



# TsuInfo Alert

prepared on behalf of the

**National Tsunami Hazard Mitigation Program**

by the Washington Department of Natural Resources

**Volume 1, Number 3, March, 1999**

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### *Program Overview--*

## **Current Accomplishments of The National Tsunami Hazard Mitigation Program**

by  
George Crawford

While many people in potentially at-risk coastal zones have yet to be educated about tsunamis, much work in the past two years have been done in tsunami mitigation through the National Tsunami Hazard Mitigation Program. Warning and evacuation signs have been posted up and down the coasts of Washington and Oregon. Inundation mapping of the Oregon and Washington coast is in its second phase and California and Alaska are working on theirs this year. Workshops in the local communities are being held and have received media attention (especially from newspaper and TV). Public education by local emergency managers shows that tsunami awareness has significantly increased. Coastal counties are using the Internet and all have a tsunami web site to post information regarding their counties-- those evacuation maps will be added to the Pacific and Grays Harbor County web sites this year. Many more mitigation tools are in place in the Pacific Rim States or are being worked on.

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*Editor's note:* We want the *TsuInfo Alert* to be extremely useful to the emergency management community of the Pacific States. We've heard from you, though, that it's not as useful as it should be. What can we do to improve? **Please let us know by filling out and returning the inserted questionnaire.**

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## **April is Disaster Preparedness Month!**

**Don't forget to alert the media to your hazard-awareness programs and activities.**

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**Participants in the TsuInfo program can request copies of reports listed in this issue from:**

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and  
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**WASHINGTON STATE DEPARTMENT OF  
Natural Resources**  
Jennifer M. Belcher - Commissioner of Public Lands

# New Tsunami Mitigation Materials Added to the Library, February 1999

compiled by  
Connie J. Manson

Note: **Free reprints of these materials are available.** (See page 2 for ordering information)

## Legal Aspects

Binder, Denis, 1998, The duty to disclose geologic hazards in real estate transactions: *Chapman Law Review*, v. 1, no. 1, p. 13-56.

The duty to disclose known geologic hazards in real estate transactions has changed in the past few decades from *caveat emptor* ('buyer beware') to *caveat vendor* ('seller beware'). Because natural risks-- from earthquakes, landslides, tsunamis, or other hazards-- are foreseeable, they should be disclosed. This article discusses the legal responsibilities of real estate sellers and their agents to fully disclose all material geologic hazards they know-- or reasonably should know-- to exist.

## Hazards and mitigation

Majumdar, S. K.; Forbes, G. S.; Miller, E. W.; Schmalz, R. F., editors, 1992, *Natural and technological disasters-- Causes, effects, and preventive measures*: Pennsylvania Academy of Science,

This volume includes:

Curtis, George D., *Tsunamis--Seismic sea waves*. p. 108-124.

Miller, E. Willard, 1992, *Human response to natural and technological disasters*. p. 14-24.

Matty, Jane M., 1999, *Tsunamis: Rocks and Minerals*, v. 74, no. 1, p. 10-11.

This is an excellent brief overview of tsunamis and tsunami hazards.

## Regional studies--Hawaii

Lockridge, Patricia A., 1998, Potential for landslide-generated tsunamis in Hawaii: *Science of Tsunami Hazards*, v. 16, no. 1, p. 31-38.

Walker, Daniel A., 1998, The July 1998 New Guinea tsunami carries bad news for Hawaii: *Science of Tsunami Hazards*, v. 16, no. 1, p. 55-56.

The tsunami in Papua New Guinea that killed more than 2,000 people was apparently caused by an undersea landslide. These two articles in the newest issue of *Science of Tsunami Hazards* discuss how just such a tsunami could impact Hawaii.

Raine, Laurence M., 1995, The determinants of risk perceptions of tsunamis in Oahu, Hawaii--Public health implications: University of Hawaii Doctor of Public Health thesis, 304 p.

Tsunamis are a real hazard to Hawaiian residents. On Oahu alone, approximately 60,000 people live within a tsunami inundation zone and many others work and/or travel within those danger zones. This study examined the differences socioeconomic factors (age, gender, income level, ethnicity, education, etc.) had on tsunami risk perception and preparedness. These findings can help emergency managers, both in Hawaii and other at-risk areas, understand the diversity of approaches needed to educate people about tsunami hazards.

## New Video:

National Geographic Society, 1997, *Killer wave--Power of the tsunami*: National Geographic Society, 1 video cassette, 60 min.

## Warning systems

Tatehata, Hidee, 1998, The new tsunami warning system of the Japan Meteorological Society: *Science of Tsunami Hazards*, v. 16, no. 1, p. 39-50.

This new tsunami warning system uses detailed fast numerical modeling-- first in the world.

## Canadian Tsunami and Emergency Preparedness Websites

compiled by  
Lee Walkling

*Note:* This list is by no means exhaustive. You are encouraged to submit your favorite sites for periodical updates. The first half of this list is published here, and the second half will be in the April issue.

“Canada’s Natural Hazards map”, at <http://www.cangeo.ca/Rmap.htm> includes purchasing information for the Natural Hazards map of Canada.

“Effects of the Tsunami in the Alberni Inlet caused by the 1964 Alaska Earthquake” has a good slide set showing the tsunami damage, at <http://hoshi.cic.sfu.ca/bc/tsunamis/mswait.htm>

“Emergency/Disaster Research and Information Services” has links to resource centers and commercial sites, at <http://hoshi.cic.sfu.ca/~anderson/topics/research/research.html> It also includes the *Disaster Research* electronic newsletter and on-line library services.

“Emergency Management” at <http://hoshi.cic.sfu.ca/~pep/sub02.html> gives background information on legislation, regulations, strategies, plans and guides. Links to text of rules and laws.

“Emergency Preparedness Canada” at <http://www.epc-pcc.gc.ca> has links to news release (arranged by date), the Canadian Emergency Preparedness College, and the online journal *Emergency Preparedness Digest*

“EPICC - Emergency Preparedness for Industry and Commerce Council” at <http://www.epicc.org/> EPICC was ‘Established with a mission to prepare British Columbia businesses and industries to survive and recover from all types of disasters in order to enable community-wide recovery from catastrophic disasters.’

“EPIX, the Emergency Preparedness Information Exchange” at <http://www.epix.sfu.ca> and at <http://hoshi.cic.sfu.ca/~anderson/topics/topics.html> Gives Canadian national and provincial, International, research, and Special Projects links about Emergency management and disaster topics. Link to online newsletter, *Disaster Research*.

“EPIX - Emergency Preparedness Information Exchange” has information about EPIX and its goals, and on forums, newsletters, research, legislation, situation reports. Links to emergency management networks in Australia, the U.S., and Geneva. <http://www.netaccess.on.ca/~ccep/ccep/epix.html>

## Reports about Community and Government Efforts in Tsunami Mitigation

Note: **Free reprints of these materials are available.** (See page 2 for ordering information)

American Institute of Professional Geologists, 1993, The citizens' guide to geologic hazards--A guide to understanding geologic hazards, including asbestos, radon, swelling soils, earthquakes, volcanoes, landslides, subsidence, floods, and coastal hazards: American Institute of Professional Geologists, 134 p.

An excellent overview of hazards from geologic processes (like earthquakes, tsunamis, and landslides) and geologic materials (like asbestos and radon). Clearly written, with good illustrations and current information.

Highly recommended.

Ansevin, Andrea; Good, James W., 1993, A strategy for improving coastal natural hazards management--Oregon's Policy Working Group approach. *In* Magoon, O. T.; Wilson, W. S.; Converse, Hugh; Tobin, L. T., editors, Coastal zone '93; Proceedings of the 8th symposium on Coastal and Ocean Management: American Society of Civil Engineers, v. 3, p. 2829-2841.

Oregon coastal communities are growing rapidly, just as there is increased awareness of the coastal hazards from Cascadia subduction zone earthquakes and of both distantly- and locally-generated tsunamis. This group of 20 people, from a range of public and private interests, was formed to address all the natural hazards of the Oregon coast. They examined a wide range of planning, siting, design, protection, and emergency response decisions in affected coastal areas, in order to make recommendations to state and local government.

This report describes the nature of those hazards, and the methods and accomplishments of this group. While specific to Oregon, this methodology could be applied to other areas.

Bernard, E. N., 1997, Reducing tsunami hazards along U.S. coastlines. *In* Hebenstreit, G., editor, Perspectives on tsunami hazard reduction: Kluwer Academic Publishers, p. 189-203.

A detailed discussion of the National Tsunami Hazard Mitigation Program.

Bernard, E. N., 1998, Program aims to reduce impact of tsunamis on Pacific states: *Eos* (American Geophysical Union Transactions), v. 79, no. 22, p. 258, 262-263.

A brief but thorough report on the National Tsunami Hazard Mitigation Program. Describes the offshore buoy sensors, the inundation mapping, and the public information efforts.

Highly recommended for program participants and local emergency managers.

Boyce, J. A., 1985, Tsunami hazard mitigation--The Alaskan experience since 1964: University of Washington Master of Arts thesis, 109 p.

This Masters of Geography thesis evaluates the efforts of Alaskan state and local governments to prepare coastal communities for tsunamis. It focuses on what land use management strategies are, or are not, used to mitigate tsunami damage in the larger communities most damaged by the 1964 tsunamis. Interestingly, it specifically recommends many of the same actions commonly cited in more general works: Warning sirens, evacuation signs and maps, regular drills to test the systems, and education programs in the public schools.

Although focused on Alaska, this study applies to most coastal communities. Recommended for local government officials.

California Governor's Office of Emergency Services, 1997, Findings and recommendations for mitigating the risks of tsunamis in California: California Governor's Office of Emergency Services, 30 p.

An excellent review of the current state of tsunami mitigation in California.

Highly recommended for Californian local officials and emergency managers, and recommended as a model for other areas.

Carte, George W., 1984, A tsunami preparedness assessment for Alaska: *Science of Tsunami Hazards*, v. 2, no. 2, p. 119-124.

The author devised a six-point rating system to assess local tsunami readiness. The factors are: communications, written action plans, public warning devices, police/fire departments, evacuation sites, and vulnerability of emergency equipment and supplies. The author used this system to rate 46 Alaskan communities.

Although dated, this is a useful report to measure local preparedness, and could be applied to other coastal communities.

Combellick, Rod A., 1999, Earthquake and tsunami hazards in Alaska: *Alaska GeoSurvey News*, v. 3, no. 1, p. 1-3.

A current summary of tsunami hazards and mitigation in Alaska. Recommended for Alaskan emergency managers and local officials.

Curtis, George D., 1992, Tsunamis--Seismic sea waves. *In* Majumdar, S. K.; Forbes, G. S.; Miller, E. W.; Schmalz, R. F., editors, Natural and technological disasters--Causes, effects, and preventive measures: Pennsylvania Academy of Science, p. 108-124.

An excellent review of tsunamis and tsunami mitigation. Includes discussions of warning systems, evacuation maps, and general and specific mitigation measures.

Highly recommended.

Ganz, Steven; Traynor, Theresa, compilers, 1998, Tsunami hazard mitigation symposium--Proceedings volume: Western States Seismic Policy Council, 78 p.

*This volume includes:*

Bernard, Eddie N., The National Tsunami Hazard Mitigation Program. p. 5-8.

Hegemeyer, Richard, Tsunami hazard mitigation. p. 27-33.

Oppenheimer, David H., Consolidated reporting of earthquakes and tsunamis. p. 65-67.

Darienzo, Mark E., 1998, Efforts in mitigation, public awareness, and emergency response. p. 37.

Dengler, Lori A., 1998, Tsunami mitigation efforts on California's North Coast. p. 39-43.

Hull, Don A.; Karel, Angeline, Topic--Oregon strategy for mitigation and public awareness. p. 45-63.

Walsh, Timothy J., Tsunami hazards in Washington. p. 35.

Good, James W., 1995, Tsunami education planning workshop findings and recommendations: U.S. National Oceanic and Atmospheric Administration Pacific Marine Environmental Laboratory NOAA Technical Memorandum ERL PMEL-106, 41 p.

A thoughtful and thorough examination of tsunami education.

Highly recommended.

Hull, Donald A.; Karel, Angeline, 1997, Strategy for tsunami mitigation and public awareness: Oregon Department of Geology and Mineral Industries, 1 v.

An excellent presentation of the tsunami mitigation and public awareness efforts in Oregon. Includes samples of signs and brochures. Highly recommended.

Jonientz-Trisler, Chris, 1995, Cascadia response to the October 4, 1994 Kurile Islands Mw 8.3 earthquake-induced tsunami warning [abstract]: Eos (American Geophysical Union Transactions), v. 76, no. 17, Supplement, p. S305.

This 1994 earthquake was tsunamigenic, so a Pacific-wide tsunami warning was issued. Unfortunately, there were some failures in the warning information system and in community responses. There was no tsunami, but the experience pointed out ways the warning systems and responses should be improved.

Kuroiwa, Julio; Zupka, Dusan, reviser; Schneider, Christine V., translator, 1995, Tsunamis--Population evacuation and land use planning for disaster mitigation; Localities studied in Peru (1981-1994): UNDHA, 1 v.

Detailed, thorough study of tsunami hazards and mitigation. Includes discussions of emergency plans, evacuation plans, temporary and emergency refuge facilities, and other mitigation issues. These lessons from Peru can be applied to other coastal communities.

Highly recommended for local government officials and emergency managers.

Morgan, Joseph, 1984, A Tsunami Avoidable Susceptibility Index: Science of Tsunami Hazards, v. 2, no. 1, p. 3-12.

"Risk" is often described as Hazards times Vulnerability times Value. Here, the author devised a simple formula to compute tsunami risk based on tsunami history (for runup

and inundation) and land use (for homes, businesses, schools, etc.). This is a useful model that could be applied to local communities.

Preuss, Jane, 1991, Urban planning for tsunami hazards--Grays Harbor, Washington and Lima, Peru. In Brennan, A. M.; Lander, J. F., editors, 2nd UJNR Tsunami Workshop, Honolulu, Hawaii, 5-6 November 1990; Proceedings: U.S. National Geophysical Data Center Key to Geophysical Records Documentation 24, p. 203-218.

A very practical and thorough examination of the effects of a tsunami in Grays Harbor, Washington and Lima, Peru. It discusses vulnerability patterns based on population distribution and land use and examines risk reduction strategies.

Although this is specific to these areas, the methodology can be applied to many other locations.

Highly recommended for emergency managers and local governments.

Preuss, Jane, 1994, Regional planning implications of tsunami risk [abstract]: Eos (American Geophysical Union Transactions), v. 75, no. 3, Supplement, p. 25.

A brief summary of basic tsunami mitigation issues. Recommended as an overview.

Preuss, Jane; Hebenstreit, Gerald T., 1991, Integrated hazard assessment for a coastal community--Grays Harbor: U.S. Geological Survey Open-File Report 91-441-M, 36 p.

A tsunami is not a single threat, but is the initiator of a suite of interrelated hazards. Using this integrated approach allows more accurate loss estimates and more effective mitigation efforts. This example from Grays Harbor can be well applied to other coastal communities.

Highly recommended for local government officials and emergency managers.

Preuss, Jane; Priest, George R., 1997, Tsunami hazard mitigation and counter measures with an example from Oregon. In Gusiakov, V. K., editor, Tsunami mitigation and risk assessment--Report of the International Workshop, Petropavlovsk-Kamchatskiy, Russia, August 21-24, 1996: Russian Academy of Sciences, p. 43-46.

A current summary of Oregon's tsunami mitigation efforts.

Highly recommended.

Priest, George R., 1997, Update on tsunamic mapping progress in Oregon: Oregon Geology, v. 59, no. 4, p. 97.

A 1997 summary of the tsunami mitigation progress made in Oregon in offshore sensors, inundation mapping, and public education.

Especially recommended for Oregon emergency managers and local officials.

Priest, George R.; Hull, Donald A.; Vogt, Beverly F.; Karel, Angeline; Olmstead, Dennis L., 1996, Tsunami risk reduction--The Oregon strategy: Science of Tsunami Hazards, v. 14, no. 2, p. 101-106.

A 1996 summary of the tsunami mitigation progress made in Oregon in offshore sensors, inundation mapping, and public education.

Especially recommended for Oregon emergency managers and local officials.

Rinard, Stephen K., 1988, Tsunami--Preparing for a vague and rare event. *In* Magoon, O. T.; Converse, Hugh; Miner, Dallas; and others, Coastal zone '87--Proceedings of the 5th Symposium on Coastal and Ocean Management: American Society of Civil Engineers, v. 3, p. 3314-3319.

Succinct description of the National Weather Service's efforts to cooperate with local governments to improve tsunami education and awareness. Very good summary of the basic needs and problems in educating local governments and the public about tsunami hazards.

Recommended for local emergency managers and government officials.

U.S. Federal Emergency Management Agency, 1998, Multi-hazard identification and risk assessment--The cornerstone of the national mitigation strategy: U.S. Federal Emergency Management Agency, 369 p.

Chapter 17, "Tsunami Events" summarizes tsunami hazards and effective mitigation strategies.

Highly recommended.

U.S. Federal Emergency Management Agency, 1998, The Project Impact hazard mitigation guidebook for northwest communities--Alaska, Idaho, Oregon, Washington: U.S. Federal Emergency Management Agency, 58 p.

FEMA's Project Impact intends to help communities prepare *before* disaster strikes to minimize the effects of the event. This guidebook intends to help communities form hazard mitigation strategies and includes a 2-page section on tsunami mitigation.

Highly recommended.

## **The Human Face of Tsunami Hazards and Mitigation**

Carte, George W., 1981, Tsunami hazard and community preparedness in Alaska: U.S. National Oceanic and Atmospheric Administration Technical Memorandum NWS AR-29, 20 p.

Examines tsunami hazards, warning systems, and community preparedness of Alaskan coastal communities, from 1970 to 1978. Communication deficiencies were one of the major problems then (1981) and continue today.

Includes a nine-factor preparedness rating system.

Recommended for local government officials and emergency managers.

Pararas-Carayannis, George, 1983, The tsunami impact on society. *In* Iida, Kumizi; Iwasaki, Toshio, editors, 1983, Tsunamis--Their science and engineering: Terra Scientific Publishing Company [Tokyo] Advances in Earth and Planetary Sciences, p. 3-8.

A thoughtful review of the social aspects of tsunami education and mitigation.

Recommended for local government officials and emergency managers.

Raine, Laurence M., 1995, The determinants of risk perceptions of tsunamis in Oahu, Hawaii--Public health implications: University of Hawaii Doctor of Public Health thesis, 304 p.

Tsunamis are a real hazard to Hawaiian residents. On Oahu alone, approximately 60,000 people live within a tsunami inundation zone and many others work and/or travel within those danger zones. This study examined the differences socioeconomic factors (age, gender, income level, ethnicity, education, etc.) had on tsunami risk perception and preparedness. These findings can help emergency managers, both in Hawaii and other at-risk areas, understand the diversity of approaches needed to educate people about tsunami hazards.

Ronan, Kevin R.; Johnston, David M., 1997, Children's risk perceptions and preparedness--A hazards education survey: Auckland City Council; Auckland Regional Council, 1 v.

This study found that children involved in hazard education programs had more stable risk perceptions, reduced hazard-related fears, and a much greater awareness of self-protective behaviors than children who had not received that education. This has important impacts on tsunami and other hazard education programs.

Recommended for local government officials and educators.

Tsuchiya, Yoshito; Shuto, Nobuo, editors, 1995, Tsunami--Progress in prediction, disaster prevention and warning: Kluwer Academic Publishers Advances in Natural and Technological Hazards Research, v. 4.

*Includes these studies of the social aspects of tsunami mitigation:*

El-Sabh, M. I., The role of public education and awareness in tsunami hazard management. p. 277-285.

Kuroiwa, J., Tsunami studies and their application to Peru's socio-economic development and emergency planning. p. 323-336.

Walker, Daniel A., 1996, Human factors compounding the destructiveness of future tsunamis: Science of Tsunami Hazards, v. 14, no. 2, p. 79-83.

Many of the fatalities and injuries associated with tsunamis are due to a lack of awareness of the hazards, human error, inadequate support of mitigation efforts, and poor communications between scientists, government agencies, and the general public. Unless we understand these deficiencies and take effective action to correct them, these unnecessary tragedies may be repeated. This brief study of the Hawaiian tsunami tragedies of 1896 and 1946 illustrate these issues.

Recommended.

# Disaster Preparedness for Children

by  
Lee Walkling

Because special needs (elderly, disabled, children, animals, etc.) are often overlooked, it is helpful to consider them separately before incorporating them into the large, overall preparedness plan of the family, the organization, or the community. Too often disaster planning materials are reduced to the water-food-batteries fundamentals, without urging citizens to think of specific situations they or their family might face. As with all preparedness plans, the key is advance planning. Educating children and their caretakers is the first step. Including the family's animal population in plans is also important.

Children need to be trained concerning emergencies and what to do about them. Practice drills are important. Explaining about potential local disasters helps children to understand and to deal with them when they happen, with less confusion and panic. Each age group needs its own preparedness plan. One size does not fit all.

Prior to making a preparedness plan, children must be told about hazards in language they can understand. There are several websites that explain tsunamis simply:

"FEMA for Kids" explains what causes disasters, and includes games and stories: <http://www.fema.gov/kids/>

"Tsunami for Kid" explains what causes disasters and includes games and stories:

<http://www.pmel.noaa.gov/tsunami-hazards/kids.html>

"Links for Kids" has links to other science-for-kids pages, including Earthforce, Ask-A-Geologist, and Earth Alert:

<http://www.geo.nsf.gov/ear/kidlinks.htm>

"Tsunamis" has interactive pages for 5-6th grade students:

<http://projects.edtech.sandi.net/encanto/tsunamis/index.html>

"Children's Literature on Floods and Natural Disasters" has a bibliography of books for preschoolers to high school students: <http://www.ag.uiuc.edu/~disaster/floodbib.html>

"Tsunamis" has two simple animations illustrating ocean waves and tsunami waves coming ashore:

<http://explorezone.com/earth/tsunamis.htm>

"Helping Children Cope with Disaster" at <http://www.disasterrelief.org/Library/Prepare/chilcop.html>

The Tsunami Safety Guide Coloring Book is a 4-page informational booklet, for elementary school children. It is available from Dr. Daniel A. Walker, Tsunami Memorial Institute, 59-530 Pupukea Road, Haleiwa, Hawaii 96712. (TMI Publication No. 03).

Children should help make their own Emergency Information cards, with particular health information, doctors' names and phone numbers, parents' work phone numbers, grandparents' phone numbers, dietary restrictions, home address, and anything else deemed necessary. These cards should be carried in the school backpacks and in wallets or purses. Another copy could be kept in the child's bedroom. It would be wise to send copies to the next of kin, neighbors, teachers, and babysitters/childcare workers.

FEMA and the American Red Cross have published these free materials for children. Most of them are available in both English and Spanish. (To order copies, call your local American Red Cross chapter or FEMA at 1-800-480-2520.)

*Helping Children Cope with Disaster* (FEMA L-196; ARC 4499)

*Disaster Preparedness Coloring Book* (FEMA-243; ARC 2200)

*Be Ready 1-2-3 Workbook* (ARC 5017)

*Be Ready 1-2-3 Instructor's Manual* (ARC 5018)

*Adventures of Disaster Dudes* (ARC A5024; FEMA 242). This is a 14-minute video for grades 4-6. (*TsuInfo Alert*

**has a copy to loan)**

*Adventures of Disaster Dudes Presenter's Guide* (ARC 5024)



# Disaster Preparedness for Animals

by  
Lee Walkling

Because special needs (elderly, disabled, children, animals, etc.) are often overlooked, it is helpful to consider them separately before incorporating them into the large, overall preparedness plan of the family, the organization, or the community. Too often disaster planning materials are reduced to the water-food-batteries fundamentals, without urging citizens to think of specific situations they or their family might face. As with all preparedness plans, the key is advance planning. Educating children and their caretakers is the first step. Including the family's animal population in plans is also important.

"Animals" is the term which includes pets, domestic animals, farm animals and service animals (guide dogs, etc.). Each category demands its own particular preparedness plan. A parakeet would not need an acre-sized, temporary enclosure, but a small herd of sheep might. Be sure the animals have identification tags. Pack extra food and water...water being the most important of the two. What type of enclosures or cages are needed? Consider your animals' needs and their possible reactions to natural disasters.

## Websites:

"Disaster preparedness/response for Pets, Domesticated Animals" at <http://www.fema.gov/cgi-shl/dbml.exe> gives an annotated list of organizations (with webpage addresses) for pet disaster information. These pages offer help in designing preparedness plans

"Barnyard Animal Rescue Plan" at <http://www.redcross.org/disaster/safety/kouncil.html> explains the need for an evacuation plan, pre-hazard planning, disaster kit lists, emergency phone numbers list, and identifying the animals

"Earthquake Tips for service animals and pet owners" at <http://www.redcross.org/disaster/safety/eqtanpet.html> gives information on preparing an animal disaster plan for people with disabilities who have animal aides. Includes a checklist.

"First Aid for Animals" gives list of basic supplies for simple animal first aid and describes some first aid procedures for dogs, cats, and birds, at <http://www.redcross.org/disaster/safety/fa-anim.html>

"American Humane Association" will provide on-site rescue and relief for animal victims of disaster: <http://www.amerhumane.org/apmain.htm>

"Animal disaster plan worksheet for planners and emergency managers" at <http://www.fema.gov/home/fema/disps.htm>

*Reminder: if you don't have access to the Internet, please contact Connie or Lee. We'll print out the web pages you request and mail them to you. See page 2 for more information. Remember: the Insert can be photocopied.*

## Pets and Disasters: Get Prepared

by

the Humane Society of the United

States in cooperation with the American Red Cross.

(also available at <http://www.disasterrelief.org/Library/Prepare/pets.html>)

Our pets enrich our lives in more ways than we can count. In turn, they depend on us for their safety and well-being. Here's how you can be prepared to protect your pets when disaster strikes.

### Be Prepared With a Disaster Plan

The best way to protect your family from the effects of a disaster is to have a disaster plan. If you are a pet owner, that plan must include your pets. Being prepared can save their lives. Different disasters require different responses. But whether the disaster is a tsunami or a hazardous spill,

you may have to evacuate your home.

In the event of a disaster and if you must evacuate, the most important thing you can do to protect your pets is to evacuate them, too. Leaving pets behind, even if you try to create a safe place for them, is likely to result in their being injured, lost, or worse. So prepare now for the day when

you and your pets may have to leave your home.

### **1. Have a Safe Place to Take Your Pets**

Red Cross disaster shelters cannot accept pets because of states' health and safety regulations and other considerations. Service animals who assist people with disabilities are the only animals allowed in American Red Cross shelters. It may be difficult, if not impossible, to find shelter for your animals in the midst of a disaster, so plan ahead. Do not wait until disaster strikes to do your research.

Contact hotels and motels outside your immediate area to check policies on accepting pets and restrictions on number, size, and species. Ask if "no pet" policies could be waived in an emergency. Keep a list of "pet friendly" places, including phone numbers, with other disaster information and supplies. If you have notice of an impending disaster, call ahead for reservations.

Ask friends, relatives, or others outside the affected area whether they could shelter your animals. If you have more than one pet, they may be more comfortable if kept together, but be prepared to house them separately.

Prepare a list of boarding facilities and veterinarians who could shelter animals in an emergency; include 24-hour phone numbers. Ask local animal shelters if they provide emergency shelter or foster care for pets in a disaster. Animal shelters may be overburdened caring for the animals they already have as well as those displaced by a disaster, so this should be your last resort.

### **2. Assemble a Portable Pet Disaster Supplies Kit**

Whether you are away from home for a day or a week, you'll need essential supplies. Keep items in an accessible place and store them in sturdy containers that can be carried easily (duffle bags, covered trash containers, etc.).

#### **Your pet disaster supplies kit should include:**

- \* Medications and medical records (stored in a waterproof container)
- \* A first aid kit.
- \* Sturdy leashes, harnesses, and/or carriers to transport pets safely and ensure that your animals can't escape.
- \* Current photos of your pets in case they get lost.
- \* Food, potable water, bowls, cat litter/pan and can opener.
- \* Information on feeding schedules, medical conditions, behavior problems and the name and number of your veterinarian in case you have to foster or board your pets.
- \* Pet beds and toys, if easily transportable.

### **3. Know What to Do as a Disaster Approaches**

Often, warnings are issued hours, even days, in advance. At the first hint of disaster, act to protect your pet.

Call ahead to confirm emergency shelter arrangements for you and your pets.

Check to be sure your pet disaster supplies are ready to take at a moment's notice.

Bring all pets into the house so that you won't have to search for them if you have to leave in a hurry.

Make sure all dogs and cats are wearing collars and securely fastened, up-to-date, identification. Attach the phone number and address of your temporary shelter, if you know it, or of a friend or relative outside the disaster area. You can buy temporary tags or put adhesive tape on the back of your pet's ID tag, adding information with an indelible pen.

You may not be home when the evacuation order comes. Find out if a trusted neighbor would be willing to take your pets and meet you at a prearranged location. This person should be comfortable with your pets, know where your animals are likely to be, know where your pet disaster supplies kit is kept, and have a key to your home. If you use a petsitting service, they may be available to help, but discuss the possibility well in advance.

Planning and preparation will enable you to evacuate with your pets quickly and safely. But bear in mind that animals react differently under stress. Outside your home and in the car, keep dogs securely leashed. Transport cats in carriers. Don't leave animals unattended anywhere they can run off. The most trustworthy pets may panic, hide, try to escape or even bite or scratch. And, when you return home, give your pets time to settle back into their routines. Consult your veterinarian if any behavior problems persist.

### **A Final Word**

If you must evacuate, do not leave your animals behind. Evacuate them to a prearranged safe location if they cannot stay with you during the evacuation period. (Remember, pets are not allowed in American Red Cross shelters.) If there is a possibility that disaster may strike while you are out of the house, there are precautions you can take to increase your pets' chances of survival, but they are not a substitute for evacuating with your pets. For more information, contact:

The Humane Society of the United States,  
Disaster Services,  
2100 L Street NW,  
Washington, DC 20037.

## Infrequently Asked Questions

compiled by Lee Walkling

### **The tsunami warning signs say to go to high ground. What is a low-lying area and what is high ground?**

Since it is impossible to predict the exact heights tsunamis will reach when they hit land, this question cannot be answered exactly. "Low-lying" generally means sea level, including coastal river banks and beaches. Studies have shown that past tsunamis have averaged from 20-45 feet high at shoreline, with some tsunamis reaching 100 feet or more in a few isolated sites. The best advice: get to "high ground" of more than 100 feet above sea level or at least 2 miles inland, preferably traveling on foot to avoid traffic congestion and possible road damage.

### **What is a real-time tsunami reporting system?**

It is a series of detection devices sited around the Pacific Rim which are designed to sense and report continually on seismic and sea level changes. The instruments sit on the ocean floor and float at the ocean surface, sending data to satellites which relay the information to land-based stations. There is a report about the 1997 deployment cruises and a map of the buoy locations on the internet at <http://www.pmel.noaa.gov/tsunami-hazard/98buoyreport.html>  
[http://www.pmel.noaa.gov/tsunami/rtb\\_deployment.html](http://www.pmel.noaa.gov/tsunami/rtb_deployment.html)

[PHOTO]

### **photo by Michelle Bullock**

from: <http://www.pmel.noaa.gov/tsunami-hazard/deploy.html#buoy2>

## The Washington State Local/State Tsunami Workgroup

On February 18, 1999 the Washington State Local/State Tsunami Workgroup met in Pacific County, Washington. The agenda included budget updates, NOAA Weather Radio maintenance proposal, inundation mapping, interpretive sign review, and the Regional Coastal Earthquake Conference.

The final draft of the Tsunami interpretive sign was presented by Sea Reach LTD. Twenty-nine sites have been selected along the Washington coast for these signs. All counties present approved the design. The draft will be sent out to the absent counties for review and approval. March 26th is the shipping date for these signs.

The deadline for the inundation maps is still March 30, 1999. It was stressed that the maps are being done for emergency planning purposes, not for land use/growth management planning. Also a high priority for the counties are the evacuation maps and the tsunami hazard brochures.

A proposal was made at the January meeting to expand the NOAA Weather Radio system to include areas that now receive little or no reception. This might be done by placing a Weather Station site at Mt. Octopus in Jefferson County, for an estimated cost of \$17,000. The benefits to Grays Harbor County, Pacific County, Jefferson County, Clallam County, the five Indian Nations, and the boating/shipping industry include tsunami alerts and adverse weather reports for the entire coast, areas inland, and about 12 miles out to

sea. This month the Quinault Nation asked for a partnership with others to cover the costs of annual maintenance (\$1500) of the new NOAA Weather Radio tower.

The Regional Coastal Earthquake Conference "Building Earthquake Resistant Coastal Communities" will be held May 11-13, 1999, at the Doubletree Hotel, SeaTac Airport. Topics will include seismic building codes, effects of tsunamis on structures, earthquake mitigation initiatives in private business, community mitigation success stories, and tabletop exercise in earthquake recovery and mitigation. Private entities are welcome to attend, but must pay a \$75.00 registration fee. More information is available at the website <http://www.wa.gov/mil/wsem/>

The next meeting of the group is not yet scheduled, but will be held before May 1, 1999. Contact George Crawford (253) 512-7067 or Laura Vander Meer (253) 512-7069 for more information.

Pacific States' tsunami hazard mitigation workgroups, committees, and commissions are invited to send minutes or reports for publication in *TsuInfo Alert*. The most recent meeting minutes for the Redwood Coast Tsunami Working Group are online at: [http://glinda.cnrs.humboldt.edu/earthquakes/rctwg/Feb\\_3\\_1998\\_meeting.html](http://glinda.cnrs.humboldt.edu/earthquakes/rctwg/Feb_3_1998_meeting.html) The matrix of accomplishments (as of October 7-8, 1998) for the national Tsunami Hazard Mitigation Steering Group Meeting, are online at <http://www.pmel.noaa.gov/tsunami-hazard/october98summary.html>



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