

Disasters

Preparedness and Mitigation in the Americas



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October 2003

Unseating the Myths Surrounding the Management of Cadavers



Photo: PAHO/WHO

Family and friends demand the chance to identify the victims of the 1985 Mexican earthquake, expressing opposition to common graves.

In the aftermath of a major natural disaster, authorities must prioritize many urgent tasks, including: (1) rescuing the survivors and providing the care they need, (2) restoring or maintaining basic services and (3) managing a potentially large number of cadavers. The latter deserves special attention. The most pressing issue is preserving the identity of those who have lost their lives. Under no circumstances are burials in common graves or cremations justified or warranted.

Many myths survive to this day regarding the health hazards posed by a large number of cadavers at the scene of a disaster. Dead bodies are seen as highly contagious, a source of epidemics that can raise the death toll. Often such convictions have led the public to demand that authorities rush to bury or cremate victims, even before the dead could be identified, and frequently in disregard of the customs and beliefs of loved ones left behind.

(continued on page 7)

Distance Learning Builds Capacity in the Americas



In November, professors from Latin American and Caribbean universities that have disaster distance education programs will join experts in Internet-based training and international organizations that deal extensively in traditional training for disasters to evaluate the appropriateness of existing models and methodologies for distance learning based on the Internet and other information and communication technologies. Work groups will identify priority areas and topics in public health and disasters around which to develop virtual courses. More about this workshop in the next newsletter. Background information on the web at www.disaster-info.net/elearning.



Pan American
Health Organization
Regional Office of the
World Health Organization

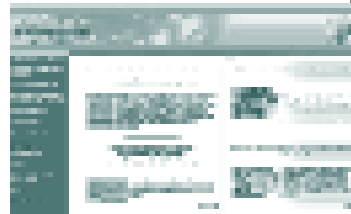
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PAHO Publishes 2003 Catalog of Disaster Publications and Training Material

The updated 2003 edition (in Spanish) of the catalog of publications and training material on disasters and emergencies is now available in print and online versions. PAHO's 2003-07 Strategic Plan, approved by the Member Governments, cites the continued production and wide dissemination of training materials and updated guidelines as a strategic focus of emergency preparedness and disaster relief. This latest edition of the catalog is a step in that direction.

The catalog reviews the latest version of the Health Library for Disasters (full-text version of more than 500 publications) and the recently-developed materials for conducting hospital disaster planning courses. Slide programs, widely used in the 1980s and early 1990s, have been converted to digital format and the cata-



log features a new CD-ROM with these programs and the URL to download an online version.

For print copies of the catalog, write to the Regional Disaster Information Center (see page 8) or download the updated Spanish version from www.paho.org/desastres (click on Catálogo de publicaciones). The English language version of the catalog remains current (see www.paho.org/disasters click on Publications Catalog), as the latest materials are in Spanish only.



..... Around the Web



- www.desastre.org: web site of the Dominican Association of Disaster Mitigation, which works to raise awareness in the Dominican Republic about natural hazards (hurricanes, earthquakes, floods, landslides and more) and distribute information to reduce the impact and achieve sustainable development through risk management.
- www.americanlifelinesalliance.org: website of the American Lifelines Alliance, which promotes risk reduction in lifeline services (water and sewerage, electric, gas) and their systems of transport.
- www.reliefweb.int/hin: quarterly newsletter of the Humanitarian Information Network, a cooperative effort to build community among humanitarian information professionals and others with an interest in using information management tools to strengthen information exchange.
- www.undp.org/hdr2003/: Human Development Report 2003: Millennium Development Goals, a report commissioned by UNDP, cites eight goals for transforming development and cites the greatest problems to achieving them.
- www.dhs.ca.gov/lnc/default.htm: California Hospital Bioterrorism Response Planning Guide. Developed by the Department of Health Services to assist hospitals in preparing for a possible bioterrorism event.

PAHO and IOM Seek Advisor on Migration

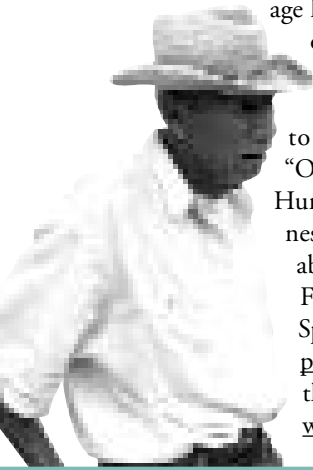
The Pan American Health Organization and the International Organization for Migration have an opening for a regional health advisor on migrating populations, with duty station in Bogota, Colombia. The selected candidate will help develop and implement health activities for displaced persons, refugees or other vulnerable mobile populations in the Americas. The post requires nine years of national and international experience in emergency/disaster situations, preferably with health programs and very good knowledge of Spanish and English. Applications must be received by 9 November. View the vacancy notice and apply online at www.paho.org (click on Job Opportunities in the right hand column).

Other Organizations

Other Organizations

Guidelines Target Older People in Emergencies

HelpAge International has published guidelines that suggest practical ways to meet the needs of the older population in emergency situations. The guidelines also encourage humanitarian workers to use older people's experience and knowledge of the population and local conditions to make aid more effective. "Older People in Disasters and Humanitarian Crises: Guidelines for Best Practice" is available free of charge in English, French, Portuguese and Spanish. Request a copy from press@helpage.org or view the document on the web at www.helpage.org.



People In Aid Revises Code on Staff Support

People In Aid, the network of 50+ international relief, development and advocacy agencies, has launched a revised "Code of good practice in the management and support of aid personnel" to help improve the quality of assistance provided by international and host country staff to communities affected by poverty and disaster.

Building on previous guidelines, the People In Aid Code offers agencies the most effective framework for human resources management, helping them assess and raise their performance.

The Code links together aims and indicators in seven areas: health, safety and security; learning, training and development; recruitment and selection; consultation and communication; support, management and leadership; staff policies and practices; human resources strategy. The Code is online at www.peopleinaid.org/. For more information contact launch@peopleinaid.org.

GDIN Meeting Rescheduled for March 2004

The Global Disaster Information Network meeting, originally scheduled for this November, will take place in Washington, D.C. in March 2004. For more information or to register for GDIN 2004 visit www.gdin.org and look for the GDIN 2004 logo.



You have a choice!

How would you like to receive your disaster news? You can cut down on paper and opt to read this newsletter in HTML or PDF format (we'll let you know when it's up on the web). Or you can continue to receive your print copy and be notified when the electronic version is up. Let us know which you prefer. Write to disaster-newsletter@paho.org. Check out the HTML version of this newsletter at www.paho.org/disasters (click on Newsletter in the right hand column).

HPG Publishes Report on Humanitarian Needs Assessment

The Humanitarian Policy Group has synthesized information from a report on needs assessments and decision making in the international humanitarian system into a briefing paper that explores how responses by the international humanitarian system can be judged proportionate and appropriate to the needs of those affected by disaster and conflict. It offers a critical examination of current practices in needs assessment and decision-making, looking at key elements of the current system and how it functions as a whole. Download the report at www.odi.org.uk/hpg/papers/hpgreport15.pdf and the briefing paper from www.odi.org.uk/hpg/publications.html.



Disaster Prevention: Keys to Success in Central America

Several municipalities in Central America are adopting innovative risk management and prevention measures to reduce their vulnerability to disasters. Raising awareness of these keys to success is the focus of a joint IDB, FEMICA, CEPREDENAC project. As a starting point, model practices were identified in several municipalities in Honduras (San Pedro Sula y la Mamuca), El Salvador (San Salvador) y Nicaragua (Estelí y Managua). These practices were captured to produce a tool kit which is being used to train municipal mayors in these three countries. The municipalities, in turn, will train community leaders and members of local emergency committees in their municipalities. The project will conclude by evaluating the impact of the activities. For more information, contact Angela Funez at angelaf@contractual.iadb.org, or visit www.femica.org.

Member Countries

Central American Nations Approve Joint Disaster Reduction Plan for the Health Sector

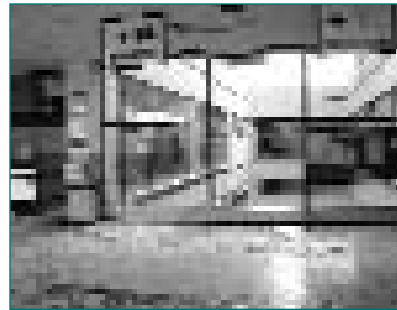


In the wake of Hurricane Mitch, the most devastating disaster to strike Central America in decades, SICA, the Central American System for Integration and CEPREDENAC, its disaster arm, helped guide preparation of a strategic framework to reduce vulnerability to disasters.

Within this framework, the disaster offices of the Ministries of Health, led by Nicaragua, prepared the Central American Vulnerability Reduction Plan for the health sector, which was approved at the annual meeting of Health Ministers in August.

The Plan outlines ways to strengthen technical cooperation among the countries of Central America so that the response to disasters will be more timely, organized and efficient. The Plan will serve as a roadmap for the next two years as the countries begin to prepare or improve their own national health sector disaster plans in light of these collective commitments. The full-text plan is available on the Internet at www.disaster-info.net/saludca/desastresCR/. For more information contact Beatriz Vélez: velezb@hon.ops-oms.org

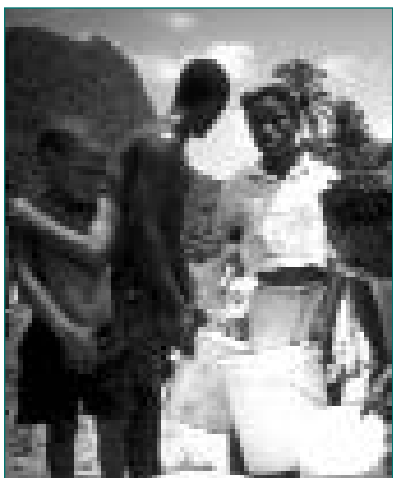
Ministries of Health, Red Cross and PAHO Set Joint Action Plan in South America



Representatives from Ministries of Health of Andean Region countries (Bolivia, Colombia, Ecuador, Peru and Venezuela) and from the Southern Cone (Argentina, Brazil, Chile and Uruguay) met to define a strategic plan for

interagency coordination on disaster management issues in the health sector. In the Southern Cone countries, cooperation will revolve around mapping health risks and vulnerability; hospital disaster planning; damage and needs assessment as a result of flooding; humanitarian supply management and promotion of a regional disaster health information network. The Andean Region will focus on most of these same areas and also include virtual disaster libraries and epidemiological surveillance in border areas. A joint plan of action among the Health Ministries, the Red Cross and PAHO in the two subregions will target several specific areas: gender and disasters as a crosscutting component in preparedness, mitigation and response plans; evaluating post-disaster damage in the health sector and logistics; and information, communication and connectivity. For more information, contact Dr. Alejandro Santander at asan-tand@ecu.ops-oms.org.

CARICOM Endorses Disaster Training for Caribbean Environmental Health Professionals



The Caribbean is exposed to the risk of natural and manmade hazards, especially hurricanes and storms associated with the annual hurricane season. The environmental health sector is often affected. To address this reality, the Ministerial Council for Health and Social Development (COHOSOD) of the Caribbean Community (CARICOM) has endorsed a three-step education and training program for all Caribbean environmental health professionals, which includes a module on disasters. This training will help to ensure that all future professionals at the technical, supervisory and managerial levels will be aware of

the potential hazards and their repercussions and have the basic skills necessary to build capacity for disaster risk reduction in the environmental health sector.

This initiative expands the range of professionals in the Caribbean with education and skills in health disaster reduction, as it adds to those who already benefit from similar training in the Masters of Public Health Program of the University of the West Indies. This represents a key development in efforts to institutionalize and strengthen health sector disaster management programs in the Caribbean. For more information, contact Ivan Alert at alertiva@cpc.paho.org.



Radio Dramas on Disasters Still Popular



The radio drama Hurricane Season (Tiempos de Huracanes)—launched in October 2002 and broadcast by more than 50 radio stations in Central America—weaves the tale of how a community's level of preparedness helps determine the impact a flood will have on the residents. This radio drama is being rebroadcast for the 2003 hurricane season in Central America and is also reaching audiences in Cuba, Mexico, Venezuela and the Dominican

Republic. The success of this endeavor has led to the production of a new program Réplicas en el Corazon (Tremors of the Heart).

The three stories of this new radio drama unfold in the wake of earthquakes, landslides and volcanic eruptions and are geared around several central themes: raising the awareness of communities about the natural hazards that surround them, coexisting with risks and decision making. The new radio drama will begin airing before the end of this year. For more information, contact elina.palm@eird.org or visit www.eird.org.

Experts Study Making Hospitals Safe from Disasters

In July, more than 100 professionals met in El Salvador at the international meeting “Hospitals in Disasters: Handle with Care.” The bulk of the meeting was dedicated to working groups that studied and made recommendations on three major topic areas:

■ **Hospital disaster mitigation** and the need to revise and enforce existing regulations concerning the design and construction of health facilities, with the ultimate goal of protecting the lives of patients, staff and other occupants and ensuring that these facilities can continue to function during and after a disaster. This working group discussed and modified the *Guidelines for Vulnerability Reduction in the Design of New Health Facilities*, a comprehensive publication for investors and hospital managers. A shorter summary of this document, prepared for decision makers, is also available.



■ **Evacuating a hospital** may become necessary at some point. But unnecessary evacuation can lead to serious problems, and the group analyzed the consequences of evacuation in terms of politics, social aspects, administration, public assistance, labor, etc. The guide *Should Hospitals be Evacuated?* was endorsed and the group formulated additional recommendations, including: share the decision to evacuate, to the



extent possible, with health or government authorities responsible for the affected area and keep in mind that the press will play an important role in generating or dispelling fears about hospital evacuations.

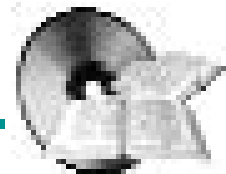
■ If hospitals must be evacuated, many view **mobile field hospitals** as a way to provide immediate medical care to victims. Some political authorities in disaster-affected countries have accepted the donation of self-contained field hospitals as a temporary substitute for health facilities damaged by disasters. However, often these foreign hospitals have not met the expectations, generating frustration and disappointment for all parties concerned: recipients and donor countries, the medical staff and the patients. The *WHO/PAHO Guidelines for the Use of Field Hospitals in the Aftermath of Sudden Impact Disasters*, prepared for donor and recipient countries, were revised by the group and have now been published. An accompanying brochure is also available (see page 6).



All publications and guidelines can be downloaded from www.disaster-info.net/hospital_disaster (click on the topic of the work group and follow the links.) A limited number of print copies of the Guidelines on Field Hospitals is available from disaster-publications@paho.org.

Publications and Multimedia

P u b l i c a t i o n s a n d M u l t i m e d i a



WHO-PAHO Guidelines for the Use of Foreign Field Hospitals



Disasters, whether natural or complex, can outstrip the capacity of the local health system to provide the required care, either because of a massive number of casualties or as a result of damage to healthcare infrastructure. As a consequence, both affected and collaborating countries try to find ways to facilitate medical care to the affected population. One potential solution could be a mobile field hospital, yet there have been mixed reports regarding the cost-effectiveness of such efforts, particularly in developing countries.

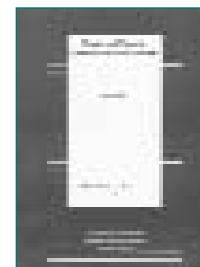
These perceived shortcomings prompted the World Health Organization and the

Pan American Health Organization to convene a meeting of experts to review guidelines regarding when it is appropriate to dispatch or donate a foreign field hospital. Presented in a clear, easy-to-consult format, the 20-page guidelines outline essential requirements and additional, or optional criteria for field hospitals used for emergency medical care during the first 48 hours; for follow-up trauma and medical care up to two weeks after the disaster; and for donated facilities that can remain on site for several years. The guidelines also pose questions to ask and issues to clarify before a field hospital is dispatched or accepted. The highlights of these guidelines also have been incorporated into a brochure for wide-spread distribution.

A limited number of print copies of the guidelines is available from the Editor at disaster-publications@paho.org. Request the brochure at the same address or download the full-text of both at www.paho.org/disasters (click on Publications Catalog).

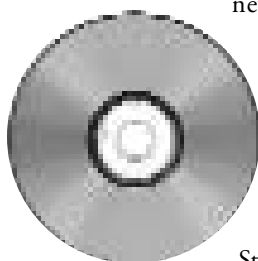
IDB Publication on Vulnerability and Risk Reduction

The Inter-American Development Bank's publication "Planning and Financial Protection to Survive Disasters" distinguishes between risk management—which calls for prior planning and investments to reduce vulnerability—and emergency response, which involves after-the-fact expenditures. This technical paper deals with two important areas: identifying and reducing risk by integrating prevention and mitigation into development plans and financial protection of costly investments. Download the publication from the web site www.iadb.org/sds/ (click on Publications and search by the authors: Kari Keipi and Justin Tyson).



New from the Caribbean

CD-ROM . . .



Building codes from selected countries have been compiled on a new CD, which also contains a report that compares the building codes and practices in use in the Bahamas, CUBiC (the Caribbean Uniform Building Code), the Dominican Republic, the French Antilles, and the Organization of Eastern Caribbean States, with a focus on design and construction of healthcare facilities. In addition, the CD-ROM contains a selection of hospital vulnerability assessments carried out in Aruba, Barbados, Belize, Cuba, Grenada, St. Kitts and Nevis, Saint Lucia, St. Vincent and the Grenadines. Saint Lucia and Grenada have already implemented some of the recommendation made in the assessments.

. . . Manual on Environmental Health Contingency Planning and Rapid Needs Assessment For Floods in the Caribbean

Floods are the most frequently occurring natural hazard globally and in the Caribbean. Because flood events can adversely affect environmental health, contingency plans are critically important. PAHO, in collaboration with the Caribbean Environmental Health Institute (CEHI), has prepared a manual for environmental health contingency planning and rapid needs assessment for floods in the Caribbean.

Intended primarily to help environmental health units develop flood contingency plans, the manual outlines basic steps and key management issues in the contingency planning process and provides instructions on the structure and elements of the plan. The manual deals with all major environmental health topics: water quantity and quality, sanitation and hygiene, vector control, chemical hazards, food safety and epidemiological surveillance. The manual also includes tools to conduct environmental health rapid needs assessments following floods. These tools are being published separately as a booklet for field use. Download the manual from <http://www.disaster-info.net/carib/ehrna.htm> or request a print copy from CRID (see page 8).

Management of Cadavers

(from page 1)

The history of large-scale disasters is full of examples of this kind. Soon after Hurricane Mitch hit Central America, the fear of infection led to mass cremations. After an earthquake struck another country in the Region, authorities and local residents demanded that common graves be dug, without first identifying the intended occupants. And yet no scientific evidence to date has suggested that the bodies of victims of disaster increase the risk of epidemic breakouts. In fact, the cadavers of the victims pose less risk of contagion than an infected living person.

When health arguments have been proven groundless, others—equally spurious—can take their place. Advocates of common graves, for instance, often argue that there is just not enough space to bury a very large number of fatalities. This is not necessarily the case. Technical standards exist for mass burials. They call for digging plots that allow half a meter for the corpse and another half meter between bodies. Since bodies can be buried one atop the other, up to five deep, and the location of each can be registered on a grid, this provides a viable alternative to burying unidentified victims in common graves.

Another common misconception is that quickly disposing of cadavers—either through burial or cremation—creates a sense of peace and tranquility. Actually, survivors and victims' families are relieved when the bodies of loved ones are recovered

and identified. To not do so is to leave the door open to false hopes. In disasters which were the result of mud or landslides and produced a high number of fatalities, many bodies were buried under tons of mud and rocks and could not be recovered. The odds that anyone directly in the path of those landslides could have lived yet remain unaccounted for days after the disaster, were extremely slim. Still, many survivors refused to believe that their loved ones were dead; this belief was cruelly reinforced when rumors circulated that a lost relative or friend had been spotted in another part of the country. In contrast, when a loved one's body was found and identified, it brought a sense of closure.

Another myth purports that in the aftermath of a major catastrophe, it is impossible to identify the large number of corpses. But a high death toll does not have to impede the proper identification of the victims. In general, the tools and technology exist to identify the majority, if not all the victims. Following the attack on the World Trade Center in 2001, only 47 cadavers remained unidentified among the nearly 2,700 fatalities.

From a legal point of view, the government's chief responsibility is to do all it can to recover and identify the bodies. As noted in article 27 of the Inter-American Convention of Human Rights, emergency situations do not justify suspending people's fundamental rights. The full identification of disaster victims is important in many ways. It is the only way for the authorities to ensure that identity fraud does not take place. More significantly, however, it is the only way to put an effective end to the anguish that torments relatives and friends. The process of identifying cadavers is key to ensuring the welfare of the surviving population, and its consequences are not only



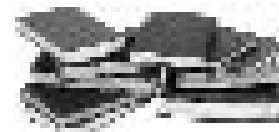
psychological and social but also legal, cultural, and even economic.

Once identification has been completed, the body should be handed over to the nearest relative as quickly as possible—and they should decide on the proper funeral rites, according to their customs. While not mandatory, government assistance at this point would no doubt be welcome, as it was in the case of the Mesa Redonda fire in 2001, where the government of Peru covered the cost of funeral services and burial of the victims.

It is the government's responsibility to ensure that under no circumstances should mass cremation or burial in common graves take place in the wake of a natural disaster. That is the message of a soon-to-be-released manual on the proper management of large numbers of cadavers in disaster situations. PAHO/WHO and a select group of experts from the hemisphere are working on this manual—which will be out in early 2004—to debunk the myths and misconceptions that hinder the proper handling, identification and disposal of the bodies. It also stands by the rights of the victims' relatives, opposing any sort of anonymous burial in common graves or cremation. It targets national and local authorities and covers topics such as preparedness; the correct handling, identification and disposal of bodies; health considerations; and legal, sociocultural and psychological aspects.



Selected Bibliography



S e l e c t e d B i b l i o g r a p h y

The articles listed in this section may be of interest to health professionals and others responsible for disaster preparedness, mitigation and relief. They have been reproduced and recently added to the collection of articles available from the CRID. A complete list of reprints is available upon request. Please quote the reference code listed to the left of the publication title when requesting articles.

- H.7** *Environmental Health in Emergencies and Disasters. A Practical Guide.*
Editores: B. Wisner y J. Adams. Available on Internet: www.who.int/water_sanitation_health/hygiene/emergencies/emergencies2002/en/.
- H.8** Johnson, Clare and John Handmer. *Water Supply in England and Wales: Whose Responsibility Is It when Things Go Wrong?* Water Policy 4 (2002), pp 345-366.
- H.9** Bisbal Sanz, Alberto. *Plan de mantenimiento preventivo y correctivo en instalaciones sanitarias en hospitales y edificaciones.* Revista Ingeniería Sanitaria y Ambiental; 15, pp 13-7, Nov. 1998.
- H.10** Rondón G., Marco; Nuñez, Mariana. *Sala de situación en agua potable y saneamiento : Caso "Desastre en Venezuela, 1999-2000"*; Organización Panamericana de la Salud, 14p.
- I.1** Gisbert Calabuig, J. A. *Identificación de cadáveres.* Alvarez Leiva, Carlos; Chuliá Campos, Vicente; Hernando Lorenzo, Antonio E. Manual de asistencia sanitaria en las catástrofes. Madrid, Book of the Year 1992, pp 481-9.
- H.2** Leal Diez, Francisco. *Identificación de cadáveres en grandes catástrofes.* España. Ministerio de Sanidad y Consumo. Madrid, España, 1984, pp 211-15.

Disasters: Preparedness and Mitigation in the Americas is the Newsletter of the Emergency Preparedness and Disaster Relief Coordination Program of the Pan American Health Organization, Regional Office for the Americas of the World Health Organization. The reported events, activities and programs do not imply endorsement by PAHO/WHO, nor do the statements made necessarily represent the policy of the Organization. The publication of this Newsletter has been made possible through the financial support of the International Humanitarian Assistance Division of the Canadian International Development Agency (IHA/CIDA), the Office of Foreign Disaster Assistance of the U.S. Agency for International Development (OFDA/AID), and the Department for International Development of the U.K.

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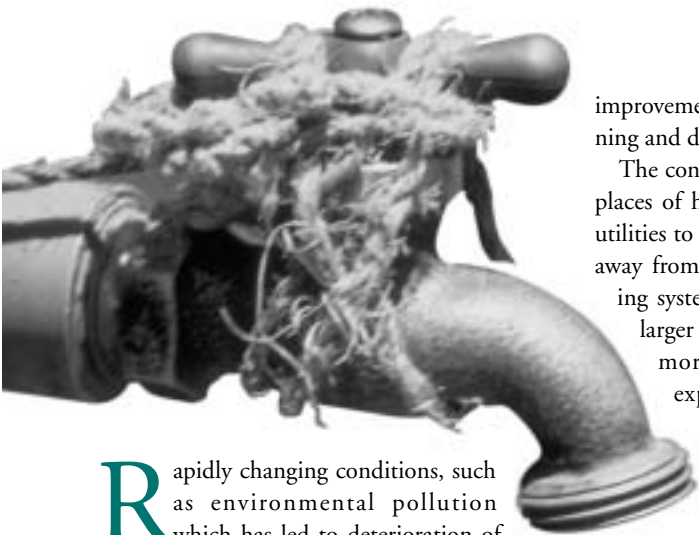
October 2003



Produced in colaboración with CEPIS, the Pan American Center for Sanitary Engineering and Environmental Sciences

Risk management in water and sanitation systems

In search of answers to new challenges



Rapidly changing conditions, such as environmental pollution which has led to deterioration of primary water sources, and other factors such as uncontrolled urban growth, are forcing the water and sanitation sector to strive for

improvements in its technology and its planning and design methods.

The contamination of bodies of water near places of human habitation is forcing water utilities to rely on sources further and further away from the beneficiary population, making system components extend over much larger geographical areas, rendering them more complex and increasing their exposure to natural and manmade hazards.

At the same time, an increasingly poor and marginalized population and the unplanned growth of urban centers in Latin America and the Caribbean has forced people to settle in areas where they are exposed to significant-

ly greater risk—both from diseases and adverse natural phenomena. Consequently, the components of water systems are also located in the same high-risk areas.

All this has forced the institutions involved in the water and sanitation sector—particularly the utilities and regulatory bodies—to search for new ways and strategies to ensure that drinking water can continue to be supplied in the necessary quantity, with the necessary quality, even after a disaster has struck.

Some institutions have chosen to focus their efforts on the post-disaster stage, developing response plans, training their staff in damage assessment, and striving to identify and correct the vulnerabilities and physical

(continued on page 3)

Pereira, Colombia

Risk management as a crosscutting process

The current management of Pereira, Colombia's water and sanitation system has recognized that integral risk management must be a crosscutting process spanning all routine activities of the company. With this in mind, they have established an emergency prevention and response unit, run by a full-time professional, with the ultimate goal of continuing to provide service to 99% of its customers in

emergency situations.

Risk assessment in the Pereira system is not limited just to infrastructure. It also takes into account the quality and continuity of the service, which is seen as an inalienable constitutional right.

Pereira, the capital of the Colombian Department (province) of Risaralda, is located on the eastern slopes of the

country's Central Mountain Range. The area is well known for its breathtaking landscapes, but is also prone to volcanic and seismic activity, landslides and heavy rainfall.

The lack of a proper land-use management plan in Pereira, combined with the hazards mentioned above, threaten the water supply of the company's subscribers, who by June 2003 amounted to 94,812. A preliminary assessment of the system's infrastructure revealed that it meandered through some of the most risk-prone areas of the municipali-

(continued on page 4)

Sharing Lessons from Ecuador



Several volcanic eruptions over the last four years in Ecuador provided the context for water and sanitation agencies to implement disaster mitigation measures in vulnerable components of their systems. Ecuador's Geophysical Institute had conducted a formal study of the vulnerability of Quito's aqueduct system to earthquakes and volcanic eruptions, but suggestions for mitigation measures also came from government professionals working in the sector.

The mitigation measures implemented included covering treatment plants to protect from ash fall (as shown above), inter-connecting different systems, identifying alternate sources of water, covering filters and treatment plants, and modifying the treatment process by creating a by-pass among components. These measures, which were taken to reduce the effects of potential ash fall from a volcanic eruption, would have been better implemented from the design stage.

Preserving and disseminating this type of experience will enable other Latin American and Caribbean countries to apply the lessons to new and existing systems and, in the long run, will facilitate knowledge transfer in training activities.

Central American countries target water and sanitation systems for vulnerability reduction

For the past several years, prompted in large measure by the devastation left in the wake of Hurricane Mitch in late 1998, several Central American countries have stepped up their efforts to reduce the vulnerability of their water and sanitation systems. The result is a joint platform of action common to all four countries participating in the initiative.

The common efforts aimed at risk management in El Salvador, Guatemala, Honduras and Nicaragua have resulted in a much broader vision of the subject. No longer are floods and torrential rains stemming from hurricanes like Mitch considered the major natural hazards threatening water and sanitation systems. Subsequent experiences and awareness-raising initiatives have led them to be on guard against hazards such as landslides, silting in dams, and earthquakes such as the two that hit El Salvador within one month of each other in early 2001.

One of the most significant results of the work undertaken in the last few years has been the production of a set of technical manuals on the incorporation of disaster prevention into the design of water and sanitation systems. The manuals are based on a series of pilot projects implemented in selected systems, and the evidence gathered from the impact of Mitch and other disasters on those systems. Some of the manuals pay special attention to rural water systems, often among the most vulnerable. Another common result across participating countries has been the inclusion of disaster prevention as a formal subject in education, both in teaching and research.

Particularly noteworthy has been the work undertaken on the Central American Disaster Prevention and Response Plan for the Water and Sanitation Sector. This will be a cornerstone of the Regional Disaster



Reduction Plan pushed forward by the Central American Coordination Center for Natural Disaster Prevention (CEPRE-DENAC) and the Water and Sanitation Forum of Central America and the Dominican Republic, which has placed risk management in the face of natural hazards near the top of its agenda.

Among its goals, the Central American Plan seeks to gather information on the relevant human, financial, technological and other resources available in the subregion so that when a disaster inflicts significant damage to any of the countries in the area, the others can provide immediate support in the most efficient way possible. The information- and resource-sharing capabilities contemplated in the plan should make it possible to manage the gamut of disaster prevention challenges, including those that in the past would have been impossible to tackle given the dispersion of resources. It will now be up to the subregion's professionals and institutions in the sector to make this goal a reality, and the Water and Sanitation Forum of Central America and the Dominican Republic to support its fulfillment.

Project activities were made possible by funding from the U.K. Department for International Development (DFID) and the Office of U.S. Foreign Disaster Assistance (OFDA/USAID).

Several of the documents are available in full-text format at www.cepis.ops-oms.org/bvsadelelcentro-america.html. Contact: Alberto Bisbal at bisbala@nic.ops-oms.org or Claudio Osorio at desastre@cepis.ops-oms.org.

Information Resources on Water and Disasters



CRID, the ISDR and PAHO have collaborated on a new CD entitled Information Resources on Water and Disasters. This CD contains the full text of selected documents on topics as diverse as water quality, disaster prevention in water systems, the impact of floods and drought, and more.

A list of web sites with information on the effects of disasters on water systems and institutional contacts are also included. On the web at www.crid.or.cr/crid/CD_AGUA/index.htm. For a copy of the CD write to CRID (page 8) or to CEPIS at desastre@cepis.ops-oms.org.



The fruitful work carried out by the Technical Committee on Disaster Prevention and Mitigation of the Costa Rican Water and Sanitation Institute (A&A) has not gone unheeded. It has led the Institute—the government entity in charge of most water and sanitation systems in the country—to consider converting the Committee (which has been involved in risk management since the 1991 Limón earthquake caused significant damage to one of the main water systems in Costa Rica) into a Risk Management Unit.

For more than a decade, the Committee has been carrying out a variety of disaster mit-

igation and prevention activities with support from several sectors linked to water and sanitation, and the support of both A&A and external bodies. The Committee has also played an active and significant role in various initiatives of Costa Rica's National Emergency Response Commission (CNE), the country's focal point for risk management.

Among the accomplishments to date, the country's main aqueduct, Orosi, has been retrofitted over time, at a reasonable cost, to protect it from the seismic and landslide risks that were the major threats, according to a vulnerability study commissioned by the Committee itself. The result: the aqueduct has withstood the occurrence of several natural phenomena without any significant damage or suspension of services.

In addition to the vulnerability study, the Committee has also organized training workshops on disaster prevention and mitigation in five of the six regions of Costa Rica in which it launched vulnerability assessments. It also conducted a major seminar on risk management. While taking these positive steps, the Committee has also identified the major gaps to reducing the vulnerability of the country's water and sanitation systems, primarily a lack of more hazard assessments and specific prevention and mitigation projects.

As a result, the Committee designed a new strategy involving the systematic identification of the systems' vulnerabilities and the preparation of prevention and mitigation plans to reduce the impact of both natural and manmade risks to a minimum. This approach has been incorporated even at the project design stage, so that risk reduction is a full component of routine maintenance as well as of all new waterworks' budgets and specifications.

It was in this context that the idea came up of institutionalizing the Committee by making it permanent and giving it a new name, the Risk Management Unit, as a reflection of the myriad tasks the new entity will be called on to fulfill: training, liaison with external bodies known for expertise in the field, the review of all emergency and disaster response procedures, and the identification of the projects needed for the enhancement of risk reduction and management. The experiences that led to up to this point underscore that disaster prevention cannot be occasional or sporadic, but must be an ongoing, permanent component of any water utility's actions over time.

For more information contact Héctor Feoli at hfeoli@aya.go.cr.

In search of answers...

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weaknesses in their infrastructure to make it more reliable, particularly during and after an emergency. This is the case with Costa Rica's Institute of Water and Sanitation. Its efforts in the field over many years have built up a significant level of experience and know-how in risk management and control, to the point where the Technical Committee on Disaster Prevention and Mitigation is on the verge of becoming permanent Risk Management Unit (see related story above).

Unable to solve all physical vulnerabilities of their current systems, other service providers have chosen to rely on insurance to protect their investments. Although this option provides a certain peace of mind while

responding to the proliferation of needs that arise in the aftermath of a disaster, utility companies are not always aware that the reimbursements may not be available as quickly as they would like or need. Moreover, the fact that equipment or components are insured is not an incentive to reduce the physical risk to the systems themselves.


Recently, lending and development institutions have developed tools for ensuring that risk management is fully integrated into the projects they support. In cities such as Guayaquil, Ecuador and La Paz, Bolivia, where the Inter-American Development Bank and the World Bank have supported the modernization of water and sanitation systems, the new service provider was called upon to design and implement disaster

response plans within a few months of the contract going into force.


The lesson is clear: water and sanitation systems' regulatory frameworks must be designed in such a way that they encourage service providers to increase the safety of their infrastructure even as they increase the coverage and quality of their services. Their performance should be monitored, and assistance should be provided whenever shortcomings are detected.

In short, new infrastructure projects in the water and sanitation sector, in addition to considering the usual hydraulic and health variables, must incorporate risk assessments concerning the natural hazards prevalent in the area. This will enable service providers to ensure quality even as they safeguard the investments they made.


New from PAHO/WHO




Managing Solid Waste in Disaster Situations. (Manejo de residuos sólidos en situaciones de desastre). Guide outlining the relationship between natural disasters and solid waste management systems, based on experiences in Latin America and the Caribbean.



Reducing Seismic Damage: Guide for Water Agencies (Reducción del daño sísmico. Guía para las empresas de agua). The original English-language work, published in 1994 by the American Water Works Association, has just been translated into Spanish and adapted for Latin America and the Caribbean.



Effects of the Eruption of the Reventador Volcano (2002) on Water and Sewerage Systems. (Efectos de la erupción del volcán Reventador (2002) en los sistemas de agua y alcantarillado). Lessons learned from this disaster, with particular emphasis on these vulnerable systems.



Impact of the El Niño Phenomenon 1997-98 on Water and Sewerage Infrastructure: Ecuador's Experience (Impacto del Fenómeno El Niño 1997-98 en la infraestructura de agua y alcantarillado. La experiencia del Ecuador). Collection of experiences from a number of Ecuadorian agencies.

Publications (in Spanish only) prepared by CEPIS and PAHO's Area on Disaster Preparedness. These and other publications on disasters, sanitary engineering and environmental sciences are available in full text at www.cepis.ops-oms.org/bvsade/pub/index.html. Request individual copies from desastre@cepis.ops-oms.org.

WHO explores countries' capacity to reduce the vulnerability of water and sanitation systems

The Water, Sanitation and Health Program of the World Health Organization is carrying out a global survey to determine what actions individual countries and their water and sanitation systems have taken to date to reduce vulnerability to emergencies and disasters and the capacities that exist in each country. The survey is also meant to identify institutions in each country that can assist in the recovery of water and sanitation services after an adverse event.

Survey results will enable WHO to assess more precisely the technical cooperation and support needs of countries in disaster prevention, mitigation, and response so as to ensure the continuity and quality of water supply and sewerage services both during and after a major emergency.

Professionals and institutions active in the field of water and sanitation are invited to fill out the questionnaire. They will thus contribute, from their own distinctive vantage points, to the development of a worldwide intervention strategy aimed at improving the safety of water and sanitation systems, as well as the response to adverse phenomena. The survey is online at www.cepis.ops-oms.org/survey/survey.htm

For more information please contact Dr. Joseph Cotruvo, joseph.cotruvo@verizon.net.

Water system in Pereira

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ty, directly above the Silvia Seismic Fault System.

The awareness that risk management should be a crosscutting process arose after two earthquakes hit the region (1995 and 1999) and a landslide in 1987 affected the water supply for nine days.

Finally, an emergency response protocol was completed and an assessment was made of the feasibility of using an alternate system during emergency situations.

For more information, contact José Edier Ballesteros at jebbar@pereira.cetcol.net.

Strategic actions

After all company departments were directed to apply this approach, a geo-referenced information center was created in April 2002 to facilitate and coordinate risk zoning studies and contribute to planning.

In addition, the vulnerability of the entire system was analyzed by superimposing a map



of all piping six inches or more in diameter onto seismic microzoning maps. The stability of the soil in the region was also looked into. This analysis revealed that the channel that carries water from the supply intake to the treatment plants was highly vulnerable to landslides.

IDB striving to incorporate risk management in water and sanitation projects

For several years, the Inter-American Development Bank (IDB) has had a specific policy on disaster risk management and financial cooperation in disaster situations, which forms part of the Bank's sectoral policies. Recently, the IDB has produced a series of documents across the many sectors it serves, directed at assisting professionals in the field to incorporate risk management in all projects it finances in Latin America and the Caribbean.

Among the new tools developed, one targets the water and sanitation sector. It provides indicators and checklists aimed at ensuring that Bank interventions and investment programs incorporate disaster prevention, mitigation, response, and financial protection measures. The goal is to set guidelines, based on expert recommendations and good practices, in order to increase the sustainability of the Bank's actions in the future.

The manual is based on the conviction that one of the main challenges to sustainable development in Latin America and the Caribbean is the inclusion of disaster risk reduction in all development activities in the region. After all, the same factors that halt these countries' development—institutional weaknesses, accelerated and non-planned urbanization, increasing poverty, environmental degradation and climate change—are also largely responsible for their vulnerability to natural hazards. For more information contact Victoria Imperiale at victoriai@consultant.iadb.org.