DISASTER PREVENTION, MITIGATION AND PREPAREDNESS IN LATIN AMERICA AND THE CARIBBEAN

A Proposal for Funding
submitted to the Office of U.S. Foreign Disaster Assistance
of the U.S. Agency for International Development

1. INTRODUCTION

Natural Disasters

In the last twenty years, natural disasters have claimed the lives of some 3 million people in the world, injured another 800 million, and have caused immediate damages in excess of 23 billion dollars. Unfortunately, developing countries appear to be the most affected.

Research carried out by the Higher University Council of Central America reveals that between 1960-1991, more than 70 natural disasters – including earthquakes, hurricanes, floods, droughts, volcanic eruptions and landslides – were reported in this subregion. When we place this high incidence of natural disasters in the context of the Region's precarious financial climate, the substantial and direct economic impact becomes even more alarming.

The 1980s represented a "lost decade" for Latin America, as a significant number of countries saw their earnings decrease to the levels of one, two, and even three decades ago. The amount of money lost to disasters often exceeds the total annual gross income of an affected country.

The economic impact of disasters can affect the public health of a country in three main areas:

- it can have a direct effect on the health infrastructure and equipment, including water supply and sewerage systems;

- its effects can be indirect, disrupting the provision of health services;
- secondary effects can become apparent after a disaster, including a reduction in personal or national income, an increase in the inflation rate, problems with foreign trade, higher financial expenses that result in a decrease in resources available for health and water services, or less access to these services by individuals.

The following table shows the overall economic effects of selected natural disasters in Latin America and the Caribbean:

DISASTER	LOCATION	DATE	TOTAL LOSSES (millions)
Earthquake	Mexico	1985	US$ 4,337
	El Salvador	1986	US$ 937
	Ecuador	1987	US$ 1,001
Volcanic eruption	Nevado del Ruiz	1985	US$ 224
Floods - Drought	"El Niño" Peru, Ecuador, Bolivia	1982-83	US$ 3,970
Hurricane Joan	Central America	1988	US$ 870

Source: Economic Commission of Latin America and the Caribbean (ECLAC)

Technological Disasters

In the last decade, the health sector of many countries in Latin America and the Caribbean have made great strides in preparing to face sudden-impact disasters. But facing the threat of *technological* disasters – which in the coming years may prove just as significant – is another matter. Technological disasters are no longer the "exclusive privilege" of developed countries. They are leaving their mark in many developing countries as well. Unorganized industrialization is becoming a common pattern in most developing countries. The lack of appropriate regulation of the production, transportation, use and disposal of hazardous materials opens the door to the potential for technological disasters. The tragic examples of the Bhopal chemical disaster in India and the 1987 radiation accident in Brazil

attest to this. Technological emergencies, such as the Chernobyl nuclear accident, also demonstrate that a disaster in *one* country can become the problem of *many* countries when it is impossible to contain the effects to the actual disaster site. While much of the world has been spared catastrophes of this magnitude, the potential is ever present and increasingly, the health sector will be called upon to play a key role.

Manmade Disasters

Disasters that are *manmade*, in the form of social unrest, conflicts or war, bring with them consequences that are every bit as grave as those caused by technological and natural events. Look at Central America in the last decade:

- More than 160,000 Central Americans died in wars or civil violence during the 1980s; several hundred thousand were injured. Their short- and long-term treatment presents a challenge to the medical services, a challenge they are not always prepared to face.

- More than two million Central Americans – up to 15% of the total population – fled their homes and villages. As many as half a million homeless and often destitute refugees crossed the borders into neighboring Central American countries, adding to the *already* heavy burden those nations carried. Although a large number of PVOs (NGOs) are joining efforts with UNHCR, the Red Cross and PAHO/WHO to provide immediate and long-term assistance, the considerable need for technical cooperation and coordination in this region is obvious.

Cholera, absent from the Americas for more than a century, has become the hemisphere's newest manmade disaster. Indeed, it is the result of human neglect of the infrastructure and of sanitation services. Generally, epidemics in Latin America and the Caribbean are not considered disasters. However, the cholera outbreak quickly assumed all the characteristics of a large-scale emergency situation, and in many instances, it has exceeded the capacity of local and national resources to deal with it – a textbook definition of a disaster.

Although national civil defense systems and health disaster coordinators have been instrumental in managing the operational aspects of both preventive and response measures, the process has underlined the need for PMP activities to address some of the weaknesses.

2. MANDATE OF PAHO AND ITS EMERGENCY PREPAREDNESS PROGRAM

PAHO focuses its responsibility on assisting the health sector to reduce the impact of disasters, both direct and indirect, on health. This is not limited to hospitals and medical authorities, but also includes water and sewerage systems and other areas where the health of the population is affected.

PAHO/WHO has now diversified its strategy of support to Member Governments. Up until the mid 1970s, PAHO's participation was essentially in *response* to specific emergencies. After 1977, in the aftermath of the earthquake in Guatemala, greater emphasis was placed on health sector *preparedness* for natural disasters. Later, technological and manmade disaster preparedness would also be covered. With the beginning of the International Decade for Natural Disaster Reduction (IDNDR) in 1990, PAHO and other agencies worldwide have progressively shifted the emphasis of their activities in order to achieve a better balance between *prevention and mitigation* on the one hand, and *preparedness* on the other.

In the case of prevention, mitigation and preparedness activities in the health sector – that is government, private sector, NGOs, communities, and others – emphasis will be placed on hydrometeorological disasters; geophysical disasters; medical and health issues; natural/manmade/environmental disasters; multi-hazard preparedness support; and private sector support.

3. THE PAHO PROGRAM TODAY

The present trend in PAHO's disaster program is toward streamlining and decentralization. Currently, the professional staff is being reorganized and one professional post is being eliminated from the headquarters budget. Greater emphasis is being placed on the subregional offices, which play an important part in this scheme. There are three subregional offices located in San Jose, Costa Rica; in Lima, Peru; and most recently in Barbados, with the termination of the Pan Caribbean Disaster Preparedness and Prevention

Project in March 1991. Each office is staffed with a senior medical officer and an Associate Professional Officer (funded by a developed country.) The authority to make more of the day-to-day decisions in disaster operations in the countries, to hire consultants, and to plan, manage and oversee workshops and other training activities has been delegated to these field offices. One successful example of this strategy is the *Regional Disaster Documentation Center*, established in San Jose, Costa Rica in 1990, which performs functions previously the responsibility of headquarters. The Center collects and catalogs scientific and technical information on disasters and makes it available, free of charge, to professionals in the Americas.

4. ASSETS OF PAHO

- PAHO has a long history of providing reliable, cost-effective PMP cooperation to the countries of the Americas as part of their development activities.

- In addition, the Organization has a very high level of acceptability, both regionally and internationally.

- The Organization has access to decision-making levels both inside and outside the health sector in Latin America and the Caribbean.

- PMP activities are implemented by the Organization's entire professional staff, under the coordination of and with support from the specialized disaster reduction program.

- Disaster reduction activities have been linked with the leading PAHO/WHO initiatives in the region: Bridge for Peace in Central America; Development of Local Health Services; and Democracy through Health.

5. CRITERIA FOR PAHO COOPERATION

► The services and technical cooperation of the Organization are accessible to all countries in the Region exposed to disasters.

► Priority should be given to those countries, or provinces, states, institutions, etc. with:

- the highest vulnerability, or where the *need* is greatest nationally;

- the greatest capacity to absorb the technical cooperation, or where the national *contribution* ensures a multiplier effect.

- already existing multi- or bilateral projects that complement PAHO's actions in fields unrelated to health (for instance, OFDA activities in priority countries).

6. OBJECTIVES

► To assist the countries of Latin America and the Caribbean to reduce the health consequences of natural and manmade disasters (loss of lives, injuries, economic impact on the health sector, etc.) as part of their development strategy.

- to assist the public and private sectors of Latin American and Caribbean countries to adopt appropriate *prevention and mitigation* measures to minimize the health impact of natural or technological disasters.

- to strengthen the preparedness of the health sector to respond to all types of disasters promptly and efficiently, including technological accidents and situations resulting from conflicts.

► To broaden the knowledge of key professionals and decision makers about prevention, mitigation and preparedness (PMP) activities and garner their support.

► To assist WHO to promote prevention, mitigation and preparedness globally through the lessons learned and material developed in the Americas.

7. STRATEGIES

The overall strategy of PAHO during the next five years will be based on the following principles:

► give priority to increasing technical cooperation provided in the field of **prevention/ mitigation** to prevent and reduce the *health* effects of all types of disasters: natural disasters, technological accidents and situations of conflicts. This strategy is based on the principle that structural or other engineering interventions that improve the safety and disaster-resistance of hospitals or water supply systems will potentially save more lives than further improvements in mass casualty management or emergency water distribution alone.

► strengthen technical cooperation in the field of chemical and other technological accidents as well as in conflict situations. Preparedness for natural disasters, the mainstay of the PAHO program, is relatively well understood, and in most countries, national professionals deal with it routinely and effectively. *Progressively,* prevention of natural disasters and PMP for technological disasters and situations involving refugees and displaced persons should share the spotlight. It will still be necessary to provide *maintenance* support for preparedness related to natural disasters, especially in those countries where the national program remains fragile and vulnerable.

► further diversify the target audience of the Program. It will be impossible to reduce health sector losses and other economic impacts of disasters to a minimum unless PAHO and the health sector extend their collaboration and support to new constituencies: Ministries of Planning, Ministries of Finance, the private sector, NGOs, the mass media, etc. This trend, initiated several years ago on a modest scale through contacts and workshops with Foreign Affairs and the communications media, needs to be strengthened. The IDNDR provides an excellent framework and starting point for mobilizing multisectoral support in benefit of public health of disaster-prone populations.

- continue efforts in the mobilization of resources. OFDA's contribution in the past has served as seed money and has provided the incentive for matching or complementary contributions from other donors. This approach will not only be pursued, but it will be expanded through contacts with the private sector (in collaboration with OFDA/IDAC), mobilization of women's associations and other non-governmental organizations in the countries, etc.

- development of human resources. PAHO, with the support of OFDA and other agencies, sponsors or organizes approximately 200 PMP courses/workshops each year. However, this component will change significantly; not necessarily in the number of events or where they are held, but in their technical content and purpose. An increasing number will deal with prevention and mitigation as well as with technological disasters and with refugees and displaced persons. More importantly, the emphasis will *continue* to shift away from these highly-visible training events toward the systematic inclusion of the subject matter in the routine pre- and postgraduate academic or professional curriculum of universities in the region. This long-range task, already initiated in some fields with support from OFDA and other donors, will be intensified.

PROPOSED ACTIVITIES

8.1 General promotion of prevention, mitigation and preparedness

The effective reduction of the health sector's vulnerability to all types of disasters requires mobilizing public support as well as the support of the political authorities. The declaration of the 1990s as the International Decade for Natural Disaster Reduction (IDNDR) is expected to provide the opportunity for mass promotional and awareness campaigns to gain support for *pre-disaster* preventive measures in Latin America and the Caribbean. Activities under this heading will include:

- Promotional/motivational multisectoral workshops, which will focus on *preventive* measures and will particularly target the Ministry of Planning, finance officials, engineers, architects and health decision makers. These workshops will deal with the social and economic importance of prevention and mitigation in the planning, design and upgrading

of the health infrastructure (medical and sanitation), and the prevention of chemical or other technological accidents. An average of 10 workshops per year will provide an exposure of 5,000 person/days over the five-year period.

- Workshops with the mass media, NGOs, chemical industries and other components of the private sector, which will aim to stimulate the support of these sectors and channel their resources toward community education and joint activities in the prevention and mitigation of natural and manmade disasters. An average of three model workshops will be organized each year at the national level (1,500 person/days exposure over a five-year period).

- The production of promotional PMP material, which will include various tasks such as developing national or regional written promotional material; producing short 30-second videos for general broadcast, either immediately after disasters or at the annual IDNDR Day (October); producing three videos (10 to 15 minutes) on environmental disasters, hydrometeorological disasters and geophysical disasters; and supporting national dissemination of educational PMP material to the public on IDNDR Day. This material may be developed globally (IDNDR Secretariat) and adapted locally, or produced by PAHO with an individual slant toward Latin America and the Caribbean. This material ill be multi-hazard, and cover natural and technological disasters.

- An inventory will be made of technological/scientific PMP material relevant to Latin America and the Caribbean, which will be broadly disseminated. The regional Disaster Documentation Center based in San Jose, Costa Rica will provide the framework for this activity. The Center already collects scientific and technical material (books, periodicals, published and unpublished reports, national norms and guidelines, etc.) from sources worldwide, indexes this material in a U.N.-standard bibliographic format, promotes the availability of the information and disseminates it to developing countries and agencies working in PMP activities. Approximately 1,000 new documents on PMP will be added annually to the Center's collection and information and services will be made available at no cost in developing countries, to more than 15,000 individuals and institutions worldwide.

The benefit of this Center to other regions of the world will become more apparent in the next five years: as the Center becomes more established, not only will other regions be able to make increasing use of its services, but the Center will also serve as a model

for other regions who wish to promote the broad dissemination of technical PMP material. On request, and subject to funding, technical support will be available to other regions.

In addition to its scientific function, the Disaster Documentation Center will support the dissemination of educational material directed to the general public.

- Selected material produced by the IDNDR, OFDA, CEPREDENAC, CENAPRED, CISMID and other agencies, will be translated into Spanish, Portuguese and, as the need arises, into French. PAHO also finds it cost-effective to use educational and training material developed by other agencies and adapt and translate it to fit the needs of the health sector in the Latin America and the Caribbean. Portuguese-language material will be produced in Brazil at a low cost and will continue to be made available to Portuguese-speaking African countries, in coordination and consultation with WHO, the IDNDR, UNDRO and LRCS. It is estimated that up to 20% of the material developed in this region will be made available, free of charge, to other developing countries: for example, in Africa, through WHO and CDC; in Asia, through AIT in Thailand; in Eastern Europe through the WHO European Regional Office or the WHO Collaborating Centers.

The above activities will be executed by various PAHO Programs[1] at the regional and ubregional level. Because of the substantial cost involved in these activities, such as the p-front costs of developing and producing general PMP material, an intercountry pproach would be much more effective than a country-specific approach.

8.2 Sectoral Risk Assessment

In addition to serving as a model for other countries and regions of the world, the objectives of this activity are to:

[1]Disaster Program, Information and Public Affairs, Country Representatives, Centers such as the Pan American Center for Human Ecology and Health (ECO), etc.

- Build a significant level of community awareness, from the grass roots level to decision makers, using a low-technology risk mapping approach developed and tested jointly with WHO and bilateral agencies in Central America and Peru.

- Ensure that the level of risk is considered in socioeconomic development projects. PAHO will take the necessary precautions to bridge the gaps that frequently exist between multi-risk mapping and vulnerability analysis carried out by scientists, and decision making undertaken by planners, developers and other national authorities.

These objectives will be accomplished by:

- Using the health sector to introduce this type of initiative, which should facilitate its ocal acceptance by the public and private sectors;

- Undertaking a multiple risk assessment of the health sector within the framework of a multisectoral vulnerability analysis. One of the prerequisites for this activity will be an effective overall risk mapping and vulnerability analysis at the national, state or municipal level, carried out by either the national program, or bi- or multilateral projects. Activities which OFDA and other agencies are carrying out in this field will influence the delivery of technical cooperation by PAHO.

- Including a clear component on prevention of local risks associated with hazardous substances, in addition to hydrometeorological and geophysical disasters. PAHO, through its Emergency Preparedness and Disaster Relief Coordination Program and its Center for Human Ecology and Health in Mexico, has the necessary contacts with local and North American chemical industries and the in-house technical expertise to successfully complete this pilot activity which is of interest to all developing countries.

- Producing and disseminating promotional and educational PMP materials. As is the case with other international or bilateral organizations, PAHO may be able to do this on its own, but it will be unable to locally implement specific PMP activities without the leadership and/or acceptance of this country. This factor will be instrumental in selecting the sites for this activity.

Under this component, activities will include:

- A survey, conducted during the first year of the grant period, to select one community or municipality in each of three Latin American countries and one in the Caribbean. Existing methodology and training strategies will be adapted to assess public health risk and the economic impact of all types of natural and technological disasters on the health sector.

- An assessment of the risk to the health sector, conducted during the second year, in cooperation with other national, bilateral or multilateral projects.

- An evaluation, carried out jointly with funding agencies, toward the end of the project.

- Seminars and field visits, organized for the benefit of other countries, states or provinces and municipalities to promote similar initiatives. Subject to the availability of funding, participants from other regions of the world will be invited. The results of this particular activity will be published and broadly disseminated through the specialized Newsletter and in a more comprehensive form, at the conclusion of the five-year period. This activity is a key element, as this component has a definite pilot/demonstration nature.

8.3 Sector Vulnerability Studies and Mitigation Measures

The special vulnerability of the health sector to disaster situations justifies specific programmatic action under this component.

Given the threats facing Latin America and the Caribbean, the need for health infrastructure damage mitigation is clear. It is not enough to ensure that health care facilities can withstand the impact of earthquakes, hurricanes, and other disasters and not themselves pose an added threat to their occupants. Structurally, many hospitals in Latin America are old; some date from Spanish colonial times. Others are contemporary, modern facilities but the lax application of anti-seismic building codes which makes their ability to support earthquakes questionable. Aside from their structural integrity, they must also remain operational. Hospitals that are unable to be used in the critical post-disaster period, due to structural or non-structural damages, may, indirectly, claim an unknown number of lives.

The following table offers a partial inventory of the damage to health care facilities following several earthquakes and hurricanes in this region.

TYPE OF DISASTER	NUMBER OF HOSPITALS*	NUMBER OF BEDS LOST
Earthquake, Mexico (Federal District, September 1985)	13	4,387
Earthquake, El Salvador (San Salvador, October 1986)	4	1,860
Hurricane Gilbert (Jamaica, September 1988)	22	5,085
TOTAL	39	11,332

* Including health care clinics in Jamaica
Source: Pan American Health Organization

The estimated cost for each hospital bed in Latin America is approximately US$ 100,000 for modest hospitals, and higher for highly specialized facilities. The number of hospitals damaged and beds lost gives us a gross idea of the financial implications of restoring them, taking into consideration the high cost of constructing and equipping these facilities.

What is most urgently needed is not additional surveys, maps or studies, but the actual use of *already existing* information: in both hospitals and lifeline systems, part of the problem lies in the ignorance or the non-application of basic, well-known principles or safety techniques by professional engineers or architectural staff or decision makers. Making these professionals and decision makers conscious of the importance of disaster-proof engineering principles and of existing building codes would contribute to reducing the loss of live and property without making a disproportionate investment of capital.

In addition to preventive measures at the time of the infrastructure design and planning, retrofitting existing vulnerable health sector structures has been proven to be both feasible and cost effective, as was shown by the manner in which the Hospital Mexico resisted the December 1990 earthquake in Costa Rica. Similar investments are being made by a few other countries such as Mexico, Chile, and Colombia.

Other infrastructure, such as water supply and sewage systems also have a direct impact on public health and they too must be included in a sectoral vulnerability analysis. Particularly in major urban areas in Latin America, countries place a high priority on assessing the structural and operational vulnerability of their environmental health infrastructure. The economic and human costs resulting from damages to these systems and other lifeline utilities essential to human health is staggering. Most of these costs could be prevented through appropriate low-cost prevention/mitigation techniques.

► Sector Vulnerability Studies: sectoral vulnerability analysis will be limited to delivery infrastructure for specific kinds of services, such as medical, curative care or water/sewerage services. Sector, therefore, will have a more restrictive definition in this context than in the rest of the document, where the term health sector encompasses all components (private, government, community) that contribute to improving public health.

- the vulnerability analysis of a sector, whether water and sewerage, medical or another, will be complemented by the development of the capacity to rapidly assess the extent and cost of damages resulting from natural disasters.

  In the medical care sector, mechanisms and guidelines for determining the structural safety of installations after earthquakes or hurricanes will be refined, tested and demonstrated in English and Spanish.

  In the water/sewerage sector, procedures (guidelines, forms) will be developed and tested through field simulations based on the preliminary model being developed in the Caribbean by PAHO and the Caribbean Environmental Health Institute (CEHI).

- in one community each, in Latin America and the Caribbean, the risk assessment study described on page 12 will be complemented, on a pilot basis, by a more specific analysis of vulnerability of the sector to the specific types of sudden-impact natural disasters (geophysical or hydrometeorological) most prevalent locally (most likely earthquakes in Latin America and hurricanes in the Caribbean.) This demonstration project will apply guidelines that have been developed and refined for both medical care and environmental health infrastructure.

► Mitigation Measures: To mitigate potential damages to the health infrastructure, the following activities may be considered:

- guidelines for applying measures to mitigate the damage to health infrastructure and for teaching a new generation of engineers/architects will be developed. Continuing the effort started in 1990 with initial support from OFDA, PAHO will monitor and support the inclusion of infrastructure mitigation techniques in the curriculum of schools of engineering in universities in Latin America and the Caribbean (University of the West Indies).

- workshops on the planning and design of hospitals and other lifeline services in areas that are vulnerable to geophysical disasters (earthquakes, volcanos) and hydrometeorological disasters (floods) will be organized as follows: three intercountry courses (600 person/days) followed by 15 national workshops/courses (2,000 person/days). In addition, specialized sets of slides (5) and videos (3) will be produced and distributed at no cost to developing countries in the Americas and other regions of the world through WHO, donors, IDNDR or UNDRO.

  The workshops/courses and training material will be disaster-specific. For instance, information and material on earthquakes, hurricanes, landslides, floods, volcanoes and will be directed to planners, architects and engineers who are directly responsible for designing and maintaining hospitals, water supply systems and other health infrastructure.

- in the area of land use and building codes for health facilities, building codes exist in many countries, but it is necessary to assess whether or not they are applicable to hospitals, water systems and other public buildings. In those cases where they are applicable, it must be determined whether or not they are respected. At the international level, no minimum building codes or principles govern infrastructure built by bilateral agencies or funded by multilateral banking institutions. To alleviate this problem, PAHO proposes organizing in 1993-1994 an international conference on *DESIGN AND SAFETY OF NEW HOSPITALS AND HEALTH INFRASTRUCTURE* in earthquake-prone areas for major donor agencies, the World Bank, the Inter-American Development Bank and experts from Latin American countries. The objective of this conference will be to initiate an interagency process of developing coordinated building standards for internationally-financed health infrastructure in developing countries where an earthquake risk exists. Similar initiatives will be considered for other types of disasters.

8.4 Incorporation of PMP into economic development

One of the perceived problems in reducing the loss of lives and damage to the health infrastructure is the gap that exists between the scientific knowledge we possess and the actual use that is made of available information by private or public decision-makers, in all areas of development.

Activities to raise general public awareness will be complemented by a comprehensive, coordinated effort to sensitize and guide planners and developers about the potential health and financial benefits of including PMP strategies in their decision making. This is in follow up to the recommendations adopted at the regional meeting on disaster reduction, held in Guatemala from 9 to 13 September 1991.

The following activities are proposed:

- *Support to IDNDR initiatives:* the creation by the U.N. of a Special High-Level Council and the Scientific and Technical Committee for the IDNDR provides the opportunity to organize informal consultations and planning sessions with members from the Americas on including PMP in social and economic development planning (there are three members on the Special High-Level Council and seven on the Scientific and Technical Committee from this region).

- *PMP training of officials from the Ministry of Planning, Finance or other similar institutions at the national, provincial/state and municipal level:* at least one five-day course/workshop will be organized in each disaster-prone country on the basic principles of PMP and their relevance to health and socioeconomic development. These courses/workshops will provide an estimated 3,000 person/days of exposure to and training in PMP for national, bilateral and multilateral development officials in the countries. Preferably, these workshops will be organized at the national level in cooperation with OFDA field experts in Costa Rica, the Secretary-General of the OAS, ECLAC, SELA, IDNDR, UNDP, UNDRO and other key agencies present in the Region. Some of these activities will be carried out within the framework of the UNDP/UNDRO Disaster Management Training Program.

- *Sensitizing decision makers to the health and social benefits of PMP:* the opportunity of ongoing high-level meetings, such as those organized by ECLAC, SELA or other

intercountry agencies, will be used to present justification for the health and social benefits of PMP by including it in the agenda, making presentations, writing position papers or establishing informal contacts up to the Ministerial level when appropriate.

8.5 Multi-hazard Preparedness

▸ Strengthening of institutions

The level of preparedness in the health sector is directly proportional to the effectiveness of a country's post-disaster response. Therefore, a well-prepared health sector is critical to reducing the number of lives lost. It is also the area in which many countries have made the greatest progress. Almost every country in Latin America and the Caribbean has formally established some type of specialized, national program which is responsible for formulating plans, training first responders and health workers, coordinating the health response in case of disasters and liaising with other institutions. Although in some countries the national program is self-sufficient, and requires little if any outside support for routine activities, in other countries, minimal cooperation is still needed to ensure that the Program is strengthened in the difficult economic or political environment. PAHO activities will consist of:

- annual subregional meetings of disaster coordinators in the Caribbean, Central and South America to foster an exchange of information, stimulate cross-border coordination and seek solutions to common problems.

- technical cooperation visits and meetings among neighboring countries to negotiate, monitor and evaluate bi- or trilateral agreements similar to those in effect between the USA and Canada and the USA and Mexico.

▸ Medical Preparedness and Training

Prevention and mitigation of potential damages or disruption of services to medical facilities is critical. However, these efforts alone are not enough. They must be accompanied by a high level of staff preparedness. The fact remains that physically-intact hospitals can scarcely be effective in disaster situations if management is hopelessly disorganized.

Although hospital preparedness throughout the region has improved significantly, the sheer number of medical facilities requires that PAHO and other agencies maintain their support to reach a critical mass compatible with sustainable development. The following activities are proposed:

- development and dissemination of training material
  - reproduction of existing audiovisual training material
  - development or adaptation of material on simulation exercises, mass casualty management, inter-hospital coordination in metropolitan areas, etc.

- advanced workshops on specialized topics related to intra-hospital disaster planning, first aid, triage and pre-hospital mass casualty management and hospital management of chemical/radiation accidents. An estimated 20 workshops will be organized at the national level (3,000 persons/day). Attendance will be multi-disciplinary and will include, when appropriate, local community leaders and the private sector.

- technical support/consultants: support will be provided, on request, for inter-institutional medical contingency planning, for example, an intercountry simulation exercise in the Caribbean or a municipal-wide mass casualty plan, or for specialized/ advanced topics of a pilot nature, such as the medical management of chemical and radiation victims or burn injuries.

- training of first responders: at the primary health care level, multi-hazard preparedness activities will be demonstrated at the small parish or community level, where local leaders, members of the community and health workers in rural areas provide the bulk of the initial response. For coordinators and managers, the emphasis will be placed on planning for rapid assessment of health needs in the aftermath of disasters, managing information and coordination.

- Contingency planning

  - General Sectoral Planning: most countries have reached a sustainable level of development in their general disaster planning. Therefore, PAHO will progressively reduce its level of cooperation to:

- reproducing and disseminating existing PAHO-produced training/educational material;

- supporting national workshops, visits or consultants;

- promoting inter-agency cooperation.

- Environmental Health Planning: in recent years, both private and public water and sewage authorities have strengthened contingency planning. The city of Lima developed an integrated pilot disaster plan, but the methodology must be disseminated and applied on a broader scale throughout region. The following activities are proposed:

  - formal publication of guidelines for metropolitan contingency planning for water/sewage agencies, based on the model developed in Lima;

  - development of a 15-minute video on the same topic;

  - promotion and support for PMP activities in AIDIS, (the Inter-American Society of Sanitary and Environmental Engineering);

  - presentations or panel discussions at meetings organized by other agencies and organizations for sanitary engineers and system managers;

  - cooperate in the implementation of the guidelines in selected metropolitan areas exposed to natural disasters.

- Foreign Affairs/Diplomatic Missions: contingency planning and briefing of diplomats will aim to improve the contribution of the diplomatic community to the management of both requests or donations of international assistance through the establishment of a focal point on disaster reduction in the Ministry and by including disaster management in the curriculum of diplomatic academies in Latin America.

PAHO has carried out 11 training workshops in the capital cities of its member countries, closely coordinating it with similar initiatives carried out by OFDA and the Red Cross in the Washington area. To the extent possible, it will be taken one step

further, by conducting training/briefing sessions for diplomatic missions to the U.N. in Geneva and New York or to the OAS. Ministries of Foreign Affairs will be encouraged to formally issue clear written guidelines and instructions following the model of those prepared by the Government of Colombia. (Annex 1)

- Donors: guidelines on providing effective post-disaster health assistance will be reviewed periodically and reprinted for specific target audiences, including expatriate citizen groups currently residing in traditional donor countries such as the USA, Canada or in Europe. These will be widely disseminated.

  A revised, shorter version of the video *Myths and Realities of Natural Disasters* will be produced in four languages and disseminated. (An estimated 3,000 copies will be distributed, in addition to the 2,000 copies already circulating.)

  Representatives from donor agencies will be invited to participate in relevant workshops. Upon request, PAHO may organize specific workshops or meetings.

8.6 PMP and Technological Disasters[2]

PAHO's long-term PMP objectives include:

- assisting countries to *prevent* the occurrence of chemical or radiation emergencies that affect public health;

- improving the capability of the health sector to respond promptly and efficiently when an emergency occurs;

- providing technical support to an affected country in the assessment of health needs and the coordination of the international response after a technological emergency affecting public health.

[2] See attached draft policy document on Chemical Emergencies in Latin America and the Caribbean (Annex 2).

All countries should:

- have an awareness of the type and nature of chemical risks present and prioritize their importance in terms of public health;
- progressively implement appropriate technology for safe handling of hazardous substances (chemical and radioactive) especially those used by the health sector itself;
- have adapted existing disaster response mechanisms to respond to disasters caused by, or involving, hazardous substances.

The following activities would be carried out by PAHO: the Emergency Preparedness Program, in collaboration the Environmental Health Program, the Pan American Center on Human Ecology and Health (ECO), in Mexico, and the Pan American Center for Sanitary Engineering and Environmental Sciences (CEPIS):

- developing and disseminating a manual on *Policy and Operations* outlining the role of PAHO staff in prevention and response to chemical emergencies and training its staff accordingly;
- training national disaster coordinators on the specific managerial aspects of PMP relating to technological disasters;
- stimulating and supporting the establishment of national information centers on chemical emergencies, using regionally standardized databases adapted from those available in the USA or Canada (CHEMTRECT-analogue);
- stimulating a dialogue between the health sector and private industry on chemical safety and preparedness;
- developing and distributing material for health and other responders on emergency response to technological disasters;
- developing and distributing guidelines on *Emergency Evacuation for Areas Exposed to Chemicals* and *Medical Response to Chemical and Radiation Exposures.*

8.7 Medical and health-related emergencies

- Cholera emergency management: from an epidemiological point of view, routine disease surveillance is not covered by this project. However, two aspects are relevant to PMP:

  - surveillance methods for post-disaster secondary outbreaks: countries will be encouraged to use these simple techniques, through specialized training workshops or by including them in training organized by other programs);

  - use of collected data in decision making: in the case of cholera outbreaks, this includes the expertise disaster specialists have gained in using technical information for crisis management and to mobilize local or external resources. Courses on the appropriate use of information to coordinate a multisectoral response will be organized for health offices that are responsible for liaison outside the Ministry of Health. The emphasis will not be on how to collect data or statistics—the domain of other technical programs—but on how to present it in a timely and concise fashion to other sectors and donors to maximize the effectiveness of their contribution.

- Trauma medical treatment: while other components focus on health *management*, this one will address the issue of medical treatment under emergency conditions for specific syndromes: severe burn injuries; multiple traumas; or chemical/radiation exposure.

  Activities will consist of disseminating guidelines, participating in medical societies, attending conferences and providing modest support for local initiatives of potential demonstration values.

- Management of donated medical supplies: the overwhelming logistical problems caused by large-scale donations of pharmaceuticals and medical supplies pose a real management challenge for health and relief authorities in disaster-stricken countries. Problems arise for several reasons. Often, information on the technical usefulness of the donated supplies is not available. In addition, most countries lack both the manpower to manage the drugs and supplies and a mechanism to quickly inform donors of their receipt. To address these issues, PAHO will carry out a five-year pilot project to develop an intercountry capacity (including a regional team, computer software, laptop computers, photocopies, telecommunications equipment, etc.) to rapidly and efficiently inventory and classify donated goods at their point of entry. PAHO will activate and

mobilize this capacity in the aftermath of a disaster and train nationals on site to assume full operational responsibility. Other organizations outside the health sector could easily extend this pilot project to cover the entire spectrum of relief supplies globally.

8.8 Cooperation with other regions

Although PAHO's mandate is limited to providing technical cooperation to its member countries, the impact of the investment made in this region has extended far beyond this hemisphere. Increasingly, PAHO is called upon to provide technical support and training material to other WHO regions, particularly to Africa. And at the same time, the relatively low frequency of major disasters on the scale of the nuclear accident in Chernobyl or the gas intoxication in Cameroon, makes this exchange of experiences among continents very beneficial for this Hemisphere.

This region has made training and educational material freely available worldwide, has shared technical expertise with other regions, and hosted consultants or students from Africa, Asia or other parts of the world. Subject to the availability of specialized resources, national or PAHO staff may also be available for short-term advisory missions.

Under this component, cooperation with other regions of the world will be extended to cover new PMP activities:

- Technical material - PAHO will broaden its cooperation, making publications, slides and videos available, free of charge, to other regions. Existing material will reproduced, translated as necessary, and videos will be converted to formats or broadcasting standards used in other regions.

- Exchange of visits - staff members, national health disaster coordinators, or fellows will be selected to visit countries in other regions to exchange experiences, benefit from initiatives and innovations and/or participate in global meetings on disaster reduction (for instance between the Caribbean the Pacific region).

- Technical cooperation among developing countries - bilateral assistance programs would be encouraged, for example from disaster-prone countries in Latin America to the Caribbean or African nations with similar vulnerability. PAHO will act as a broker, as

necessary and appropriate, to arrange contacts or meetings and, together with WHO, the Red Cross or UNDRO, will monitor the progress made.

9. MECHANISM OF IMPLEMENTATION

PMP activities will be implemented employing the same mechanism used successfully to develop preparedness for natural disasters in the earlier stage of the PAHO Disaster Program.

9.1 Expertise

- Decentralization: technical cooperation activities will be decentralized to a core of full-time field disaster experts who are thoroughly familiar with the countries for which they are responsible. Both disaster management experience and an intimate knowledge of the countries' needs and capabilities (human and material resources, political constraints, priorities, administrative and socioeconomic level of development) are crucial to the success of PMP activities in any sector. Activities at the national level will be carried out by these senior experts stationed in Costa Rica (Central America), Peru (Andean Region), Paraguay (Southern Cone)[3] and Barbados (Caribbean);

- Maximum utilization of local resources: technical or specialized assistance is provided by order of priority, from local manpower or neighboring developing countries. This approach is particularly cost-effective, as local expertise is generally less expensive and more adapted to the local culture and needs. In addition, the experience gained during short-term missions increases the prestige of the local consultants and expands the reservoir of expertise in member countries.

- Other PAHO programs: PAHO has considerable in-house health expertise relevant to PMP objectives, and the contribution of PAHO staff to disaster reduction activities has

[3] Subject to availability of funding.

helped to develop a PMP "culture" within the Organization. This has had a considerable multiplier effect, as the PAHO disaster focal points in every country office promote these activities.

- Development of human resources: the project aims to motivate, train and support *national* human resources. The emphasis is on developing skills and stimulating political will, not on advanced technology or capital-intensive public works.

  For this purpose, the Program relies heavily on developing and broadly disseminating training and educational material, either original or adapted from existing material, developing intercountry courses and workshops on new topics, and multiplying the effect by modestly supporting—by way of technical material, consultants, local costs—the local reproduction of both material and courses.

  Generally, workshops do not exceed five days, are multidisciplinary and require the audience to participate actively.

  Training material is developed at no cost, in-house with the cooperation of other PAHO resources, such as the Department of Information and Public Affairs.

9.2 Field Visits

An important feature of the Project is the frequent visits made to countries. In addition to technical cooperation (transfer of knowledge, advisory functions), the visits of experts and consultants stimulate intense activity from the national counterparts and ensure a faster pace of progress than usually noted in other projects or regions of the world.

9.3 Overall Program Management and Supervision

This function, assumed by the office in Washington, ensures standardization of methods and uniformity of purpose throughout the entire project. Overhead and staff and administrative support costs are kept to a minimum.

10. EVALUATION

The evaluation of this Project will follow the guidelines in the attached document *Evaluation in the Pan American Health Organization (Annex 3).* This document implies that a quantitative, cost-effective analysis of PMP activities, in terms of a reduction in human and economic losses, can be problematic in nature. For example, a hospital that is properly retrofitted to withstand earthquakes and whose medical personnel are adequately trained *could* be considered a very poor investment from a cost-effective standpoint if no earthquake occurs during the duration of the project. On the other hand, such a facility may be looked upon as an effective model, stimulating hospitals and other institutions either locally or regionally to undertake similar projects – a benefit that is difficult to evaluate. Similarly, including disaster reduction (PMP) in the curriculum of some universities will "convert" an unknown number of future professionals by motivating them to adopt prevention measures. This medium- or long-term benefit, which is essential for integrating disaster reduction into sustainable development, can only be subjectively estimated during the *short* time frame of a five-year project.

The Project evaluation will be carried out as follows:

- annual internal evaluations of the Program at the end of each calendar year, as part of PAHO's Organization-wide program evaluation process. The result of this evaluation will be shared with funding agencies.

- including the Disaster Reduction Program in the periodic evaluations of PAHO technical cooperation in selected countries. This evaluation, carried out jointly with the Government, reviews the priorities and the delivery of PAHO's across-the-board technical cooperation at the national level.

- annual staff meetings, which provide an excellent opportunity for critical review of the mechanisms and effectiveness of project implementation. Traditionally, counterparts from bilateral agencies that support the Program participate in this professional meeting.

- a formal mid-term and end-of-project field evaluation, carried out by principal funding agencies. We propose that this evaluation be planned and carried out *jointly* by all major

donors (OFDA, CIDA, etc.) and PAHO. The results should be shared with the countries visited and ideally be broadly disseminated on request.

In line with the proposal to balance the emphasis among the components of the entire disaster cycle – from prevention to relief – we proposed to:

- modifying the title of the quarterly newsletter *Disaster Preparedness in the Americas* to *Disaster Reduction in the Americas*;

- submitting for the approval of the Director of PAHO a change in the official name of the Program from *Emergency Preparedness and Disaster Relief Coordination Program* to *Disaster Reduction Program* or *Disaster Management and Reduction Program.* The present name conveys to countries and donors the impression that PAHO is concerned exclusively with preparedness and relief. No change in the acronym PED is recommended.

11. BUDGET

The total budget of the comprehensive Program (direct costs only) is estimated at US$14,810.000. Of this amount, approximately ___***___ is presently available of pledged.

Most of the supplies and equipment provided by the Project consists of audiovisual material, data and word processing equipment and miscellaneous items. The individual cost rarely exceeds $10,000 and is *usually* under $1,000.

The following table presents a comprehensive five-year budget:

*** amount will be filled in
before document is presented
to OFDA/Washington

DISASTER PREVENTION, MITIGATION AND PREPAREDNESS IN LATIN AMERICA AND THE CARIBBEAN FIVE-YEAR BUDGET

(expressed in thousands US dollars)

	YEAR 1	YEAR 2	YEAR 3	YEAR 4	YEAR 5	TOTAL
GENERAL PROMOTION (8.1)	525	575	625	625	600	2,950
SECTORAL RISK ASSESSMENT (8.2)	225	275	325	325	300	1,450
SECTOR VULNERABILITY STUDIES AND MITIGATION (8.3)	400	600	625	650	650	2,925
INCORPORATION OF PMP INTO ECONOMIC DEVELOPMENT 8.4)	250	350	275	250	210	1,335
MULTI-HAZARD PREPAREDNESS (8.5)	675	600	525	450	400	2,650
TECHNOLOGICAL DISASTERS (8.6)	350	400	400	450	450	2,050
MEDICAL AND HEALTH-RELATED EMERGENCIES (8.7)	250	280	300	310	310	1,450
COOPERATION WITH OTHER REGIONS	COSTS ABSORBED BY OTHER CATEGORIES					
SUBTOTAL DIRECT COSTS (not including PSC (13%)	2,675	3,080	3,075	3,060	2,920	14,810

The shifting distribution of costs among the programmatic components reflects the progressive redirection of emphasis from disaster preparedness and relief to a more holistic PMP approach.

Following is the proposed distribution of budgetary funds by categories:

FIVE-YEAR COST DISTRIBUTION BY CATEGORIES	
Salaries of Experts and Advisors	$ 2,725,040
Salaries of supporting administrative staff (secretaries, messengers, etc.)	1,673,530
Benefits (including recruitment costs, home leave, education allowance, etc., according to rules of Pan American Sanitary Bureau	2,265,930
Short-term Consultants/Temporary Advisors or personnel	1,184,800
Duty Travel	1,184,800
Equipment, supplies and material	1,184,800
Training, meetings and workshops	2,665,800
Personal Services Contracts	1,481,000
Other direct costs (telephone, fax, etc.)	444,300
Sub-total direct costs (not including PSC of 13%)	$ 14,810,000

12. CONCLUSION

The considerable resources that PAHO dedicates to disaster reduction, both directly and indirectly, is testimony to the high priority it places on this effort. Many staff members who are not part of the specialized PMP team, both at headquarters and in the countries, dedicate a significant part of their time and efforts to emergency planning in their specific areas of responsibility. For instance, "emergency preparedness and disaster relief coordination" figures prominently in the assigned duties of the post description of PAHO/WHO Representatives.

PAHO's effort is not limited to budgetary commitments. Periodically, the topic is promoted at the highest political level as well, during subregional meetings of the Ministers of Health and during meetings of the PAHO Governing Bodies.

Promoting and supporting PMP in the health sector of more than 30 nations and territories is a complex and lengthy process, and the level of progress we achieve will vary from country to country. Recent disasters have allowed the international community to note the striking differences between affected countries with well-prepared disaster coordinators and effective prevention programs in the health sector and those without them. The result of no *national* PMP program in the health sector: serious damages and loss of lives; a disruption in medical, water and sanitation services; inappropriate information on needs; delays in formulating priorities; and a shift -- usually too late -- to rehabilitation and reconstruction. At the time of the disaster, these problems cannot be offset by improved coordination at the international level.

The increased efforts of PAHO, with the continued support of OFDA and other agencies, will help to achieve a stable and significant improvement in the status of PMP in the health sector of Latin America and the Caribbean.

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