bill

On July 2, 1986, in a precedent setting action, Governor Deukmejian signed SB 547 into law (Chapter 250). This law requires local governments to conduct inventories of all unreinforced masonry buildings in their jurisdictions. Once the inventories are complete local governments are required to develop mitigation programs for these buildings. Inventories and mitigation programs must be completed by 1990. The law authorizes local building departments to establish a schedule of fees to recover the costs of identifying potentially hazardous buildings and carrying out other requirements of the law.

The new state law defines potentially hazardous building as *any building constructed prior to the adoption of local building codes requiring earthquake resistant design of buildings and construction of unreinforced masonry wall construction*. Potentially hazardous buildings include private schools, theaters, places of public assembly, apartment buildings, hotels, motels, fire stations, police stations, and buildings housing emergency services, equipment, or supplies, such as government buildings, disaster relief centers, communications facilities, hospitals, blood banks, pharmaceutical supply warehouses, plants, and retail outlets. For the purposes of this law the definition does not include warehouses or similar structures not used for human habitation, except for warehouses or structures housing emergency services equipment or supplies, nor does it include any building having five living units or less.

Several California communities, recognizing that this is an important problem, had developed programs prior to the passage of this law. Los Angeles developed a program in 1981. Under their ordinance they identified 8000 unreinforced masonry buildings that require some type of rehabilitation or will need to be torn down. The Mexico City earthquake prompted acceleration of the program. Their ordinance is the basis of the model hazardous buildings ordinance developed by the Seismic Safety Commission. Long Beach has had an ordinance in place since 1971.

In the Bay Area, Santa Rosa has a hazardous building ordinance as do Sebastopol, Palo Alto and Morgan Hill.

San Francisco is in the process of developing a program which may also include an ordinance. Palo Alto's program has several unique features, including the fact that it does not focus exclusively on unreinforced masonry and it attempts to persuade property owners to rehabilitate buildings, rather than mandating such rehabilitation.

By September 1987 the Seismic Safety Commission, in cooperation with the League of California Cities, the County Supervisors Association, and California Building Officials will prepare an advisory report for local jurisdictions

containing criteria and procedures for conducting the inventory and developing mitigation programs.

By January 1, 1990, all information regarding potentially hazardous buildings and all hazardous building mitigation programs shall be reported to the appropriate legislative body of a city or county and filed with the Seismic Safety Commission.

Copies of this law and further information on developing such a program can be obtained by calling the BAREPP offices.

Business Survey

A recent survey indicates little attention to earthquake recovery planning among Bay Area businesses. Out of 875 questionnaires distributed, 128 businesses who had shown some past interest in earthquake preparedness responded. The following summarizes pertinent results.

Level in Company Where Overall Earthquake Planning Responsibility Lies.

Top Management	30%
Middle Management	56%
Staff	14%

Level of Response and Recovery Planning.

Response:	yes	no
Does your company have a safety committee?	63%	37%
Does your company have an earthquake/disaster response plan?	72%	28%
Do you store emergency supplies on site?	56%	44%
Has your structure been surveyed for earthquake resistance?	64%	36%
Have you surveyed the interior of your building for non-structural hazards?	61%	39%
Do you have an employee training program for earthquake preparedness?	63%	37%
Recovery:	yes	no
Have you developed any alternate site production plans in the event your building is inaccessible following an earthquake?	33%	67%
Have you established alternate delivery schedules or other arrangements with vendors or clients?	21%	79%
Have you developed a plan for informing clients, the general public and media about company operations following an earthquake?	33%	67%
Have you developed procedures to protect vital records essential to remain in business?	63%	37%

These results reflect responses from businesses who, in some way, are already cognizant of the earthquake threat and have shown past interest in developing earthquake programs in their companies.

earthquakes

safety tips for earthquakes

The earthquake potential

Earthquakes in the United States occur most frequently west of the Rocky Mountains. But there are 39 states with a cumulative population of more than 70 million which are potential targets for earthquakes.

What to expect in an earthquake

During an earthquake, the "solid" earth moves like the deck of a ship. The actual movement of the ground, however, is seldom the direct cause of death or injury. Most casualties result from falling objects and debris because the shocks can shake, damage, or demolish buildings. Earthquakes may also trigger landslides, cause fires, and generate huge ocean waves called tsunamis.

Earthquake injuries are commonly caused by:

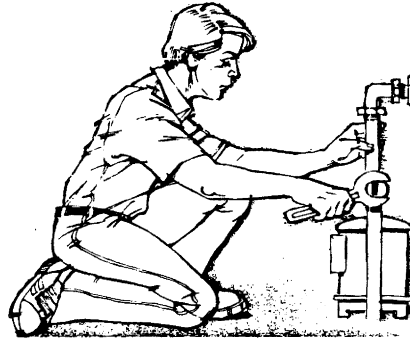
- building collapse or damage, such as toppling chimneys, falling bricks from wall facings and roof parapets, collapsing walls, falling ceiling plaster, light fixtures, and pictures.
- flying glass from broken windows. (This danger may be greater in modern, high-rise structures.)
- overturned bookcases, wall units, and other furniture.
- fires from broken chimneys, and ruptured gas and electrical lines. The danger may be aggravated by a lack of water caused by broken mains.

- fallen powerlines.
- drastic human actions resulting from fear.

Before an earthquake

Check your home for potential hazards.

- Defective electrical wiring and leaky gas or inflexible connections are very dangerous in the event of an earthquake. Bolt down water heaters and gas appliances.
- Know where and how to shut off electricity, gas, and water at main switches and valves. Check with your local utilities for instructions.



- Place large and heavy objects on lower shelves. Securely fasten shelves to walls. Brace or anchor high or top-heavy objects.
- Bottled goods, glass, china, and other breakables should be stored in low or closed cabinets.

- Overhead lighting fixtures such as chandeliers should be made fast. A little wiring or anchoring will usually take care of these risks.
 - Deep plaster cracks in ceilings and foundations should be investigated and repaired.
- Hold occasional drills so each member of your family knows what to do in an earthquake.
- Teach responsible family members how to turn off electricity, gas, and water at main switches and valves.

Have on hand:

- a flashlight and battery-powered radio in case power is cut off.
- a supply of drinking water and some nonperishable foods which can be prepared without cooking.
- a fire extinguisher and first aid kit.

During an earthquake

First and foremost, **stay calm**. Think through the consequences of any action you take.

If you are inside, stay inside; if you are outdoors, stay there. In earthquakes, most injuries occur as people are entering or leaving buildings.

If indoors, take cover under a heavy desk, table, bench, in a supported doorway, or along an inside wall. Stay away from glass. Don't use candles, matches, or other open flame either during or after the tremor because of possible gas leaks. Douse all fires.

If in a high-rise building, get under a desk or similar heavy furniture. Do not dash for exits, since stairways may be broken and jammed with people. Never use elevators since power may fail.



If outdoors, move away from buildings and utility wires. The greatest danger from falling debris is just outside doorways and close to outer walls. Once in the open, stay there until the shaking stops.

If in a moving car, stop as quickly as safety permits, but stay in the vehicle. A car may jiggle violently on its springs, but it is a good place to stay until the shaking stops. When you drive on, watch for hazards created by the earthquake, such as fallen or falling objects, downed electric wires, or broken or undermined roadways.

Hanna-Barbera's
YOGI, the BE-PREPARED BEAR

EARTHQUAKE

PREPAREDNESS
 for the **FAMILY**

YOGI BEAR FIGURES BY
 HANNA-BARBERA
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HANNA-BARBERA'S
YOGI, the BE-PREPARED BEAR

EARTHQUAKE

PREPAREDNESS
 FOR
CHILDREN

"Do you know
 about earthquakes,
 Yogi?"

"Hey, Hey, Hey!
 This is Yogi,
 smarter than the
 average bear, with
 some words to
 the wise.
 Boo Boo, Boy!"



YOGI BEAR FIGURES BY
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**"When Mother Nature starts to shake,
 BE PREPARED for safety sake!"**

Federal Emergency Management Agency

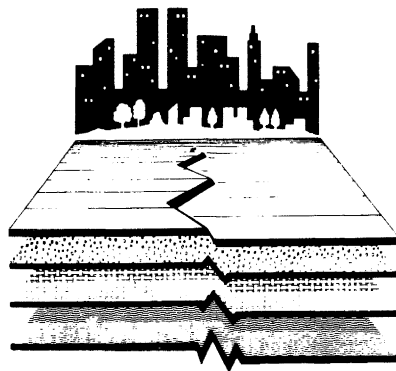
You live with the threat of earthquakes every day. Chances are that you haven't done anything to prepare for one.

That's too bad.

Because in an hour or two, you can take steps to protect your family and also limit the damage to your home and property.

Read the brochure. Take the steps.

Someday, possibly tomorrow, you'll be glad you did.



PREPAREDNESS IN APARTMENTS AND MOBILE HOMES

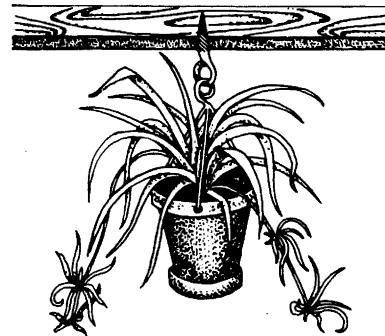
The recommendations and suggestions included in this document are intended to improve earthquake preparedness. However, they do not guarantee the safety of any individual structure or facility. Neither the United States nor the State of California assumes liability for any injury, death, or property damage which occurs in connection with an earthquake.

*Based on Material
Developed by The Southern California
Earthquake Preparedness Project*



WHAT TO DO ABOUT IT

Remove heavy objects from high shelves, or secure them. Remove any heavy object from above your bed. Objects can be secured with wire, heavy string, or Velcro fastening fabric.



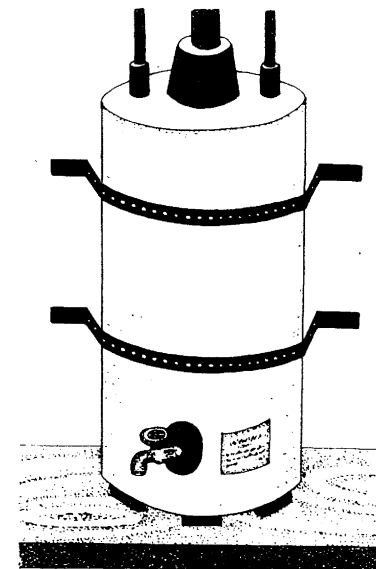
Secure hanging plants. Make sure they are screwed into wood, not just the plaster, then simply bend the hook shut with a pair of pliers, or close it by wrapping wire around. Also, consider using baskets or plastic pots instead of heavy ceramic ones.

SECURE OTHER DANGERS

Objects can be secured to the wall to keep them from falling.

Check with your manager first if you rent an apartment. Be aware of the danger and know how to avoid it.

Top-heavy furniture, appliances, pictures and mirrors can all be secured by fastening them into the wall with screws. Attractive positive-close latches, available at your hardware store, can prevent cupboard contents from falling out in an earthquake.



ABOUT WATER HEATERS...

Most mobile homes and many apartments have individual water heaters.

They should be secured to prevent them from tipping over in an earthquake and breaking natural gas lines.

Metal plumber's tape wrapped around the heater then secured into a support in the wall is an inexpensive way of doing this.

In addition to eliminating the threat of broken gas lines and fire, you will also have secured a water supply for yourself and your family (to withdraw water, you may have to open a hot water tap inside your home).

If you live in an apartment that has a central water heater, it can be secured as well, eliminating fire danger and assuring a water supply. Ask your manager about your apartment's plans.