TECHNICAL COOPERATION STRATEGY IN BASIC ENVIRONMENTAL SANITATION
CEPIS/SDE/PAHO

DOCUMENT FOR DISCUSSION

Pan American Center for Sanitary Engineering and Environmental Sciences
Area of Sustainable Development and Environmental Health
Pan American Health Organization
Pan American Sanitary Bureau – Regional Office of the
World Health Organization

September 26, 2003
1. Introduction

The Pan American Center for Sanitary Engineering and Environmental Sciences (CEPIS) is the regional center devoted to basic environmental sanitation and belongs to the Area of Sustainable Development and Environmental Health (SDE/PAHO).

Basic environmental sanitation is a set of public health technical and socioeconomic actions aimed at achieving incremental levels of environmental health, both in the ecosystem and urban and rural areas. It comprises the sanitary management of water, excreta and wastewater, solid wastes, and sanitary education and behavior change to reduce health risks and prevent contamination. Its ultimate goal is the promotion and improvement of living conditions.

The new organization and functions of PAHO, defined in the HQ-FO-03-02 Directive, gives CEPIS specific responsibilities in basic environmental sanitation. These responsibilities are described within the 2003-2007 Strategic Plan and within the new Management Strategy, which includes the priorities, institutional development, technical cooperation issues, and resources.

This document summarizes the goals, mode of operation, and foundations of the CEPIS technical cooperation strategy. It will be applied in AMPES, internal organization, and the dialogue and relationship with PAHO/WHO and external agencies.

2. Mission

The Mission of CEPIS is to cooperate with the countries of the Americas in controlling risk factors related to deficiencies or absence of basic environmental sanitation that, directly or indirectly, affect human health.

3. Goal

The goal of CEPIS is to improve the life quality and to extend the life expectancy of the populations of the Americas by diminishing health risks associated with basic environmental sanitation within the framework of equity and sustainable development.

4. Purpose

CEPIS purpose is to strengthen national capabilities in the countries of the Region to accomplish essential public health functions in basic environmental sanitation.

5. Expected results

- Strengthen sanitary regulation
- Promote the generation and use of knowledge
- Promote interventions in basic environmental sanitation.
6. **General activities**

Technical cooperation results are constituent and mutually instrumental and are aimed at the incorporation of health issues in the management of basic environmental sanitation. Toward this end, strategic partnerships will be forged with the public and private sectors, civil society, and external cooperation agencies. CEPIS will be involved in the process of reform and modernization of the basic environmental sanitation sector. General activities include:

- **Strengthen sanitary regulation**
  - a) Advise on the definition and implementation of policies and standards
  - b) Promote the adoption of surveillance systems of basic environmental sanitation
  - c) Strengthen the capacity of laboratories to improve analytical quality.

- **Promote the generation and use of knowledge**
  - a) Promote and support the development of applied research on technologies
  - b) Promote and participate in networks of information and specialized collaboration
  - c) Develop with the countries analyses of health and basic environmental sanitation
  - d) Support the exchange of information, taking advantage of the potential of modern communication and information technologies
  - e) Disseminate technological and management models in environmental basic sanitation.

- **Promote interventions**
  - a) Support, advise, and promote programs oriented to the extension of coverage and improvement of service quality
  - b) Promote citizen mobilization through timely information access and hygiene education programs to foster responsible participation in sustainable development
  - c) Advise on programs to reduce vulnerability to natural disasters. Participate in mitigation actions and during emergencies.

7. **Matrix of action**

A holistic approach will be applied in CEPIS technical cooperation, in compliance with the Resolution CD43.R15 of the 43rd Directing Council of the Pan American Health Organization. It envisages the development of instruments to strengthen the regulatory framework (legislation and technical standards); sanitary surveillance; health promotion (health education, community participation, social mobilization); institutional capacity building; analytical quality; and information (see Figure 1). The Matrix of Action has taken into account **essential public health functions** in the Americas, understanding that they represent a set of actions that should be carried out to achieve the core objective: health improvement. These essential public health functions are:

- Monitoring, evaluation, and analysis of the health situation
- Public health surveillance, research, and control of public health risks and damages
- Health promotion
- Citizen participation in health issues
- Policy development and institutional capacity building for public health planning and management
- Strengthening of institutional capacity for regulation and control with regard to public health
- Evaluation and promotion of equitable access to health services
• Human resources development and training in public health
• Quality assurance and improvement of individual and collective health services
• Public health research
• Reduction of the impact on health of emergencies and disasters.

The Matrix of Action details CEPIS specific subjects, cross-cutting themes, and technical cooperation instruments in basic environmental sanitation.

Figure 1
TECHNICAL COOPERATION IN BASIC ENVIRONMENTAL SANITATION
CEPIS/SDE/PAHO

Matrix of Action

7.1 Specific themes

The scope of the specific subjects has been identified: a) drinking water; b) wastewater and excreta disposal, and c) solid wastes.

- **Drinking water**, includes water sources, treatment, distribution, and drinking water use.
- **Wastewater and excreta disposal**, includes collection, treatment, utilization, sanitary excreta disposal, and final disposal to the environment and water bodies.
- **Solid wastes**, include integrated management of dangerous and municipal solid wastes (hospital and industrial), storage, collection, transportation, treatment, and final disposal.
7.2 Cross-cutting themes

Cross-cutting themes to the specific themes consist of: a) information; b) analytical quality assurance of laboratories; c) health education and social participation; d) surveillance and research; and e) prevention and preparedness for emergencies and disasters.

- **Information:** It will be aimed at disseminating up-to-date information, recorded by CEPIS and the institutions that work in the REPIDISCA national networks, through the BVSA or other means. It includes information in full text and databases on basic environmental sanitation.

- **Analytical quality:** It will help improving the capability and analytical quality of environmental laboratories to optimize the comparability of environmental measurements in the Region. It will contribute to the accreditation process of laboratories with public health mandates to perform the control and environmental health surveillance, allowing reliable data for decision-making.

- **Health education and social participation:** The main focus is on hygiene. It will strengthen the processes of governance, decentralization, and citizenship in the countries of the Region for the adequate management of basic environmental sanitation. It includes social participation, understood as the exercise of a responsible duty toward the achievement of efficient and sustainable services that will ensure better health conditions. It also includes the celebration of the Inter-American Days of Water, and Cleaning and Citizenship.

- **Surveillance and research:** It will support countries for the surveillance of health risks related to basic environmental sanitation and the development of applied research to foster changes in public health behavior. It should be implemented along with the Integrated Management of Childhood Illness Strategy (AIEPI).

- **Prevention and preparedness for emergencies and disasters:** It will support the water and sanitation sector to strengthen their response capability so that they can ensure the continuation of basic environmental sanitation services during emergencies and disasters. As well, it will support the formulation of contingency plans by the health sector.

7.3 Instruments

CEPIS’ TC instruments will include: a) knowledge networks; b) appropriate technologies; c) management tools; and d) strategic analyses.

- **Knowledge networks:** Its purpose is to identify, record, process, and disseminate information, facilitating the process of human resources development through distance education or certified self-instruction courses, complementing them with discussion lists, forums, bulletins, and video conferences. Its tools are the networks of institutions and professionals, strategic partnerships, the virtual library, and specialized publications.

- **Appropriate technologies:** Analyzes the link among technology, information, organization, and use, as well as its relation with the ability and willingness to pay and cultural conditions of the beneficiary community. The vision is holistic and the final goal is to achieve sustainable interventions. Tools used include applied research and the evaluation
of projects and technologies related to drinking water, wastewater, excreta disposal, and management of solid waste.

- **Management tools:** It includes guides, manuals, standards, regulations, systematization of experiences (learned lessons), databases, and regional plans to achieve the improvement of the capacity of institutions and professionals involved in basic sanitation. Its tools are the guides, procedures for design, operation, maintenance and intervention, and software programs.

- **Strategic analyses:** The purpose is to evaluate situation indicators of the countries and their policies with regard to emerging and chronic problems derived from deficiencies in basic environmental sanitation. The impact of CEPIS/PAHO programs and its operational plans will also be evaluated. Its tools are the national or regional analyses and analytical reports on drinking water, wastewater and excreta disposal, and management of solid waste; systematized reports (inventories, case studies), and the Information System in Basic Environmental Sanitation (SISAM). SIG will be incorporated. It will participate in the monitoring of the Millennium Development Goals.

8. **Implementation strategies**

To fulfill its responsibilities, CEPIS will adopt an operational structure according to the Matrix of Action described to support the areas of drinking water, wastewater and excreta, and solid wastes.

As an intergovernmental technical cooperation body, CEPIS maintains close relations with the countries of the Region. Being the ministries of health the primary partners of PAHO, an important part of the technical cooperation will support this sector. As well, relations, partnerships, and joint ventures will be forged with other sectors and agencies working in basic environmental sanitation to collaborate in the achievement of national, regional, and global sanitary goals. It includes topics related to the environment, work, planning, education, etc.

The regional situation, international forums, and especially the World Summit on Sustainable Development point out the urgent need of multidisciplinary and multi sectoral work with cooperation agencies. CEPIS for many years has given special importance to alliances with NGOs, collaborating centers, and other partners. The strengthening of the International Networks of Eco clubs and the Primary Environmental Care strategy are proposed.

Within PAHO, CEPIS work is coordinated with the Area of Sustainable Development and Environmental Health (SDE), including its three units: Unit of Local and Urban Development (LU); Unit of Risk Assessment and Management (RA); Unit of Healthy Settings (HS), and the Institute of Nutrition of Central America and Panama (INCAP) to respond the requirements of technical cooperation of the countries in harmony with PAHO/WHO Representative Offices. Activities will be carried out jointly with PED and AIEPI. CEPIS will develop initiatives to accelerate sanitary improvements in Bolivia, Haiti, Honduras, Guyana, and Nicaragua. A portfolio of projects will be prepared to achieve this goal.

Priority will be given to communications.

This document is complemented with an analysis of resources and a new organizational structure will be designed. The assessment of this strategy is associated to AMPES.
9. **Rationale**

9.1 **Situation – Population, health, services**

**Population.** In the second half of the 20th Century the population of the Americas grew from 400 million to 800 million inhabitants. According to CEPAL (Pinto da Cunha, 2002), by the year 2000 South and Central America, Cuba, Haiti, Jamaica, Mexico, and Dominican Republic amounted to 75% of urbanization. Argentina, Brazil, Colombia, Mexico, and Peru recorded the highest rates of population and growth during the 1950-1990 period. The topic of rural population is very important, mainly in Central America, where 35% of the population lives in rural areas. Percentages above this value are found in Haiti (65%), Guatemala (61%), El Salvador (54%), Costa Rica (52%), Paraguay (45%), Jamaica, and Panama (44%), Honduras (41%), Nicaragua (44%), and Bolivia (38%). Whereas it is a slow process, the total population and its urban fraction are increasingly growing in LAC. The Assessment 2000 (PAHO, 2001) showed that during the 1990s, the population grew from 429 to 497 millions.

According to CEPAL, by the mid 1990s there were 14,028 municipalities in 19 Latin American countries and 74% had less than 20,000 inhabitants. For example, in Bolivia, the population of 575 localities (89% of the total) range between 250 and 5,000 inhabitants; in Colombia 870 municipalities (80%) have less than 12,000 inhabitants; in Mexico, 198,311 localities have less than 2,500 inhabitants and are 26% (25.7 millions) of the national population. These localities do not have the benefits of the economies of scale of the big cities and that is reflected in the service delivery limitations. Perez et al. (2002) stated that such limitations may be due to political, institutional, financial, technical, participative, environmental, and sanitary aspects.

In short, whereas urbanization and marginality-related problems in big cities and metropolitan areas are a significant issue in Latin America and the Caribbean, it is also important to take into account the phenomena related to rural areas and small cities and their possible relations with bigger cities in the delivery of basic sanitation services. Rural and urban populations include inhabitants with different levels of marginality and the economic growth of the Region does not benefit them.

**Health.** The lack of basic sanitation services is directly related to the occurrence of water-borne diseases in human populations. Some water-borne diseases include cholera, hepatitis, and diarrhea. Vector-borne diseases include malaria, dengue, yellow fever, and Nile virus fever.

The assessment of the occurrence patterns of cholera and mortality by acute diarrheic diseases in the Region shows a decrease of the number of cases during the last decade. It is important to take into account, however, that these diseases are still a problem, mainly when disasters affect basic sanitation services. For example, the descendant trend of cholera cases observed during 1991-1997 was reverted when cases reported in 1998 exceeded 3.2 times the number of cases reported the previous year. Whereas 73.1% of these cases occurred in Peru, a significant increase happened in Ecuador, Guatemala, Honduras, and Nicaragua in relation to 1997. In Peru and Ecuador, this situation may be due to El Niño phenomenon and in Central American countries, it may be due to the Mitch Hurricane.

Vector-borne diseases are also a public health problem in the Region, where 44,519 cases of dengue and 1.14 millions of cases of malaria were reported in 2000 (Health situation in the Americas, 2002). It is important to point out that the burden of water-borne and vector-borne
diseases not only affect the health public system but also lead to work and school absenteeism and loss of incomes.

Some segments of the population are more vulnerable to diseases related to the lack of basic sanitation services. Urban-marginal and rural areas usually do not have these services. Lack of knowledge on hygiene practices and the inadequate management of water and wastes for risk control characterize these areas. Besides, malnutrition and the limited medical services may modify the severity and even the likelihood of dying owing to these conditions.

Children are especially vulnerable. They drink more water than an adult does in proportion to their weight, which involves the entrance of a greater quantity of organisms present in water. Since the body of a child is still developing, his/her organs are more vulnerable to the adverse consequences that the agents of water may cause.

In 2000, PAHO reported that the mortality rate in children under five ranged between 7 and 101 deaths per 1,000 live births, with an average of 38 deaths per 1,000 live births for the Region (Health Situation in the Americas: Basic Indicators 2002). This rate is higher than the rate reported in industrialized countries, where the average rate that year was 6 per 1,000 live births (We the Children, Meeting the Promises of the World Summit for Children, 2001). Diarrheic diseases are one of the main causes of mortality in children under five in the Region. In 2001, these diseases caused virtually 8% of the deaths for this age group, for an estimated of 39,000 deaths (Special Program for Health Analysis and Program on Communicable Diseases, 2001). WHO has estimated that 90% of diarrhea cases worldwide in children under five are due to environmental factors (Children in the New Millenium, 2002).

Lack of basic sanitation services is an environmental factor that represents a health risk, especially among the most vulnerable. It has been pointed out that mortality rates in children under five are lower in countries where the coverage of drinking water supply is greater (Figure 2). Also, mortality rates in children are lower in countries of the Region where sanitation coverage is greater (Figure 3). The improvement of environmental sanitation services will therefore contribute to achieve the goal of reducing by two-thirds the under-five mortality rates.

Considering the health consequences alluded to above within the context of sustainable development, it is imperative that natural water resources be protected. It is not only sufficient to provide the quantity of water required but also to ensure that the quality of the water is adequate for the uses already mentioned, i.e. potable water, irrigation, recreational, among other uses, without adverse health consequences in an economic and practical manner. Hereewith lays the direct link between the protection of water resources and basic sanitation. The quality of water resources is the basis for determining the level of wastewater treatment required. In LAC however, municipal, industrial and agricultural wastewaters are discharged without adequate, if any, treatment. The contamination of groundwater resources is in general not reversible economically. Besides, there is the problem of quantity reduction of suitable water sources for human consumption due to contamination, over exploitation, and competition.
Correlations between the coverage of water and sanitation and child mortality rate in Latin America and the Caribbean

Fuentes: We the Children, 2001
Informe Regional sobre la Evaluación 2000, 2001
Situación de la Salud en las Américas: Indicadores Básicos, 2002

Services. According to data and information based on the Assessment 2000 in the Americas, currently with a population of 497.3 million people, 84.59% of the population has drinking water services, either with connection or easy access to a public standpipe. This means that 76.5 million people (15.41%) do not have access to some form of safe drinking water. There is the added fact that around 53.9 million people (10.86%) get water through systems defined as “easy access” that represent a significant health risk, mainly for the most vulnerable populations, such as children and the elderly.

In addition, it is estimated that in Latin America and the Caribbean more than 219 million people, representing 60% of the population served through house connections of drinking water, are served by systems with intermittent operation. Considering that control, health surveillance, and quality certification for these systems are almost nonexistent, they are a permanent risk for the users. It is observed that the population served by inefficient systems in terms of continuity, frequently use health care services owing to diarrhea and other water-related diseases.

A study conducted by CEPIS in 1994 estimated that only 59% of the population of Latin America and the Caribbean received disinfected water regularly. In 1995, 23 countries of the Region notified that the majority of the people living in urban communities received water in accordance with WHO guidelines for drinking water quality. However, the same does not occur in rural areas.
In Latin America and the Caribbean only 241.3 million people, 48.6% of the population, are connected to conventional sanitary sewerage systems and 151.9 million people, 30.6% of the population, are served by on site sanitation systems, such as latrines, septic tanks, among others.

It is estimated that 103.2 million people, 20.7% of the population of Latin America and the Caribbean, do not have wastewater and excreta disposal systems, of which 37.0 millions, 10.15%, correspond to urban areas and 66.1 million, 50.4%, to rural areas. Lack of wastewater treatment continues to be one of the most serious sanitary problems in the Region, especially in the Caribbean. The Assessment 2000 indicates that only 13.7% of the wastewater collected by the sewerage systems is treated.

At the regional level, there are several critical issues still not solved. Some of them are: insufficient political support of the governments to sectoral institutions, lack of sanitary awareness in the population, urgent need to change methodologies and criteria to finance wastewater treatment facilities, inadequate environmental policies, institutional deficiencies, and the need of technical standards for waste disposal and treatment.

The Region generates daily more than 360,000 tons of household refuse, with an ever-decreasing content of biodegradable wastes and more hazardous residues (insecticides, paints, inks, disinfectants, batteries, etc.). The collection coverage in the majority of medium cities ranges between 50 and 70%, while in many perurban areas of large and small cities, as well as in rural towns, collection services are even more deficient or in many cases they do not exist.

It is estimated that more than 70% of the waste is disposed of in open dumps, in watercourses, in the streets or are used as swine food. Less than 30% of the waste goes to sanitary or controlled landfills.

In the majority of the cities hazardous wastes (from hospitals and industries) are handled jointly with municipal waste and its final disposal is done in open dumps (3,600 t/d of hospital wastes are estimated, of which more than 600 tons are dangerous).

More than 100,000 families are dedicated to informal waste recycling in open dumps. They work in unhealthy conditions and represent more than 300 thousand people, of which nearly 30% are children.

9.2 Situation – Institutional aspects

The organization and operation of the sector has not ensured adequate access to water and sanitation services for nearly a fourth of the population in the Region. Health protection goes beyond safeguarding water quality for human consumption. Distributing water of good quality, with continuity and at accessible prices requires a well-organized, regulated and administered sector, and high-level human resources. Water quality standards and surveillance laboratories cannot contribute significantly to service quality improvement if water utilities do not guarantee good operation and maintenance of their installations and if limitations of coverage and inequities are not solved.
To overcome these limitations, actions are required aimed at strengthening the capacity and performance of the institutions according to current trends in the Region. This includes decentralization and participation of the private sector, NGOs, and grassroots organizations.

**The role of the ministries of health.** Health authorities play an important role in the promotion, surveillance, and regulation of water and sanitation services. As pointed out in the World Health Organization report to a special session of the United Nations General Assembly, June 1997: “The 21st century requires a new health system that favors alliances based in the health of the population foreseeing events rather than reacting to them.”

Distinguishing responsibilities of the health authority and the specific role of responsible sectoral institutions, the ministries of health should monitor and advocate basic environmental sanitation. The participation of the ministries of health includes objectives associated with public health, universal coverage of services, abatement of inequities, and search for sustainable human development. It includes the essential functions discussed in (7).

### 9.3 Integration and priorities

The effective management of public health requires a vision of continuum for basic environmental sanitation. This vision of continuum includes: a) the environment, b) services and systems, and c) the population. The **environment** includes water sources for drinking, food production, and recreation. **Services and systems** include municipal water supply and sanitation services, waste management, regulatory frameworks, and water quality surveillance systems of the ministries of health, among others. The **population** includes the families of urban, rural, and urban fringe areas that can be affected by gastrointestinal diseases associated with poor basic sanitation services, inappropriate hygiene practices, and limitations of water for production. The issue of healthy households plays an important role in this context. See Figure 4 for details on this continuum of the basic environmental sanitation.

Human development is the process of increasing people’s options by expanding their essential capabilities: health, knowledge, resources, and basic rights. Equitable access to these capacities is a central element for sustainable development. Poverty is basically the privation or reduction of these capabilities. It has been demonstrated that basic environmental sanitation is instrumental for the construction of these essential capabilities. Increasingly, the management of basic environmental sanitation is associated with the struggle against poverty and there are explicit challenges in the Millennium Development Goals (MDG).
Figure 3

The continuum of basic environmental sanitation in public health management

9.4 Mandates and regional commitments

a) PAHO and WHO

The work of the Organization is framed under the Health for All goal and WHO work programs. The Office has regional mandates of different origin, mainly the resolutions of the Governing Bodies of PAHO. We point out the Strategic Plan of the Pan American Sanitary Bureau for the period 2003-2007; Resolution CD43.R15, Document CD43/10 related to Health, Water, and Sanitation in Sustainable Human Development, and CSP26/17, R16 related to the conclusions of the Hemispheric Meeting of Ministers of Health and Environment held in Ottawa in 2002. Finally, the Directive HQ/FO-03-02 describes the organization and functions of the different offices at the level of the Central Office, Areas, Units, and Centers of the Pan American Health Organization and indicates the functions of the Area of Sustainable Development and Environmental Health (SDE). See Appendix 1. The
b) Global

Mandates of international meetings for which WHO or the Office assumes responsibility. These international mandates include:

- The eleven WHO priorities for the period 2002-2005
- WSSD, Johannesburg (2002)
- Agreements of world conferences that addressed issues of population and health (Cairo, 1990), social development (Copenhagen, 1995), and environment and sustainable development (Rio de Janeiro, 1992).

c) Regional

Mandates of regional meetings for which the Office assumes a specific responsibility include:

- Commitments contracted at the Summits of the Americas held in Miami (1994), Santiago (1998), and Quebec (2001).
- Commitments from the Ibero-American Summit of Panama (2000).
- Hemispheric Meeting of Ministers of Health and Environment of the Americas (Ottawa 2002).

An examination of this list indicates a series of general goals with which the Region is committed: a) reduction of extreme poverty; b) equity in development; c) human rights and democracy; d) sustainable development; and e) protection of vulnerable groups.

10. Synthesis

The CEPIS/PAHO technical cooperation strategy in basic environmental sanitation is based on the understanding of the Region situation and its trends, as well as on the Organization mandates. The strategy proposes objectives related to public health and an integrated concept of basic environmental sanitation. These objectives are framed within the principles of human development and safety. Three axes of work have been taken into account to address the management of such objectives: Specific Topics, Cross-Cutting Themes, and Instruments (Figure 4).
Figure 4

Technical Cooperation Strategy in Basic Environmental Sanitation

MATRIX OF ACTION

Sustainable Development / Human Security

Core-cutting themes

Information
Analytical quality
Social participation
Surveillance and research
Vulnerability

Strategic Analysis

Management tools
Knowledge networks
Appropriate technologies
Instruments

Expected results
- Strengthen regulatory capacity
- Promote generation and use of knowledge
- Promote interventions

Goal
- Reduce health risks associated with BES

Specific themes

Drinking water, Wastewater and excreta, Solid wastes

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Annex 1

PAN AMERICAN HEALTH ORGANIZATION

DIRECTIVE No.: HQ/FO-03-02 1 March 2003

DISTRIBUTION: To All Staff

SUBJECT: New Organizational Structure and Functions

Objective

On 1 March 2003 the Pan American Sanitary Bureau (PASB) underwent significant modifications in its organizational structure:

Functional Descriptions

3. OFFICE OF THE ASSISTANT DIRECTOR (AD)

The Office of the Assistant Director includes four Areas: Disease Prevention and Control (DCP), Sustainable Development and Environmental Health (SDE), Family and Community Health (FCH), and Technology and Health Services Delivery (THS).

3.3. Sustainable Development and Environmental Health (SDE)

- Designs and implements technical cooperation to address the relationship between health conditions and the physical and psychosocial environment for attaining human security.
- Supports countries in the design and implementation of intersectoral approaches focusing on the relationship between health and sustainable development.

The Area of Sustainable Development and Environmental Health is comprised of five units: Local and Urban Development (LU); Risk Assessment and Management (RA); Healthy Settings (HS); Pan American Center for Sanitary Engineering and Environmental Science (CEPIS), and the Institute of Nutrition of Central America and Panama (INCAP).

Local and Urban Development Unit (SDE/LU)

- Promotes health as an essential element to assess and drive the sustainability of the development of local communities and cities (including metropolis).
- Develops participative methodologies to analyze, identify, and promote effective health interventions that positively affect the determinants of health in these environments.
- Supports country efforts in the development of affordable and sustainable water and sanitation services.

Risk Assessment and Management Unit (SDE/RA)

- Strengthens environmental health institutions to perform health surveillance, adopt adequate regulations and promote public health interventions that will help prevent health hazards.
- Promotes the use of risk assessment and risk management concepts to guide technical cooperation activities.
• Develops institutional capacity for the promotion of risk management, including tobacco use prevention, providing the necessary elements to influence other sectors responsible for reducing risks that can damage health.

**Healthy Setting Unit (SDE/HS)**

• Promotes the design and implementation of health promotion strategies as a collective intervention to achieve healthy settings.
• Provides technical cooperation that embodies the application of methodologies and models of healthy spaces such as healthy municipalities, healthy communities, healthy workplaces, and healthy schools with a view to prevent and minimize risks, including intentional and unintentional injuries.

**Pan American Center for Sanitary Engineering and Environmental Sciences (CEPIS)**

• Provides regional technical cooperation on basic sanitation with a view to strengthen national institutions and build capacity in the management of health aspects related to water supply for human consumption, sanitary excreta and solid waste disposal, with an emphasis on PAHO priority countries and the most susceptible populations.

• Leads collaborative efforts and establishes networks among collaborating partners and relevant stakeholders, centering actions on the identification, development, adaptation and dissemination of concepts, methods, tools and experiences applicable to the promotion of studies and technologies that can ensure the best possible basic sanitation conditions.

**Institute of Nutrition of Central America and Panama (INCAP)**

• Strengthens national capacities of its member countries to implement the food and nutrition security initiative as an essential strategy for human sustainable development.
• Promotes the local integrated community development approach and helps develop and disseminate knowledge, methods, technologies and models for achieving an optimal food and nutritional situation.