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EVALUATION OF PAN AMERICAN CENTERS: PAN AMERICAN CENTER FOR HUMAN
ECOLOGY AND HEALTH (ECO)

This document describes the evaluation of the Pan American Center for Human Ecology and Health (ECO) and, in addition to the complete report, summarizes the conclusions of the External Evaluation Group.

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Sao Paulo, Brazil

The Group carried out its evaluation during the period 20 June-
19 July 1983.

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ANNEX

REPORT OF THE EXTERNAL EVALUATION GROUP
ON THE PAN AMERICAN CENTER FOR
HUMAN ECOLOGY AND HEALTH (ECO)
20 June - 19 July 1983

Pan American Health Organization
World Health Organization
20 July 1983

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EXECUTIVE SUMMARY

Based on the resolutions of the governing bodies of PAHO, the Director of the Organization established an External Evaluation Group which was asked to make a four week study of the Pan American Center for Human Ecology and Health (ECO).

While in Washington, the External Evaluation Group was given overview briefings for the overall PAHO program along with more detailed briefings on the PAHO Environmental Health Program. The Evaluation Group or its individual members visited Peru, Brazil, Colombia, Honduras and Mexico. During its study the committee met with over 100 individuals representing PAHO in-country teams, Ministers of Health, other Ministries and agencies concerned with environmental matters or workers' health, governmental research agencies and university personnel. The Evaluation Group interviewed each member of the ECO professional staff for approximately one hour while visiting the Center. One full day was spent discussing documentation requested from the ECO Director and a list of questions submitted to the ECO Director several days before the in-depth discussions.

Member Countries expressed particular interest in enhancing the information services provided by the Center and in assuring that the Center would be able to provide advisory services and technical assistance in the areas of toxicology, environmental epidemiology and the safe use of pesticides. There was also interest in ECO's training programs. Of major importance to each country was having PAHO provide assistance in occupational health. Countries also expressed a need for information and other assistance in delineating the potential health risks associated with industrialization and industrial discharges.

The evaluation group found that ECO had some major accomplishments since it began operations over eight years ago. These include assembling an interdisciplinary team, providing advisory services to 22 Member Countries, providing needed information services (about 100 requests a year), initiating a series of publications (newsletters, guidelines, training materials), undertaking a variety of collaborative demonstration or research projects in eleven countries, and working through universities, governmental agencies and governmental research institutes to provide needed training.

The Center has been handicapped by a number of problems including difficulty in structuring a workable, coherent program; changeable program recommendations from its Scientific Advisory Committee; isolated location of its facilities; excessive turnover of professional personnel; a rapidly eroding support personnel base; and until recently, poor integration into the overall PAHO program, especially the environmental health component. The Center currently does not have the core professional staff required to carry out its program and meet the needs of Member Countries.

With regard to its specific terms of reference, the Evaluation Group found the following:

- ECO has been developed in accordance with the resolutions of the Governing Bodies and recommendations of its Scientific Advisory Committees. However, the Evaluation Group also found that ECO's failure to focus and integrate its programs was in large part a result of malfunction of the scientific advisory mechanism.

- ECO has been of considerable assistance to a number of universities, research and governmental organizations in the Host Country.

- Member countries visited were interested in ECO programs but often not knowledgeable about the Center. The image of the Center was variable, depending on the quality of advisory services provided.

- There is a well recognized need to fully integrate the activities of ECO into the overall PAHO program. Progress has been made during recent months, but further efforts are needed.

- ECO should work directly with individuals and organizations in Member Countries who request publications or readily available information. Requests for advisory services and technical assistance as well as involvement in training programs and applied research should be channeled through the PAHO country team. Whenever possible, PAHO and ECO work in close collaboration with Ministries of Health, but direct contacts with other governmental agencies is sometimes appropriate. Present communication systems are quite slow and cumbersome. Steps should be taken to make the flow of communications more timely and efficient.

- Supplementary activities of interest to member countries include fully developing the ECO information system, consultative and advisory services in environmental epidemiology, a wider variety of training materials, and toxicologic information needed for the control of industrial discharges and the safe use of commercial and agricultural chemicals, especially pesticides.

- The core professional staff of ECO should include six rather than eight positions. Two vacancies should be used to recruit an environmental epidemiologist with expertise in biostatistics and methods development, and a physician-epidemiologist knowledgeable in toxicology and experienced in the investigation of clusters of disease cases thought to be environmentally related. A librarian, support staff, and some equipment for the information system is required if this system is to be fully developed.

The Evaluation Group made a number of specific recommendations; the most important are as follows:

- The Center should be promoted vigorously and its Director supported in his efforts to further refine the focus of ECO's activities giving special emphasis to toxicology, to the safe use of pesticides, to environmental epidemiology and to the health basis for contamination control of the environment.

- ECO should work through, and strengthen, national institutions so that countries become more self-sufficient.
- ECO should play a role in fostering and coordinating research projects carried out by a network of institutions in Member Countries.
- The information system of ECO should be strengthened and fully developed with its resources being made available through REPIDISCA* and BIREME.**
- Whenever appropriate, English and Portuguese translations of ECO publications should be provided. This is especially important for training materials likely to be utilized by non-Spanish speaking persons.
- ECO should continue preparing needed training material in toxicology, epidemiology, environmental assessment and occupational health with actual training activities being conducted by universities and appropriate national research institutions.
- A personal professional development plan should be developed for each professional staff member stressing readily available short term training, but recognizing that medium-term training lasting several months may be necessary.
- Primary responsibility for planning and implementing the PAHO occupational health program should be with PAHO Headquarters, with ECO playing a mutually agreed upon role.
- Within Member Countries, ECO, when requested, should foster inter-sectoral coordination of national environmental health research and environmental contamination control programs.
- The Scientific Advisory Committee should be restructured to ensure better continuity, improved coordination with other parts of PAHO, more responsiveness to the needs of Member Countries and more appropriate professional representation (see section 7.1 for details).

The Evaluation Group developed two options for consideration by the Director of the Organization. The first option, which the Group recommends, involves strengthening the Center by recruiting needed professionals into vacant positions, purchasing equipment for the information system, relocating Center operations to Mexico City and reversing the erosion of support staff. If this is not feasible because of resource constraints, under the second option Center operations should be phased out in an orderly manner shifting some functions (environmental epidemiology, training and information systems) to CEPIS and others (occupational health and toxicology) to PAHO Headquarters.

The Evaluation Group wishes to acknowledge the assistance and cooperation of PAHO staff, both in Washington and in the Member Countries visited.

* Pan American Network of Information and Documentation on Sanitary Engineering and Environmental Sciences

** Regional Library of Medicine

We also want to thank the Center Director and his professional staff for their candor, cooperation and assistance. The Evaluation Group is especially appreciative of the help given by Dr. Elsa Moreno and her staff in the preparation of this report.

1. INTRODUCTION

1.1 Purpose and terms of reference

The purpose of the mission was to evaluate the Pan American Center for Human Ecology and Health (ECO) in response to a resolution of the Governing Bodies, and present to the Director of PASB a report of the evaluation with conclusions and recommendations on the performance and future activities of ECO.

The terms of reference proposed to the External Evaluation Group were:

- a) Evaluate the progress accomplished by ECO in accordance with the resolutions of the governing bodies and recommendations of the Scientific Advisory Committee.
- b) Establish the importance of the Center to the Host Country as well as to the other Member Countries.
- c) Determine the need of integration of ECO's program within the overall programming of PAHO.
- d) Study the mechanisms which ECO currently utilizes for relating with the Member Countries, and determine those which ECO should continue to utilize.
- e) Identify supplementary activities of interest to the countries.
- f) Analyze the priorities identified for ECO's activities. Based on these, determine the need for reprogramming the Center's activities, including financial implications, other resources and the technical composition which the Center's basic nucleus should have (number and specialties of the technical and scientific personnel, and number and type of support personnel required).

1.2 Members of the Evaluation Group

Dr. Manildo Favero (Brazil)
Professor of the Department of Epidemiology and
Preventive Medicine
Coordinator of the Human Ecology Unit of Campinas State
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Former Director of the US National Institute for Occupational Safety
and Health (NIOSH) and the Research Triangle Park, Center of the
US Environmental Protection Agency (EPA)

Mr. César Macher (Peru)

Industrial Engineer, Expert in Industrial Hygiene and
Environmental Pollution

Former Manager of PAHO/UNDP projects under the programs for
the control of environmental pollution (water, air, soil)
at FEEMA, Rio de Janeiro, and of air pollution at CETESB,
Sao Paulo, Brazil

1.3 Evaluation procedure

The Evaluation Group began its mission with briefings at the Central Office in Washington for two days. During that time, the Group received information on the structure and programs of PAHO, with more depth and detail provided on those activities of which could be considered more directly related to human ecology and health.

Relatively more time was dedicated to the Programs in Environmental Health, Workers' Health, Epidemiology, Tropical Diseases, Adult Health, Maternal and Child Health, Veterinary Public Health, Health Personnel and Health Services. The group then received more detailed briefing on the background, objectives, activities and present situation of ECO. The group received available selected basic documentation relating to the Center. Afterward, the terms of reference were discussed and clarified with the technical personnel of the Environmental Health Program. The PASB Director stressed the importance of the mission and his support for the Evaluation Group.

The next step involved visits to PAHO offices in the countries, institutions and national authorities in four countries: Brazil, Colombia, Honduras, and Mexico (in accordance with the program established by PAHO), with a view to discovering their perceived needs, their relations with ECO, the types and quality of technical assistance and advisory services received, as well as the areas of interest for future cooperation as established in the terms of reference. In addition, in accordance with procedures established by PAHO, the two Latin American consultants spent a week prior to joining the group visiting designated institutions in their own countries so as to obtain the information required for the evaluation of their respective countries from origin (Brazil and Peru). The Evaluation Group discussed ECO and its program with over 100 responsible officials, environmental scientists and health professionals. Likewise, the Group visited the Center where it met with the Director and his staff and reviewed the existing documentation with the objective of adding depth to its information about ECO. The Evaluation Group solicited information from the Center's staff by means of a written request for 19 items (see Annex I) as well as through 15 questions submitted to the Director of ECO prior to an 8-hour discussion (see Annex II). Each professional staff member was individually interviewed by one or more of the

Evaluation Group. The activities of the Evaluation Group were accomplished between 20 June and 19 July 1983.

1.4 Acknowledgements

The Evaluation Group wishes to express its appreciation to Dr. Carlyle Guerra de Macedo and Dr. Pedro Acha for their assistance in carrying out the clear terms of reference prepared by the PAHO staff. It would like to commend Eng. Guillermo Dávila and Dr. Rene Mendes for their advice, assistance and encouragement during US visits with responsible health professionals at PAHO Headquarters in Peru, Brazil, Colombia, Honduras and Mexico. It also wishes to commend Dr. Jacobo Finkelman and the professional staff of ECO for their candor, thoughtful comments and full cooperation.

The group is deeply grateful to Dr. Elsa Moreno, PAHO Area II Representative, who has made available necessary office space and secretarial support for the preparation of this report. Dr. Moreno was also most helpful in providing advice to the Evaluation Group and helping arrange its schedule of visits in Mexico.

The Group especially appreciates the efforts of PAHO Country Representatives and sanitary engineers in the countries visited who arranged for it to meet with over 100 responsible officials concerned with environmental and occupational health.

2.0 GENERAL INFORMATION ON ECO

2.1 Genesis

The Center was established after countries of the Region asked for a comprehensive review of relationships between mankind and the environment, recognizing the need to help Member Countries, strengthening their capabilities to cope with health-related problems attributed at least in part to the rapidly changing human environment. The Center was to concern itself with two general kinds of activities, those related to detection of an unfavorable state of health in a population attributed to human-environmental interactions and those designed to maximize the health benefits of economic and social development and to minimize the adverse impacts on human health of environmental changes associated with urbanization, industrialization, agricultural development and other large scale development projects.

The Center was established to supplement already existing centers and as a complement to assistance already offered through regional and national offices: The Basic Agreement between the Director and the Government of Mexico was signed in 1975. The government of the State of Mexico later (1977) made a formal agreement with PAHO. In this later 1977 document, the State of Mexico agreed to provide additional resources to the Center, including the building which presently houses the Center. The building was first occupied in July 1980.

2.2 Objectives, goals and strategies

The general frame of reference for the Center was to advocate and utilize a broader mode of thinking about health and its promotion. This human ecology approach deals with the total interrelationships of human populations within the context of the physical, biological, social, economic, and cultural components of the environment, including associations within the human population, between populations and with other species. It was thought that this ecological approach would complement and supplement more traditional environmental health programs. From the beginning, it was recognized that available resources would limit the extent of involvement in projects and the number of projects which could be undertaken. By and large, the Center has been guided in establishing its overall objectives and its more specific program goals by the guidelines, comments and recommendations provided by its Scientific Advisory Committees.

The Scientific Advisory Committees of 1975 and 1976 established the following six objectives for the Center:

- Develop methodologies to identify, define and monitor human health problems related to environmental change and develop a mechanism for setting priorities.
- Provide information needed for early warning of emerging environmental health problems.
- Promote, advise and alert governments to the need for programs and actions designed to prevent or minimize adverse human health effects resulting from environmental changes.
- Collaborate in the formulation and dissemination of environmental health criteria and guidelines to be used in the development of realistic environmental health standards.
- Determine the educational needs and assist in developing training programs in health-related human ecology.
- Conduct, support and promote studies and research including the development of relevant indices and preventive measures.

The early Advisory Committees recognized that having the Center participate by invitation in the environment impact assessment process could afford opportunities for testing methodologies and working with those responsible for making key decisions in socioeconomic development projects. It was also recognized that the Center should serve as an information resource for Member Countries, that the Center needed access to a variety of information sources not readily available in each Member Country, and that the Center should have the capacity to evaluate relevant information and to combine and integrate data sources. The Advisory Committees and the Center fully expected that the priorities and the focus of technical assistance,

information, training and research programs would be altered in accordance with experience and the needs of Member Countries.

The Third Scientific Advisory Committee recommended in 1980 that the Center more adequately harmonize its activities with the objectives, goals and projects within the Pan American Health Organization and that ways be found to improve further the coordination and cooperation with other PAHO centers, especially the Pan American Center for Sanitary Engineering and Environmental Sciences (CEPIS). The program of ECO was redefined with disease prevention and control, occupational health, ecotoxicology and environmental epidemiology, along with basic environmental sanitation being added to such previous areas of activity as the health benefits and impacts of community and economic development and providing specialized information and communication.

There were additional redefinitions and shifts in goals and priorities following the 1982 Scientific Advisory Committee report. More emphasis was given to control of chemicals hazards to health. Disease prevention and control efforts were more directly addressed and focused on the control of vector-borne disease of agro-sanitary importance. Basic environmental sanitation activities were eliminated as a separate program area and incorporated into other programmatic categories. Additional consultations and meetings have been held by PAHO headquarters to ensure that the objectives, goals and program of the Center harmonize with other approved PAHO programs, especially those dealing with environmental and occupational health.

The 1982 report of the Scientific Advisory Committee also made recommendations for setting priorities for the Center activities, recognizing that many more proposals arise for consideration by the Center than can be served, given existing resource constraints. The committee recognized the need for meticulous review of project proposals and recommended that the number undertaken be small. The following criteria were recommended for assigning priorities to projects:

- A central emphasis should be on projects where several members of the Center can form a cohesive task force.
- Projects should fit into defined program areas, so that the knowledge and experience gained in one will have application to others.
- Projects should yield results that will be useful in places and countries in addition to the site the project is performed.
- Care should be taken to select projects that are sharply defined and amenable to known methods of evaluation.

2.3 Present functions and programs

The basic functions of all Pan American Centers apply to ECO: advisory services to Member Countries, information evaluation and dissemination, education and training and participation on research. The emphasis given to

each of these functions shifts from time to time in accordance with the needs of Member Countries and the overall policies and programs of PAHO.

There are currently (1983) two program areas of work in the Center, which are as follows:

- Worker's health
- Health effects of industrial contaminants .

Twenty specific goals, some of which involve more than one project are included in the current program plan (AMPES 1983). Advisory services, training activities and projects are being developed in 13 Member Countries. The Center, following the 1982 Scientific Advisory Committee Meeting, has given special emphasis to the health benefits and potential health risks associated with industrial development and to the closely related matter of occupational health.

2.4 Organization

The Pan American Center for Human Ecology and Health (ECO), which is one of several Centers that are part of the Pan American Health Organization (PAHO), is administered by a Center Director who is appointed by the Director of the Organization. In the organizational framework of PAHO, this Center functions as a service branch of the Environmental Health Program (HPE).

In order to carry out the various work program areas that have been successively identified, based on resolutions of the Governing Bodies of PAHO and the recommendations of the ECO Scientific Advisory Committee. ECO has a small professional and support staff without a formal organizational structure. From the administrative point of view, the professional staff of ECO constitute a group of specialists in various disciplines that have either been selected or assigned to the Center. The professional areas represented basically provide an interdisciplinary character to the Center. The professionals are assisted by a support staff of nine. It was noted that of these nine, there are three permanent employees, five are temporary (including the administrator), and one is on local contract. Cleaning and garden services are subcontracted locally by ECO. The guard service for the building is at present provided as a courtesy by the Government of the State of Mexico.

The personnel of ECO (July 1983) are distributed as follows, according to position title and rank:

<u>FUNCTIONARY</u>	<u>POSITION TITLE</u>	<u>GRADE</u>
Dr. J. Finkelman	Director	P5
Dr. A. Arata	Entomologist	P5
Dr. N. Fernicola	Toxicologist	P4
Dr. M. Gajraj	Environmental System Analyst	P4
Dr. R. Lord*	Ecologist	P5
Biol. M. Mitastein	Manager of Information System	P3
Dr. T. Schorr	Social Anthropologist	P3
Ms. M. Solis	Administrator	G8

and, eight technical or administrative persons with posts equivalent to G grades.

* Has requested early retirement on Aug. 30.

The Evaluation Group considered it important to present a tabular summary of the position title, university training, and experience of each of the professional staff of the Center. (See Table 1.)

TABLE 1

POSITION TITLE, UNIVERSITY TRAINING AND PROFESSIONAL EXPERIENCE OF CORE PERSONNEL

POSITION TITLE	UNIVERSITY TRAINING	PROFESSIONAL EXPERIENCE
Director (Dr. Finkleman) Mexico	-M.D. (1966) -M.P.H. and Administration (1970) <u>Short courses</u> -Organization Planning and Program Development of Public Health Services -Epidemiology -Social Security	-1969/77 Mexican Institute of Social Security, Medical Services/Epidemiology -1969/76 University Professor in Medical Sciences/Public Health -1977/81 Epidemiological Surveillance (PAHO/WHO) Regional -1981 Director, ECO
Entomologist (Dr. Arata) U.S.A	-B.S. Biology and Chemistry (1954) -M.S. Zoology and Botany (1957) Ph.D. Zoology (1962)	-1954/68-University Professor of Biology and Epidemiology. 1968/79-Scientist Ecologist in WHO - Biology and control of Vectors in Geneva. -1979/81-Biological and Control Research on Vectors, PAHO Center, Maracay, Venezuela. -1981-Entomologist in ECO
Environmental Toxicologist (Dr. Fernicola) Argentina	-Pharmacy (1955) -Biochemistry (1959) -Ph.D. Pharmacy and Biochemistry (1962)	-1955/75-University Professor of Chemistry and Toxicology. -1976/82-Toxicologist at FUNDACENTRO, USP, CETESB and STC for PAHO as Professor of Ecotoxicology. -May 1982-Environmental Toxicologist at ECO

TABLE 1 (cont.)

POSITION TITLE	UNIVERSITY TRAINING	PROFESSIONAL EXPERIENCE
Environmental Systems Analyst (Dr. Gajraj) Guyana	-B.S. Chemical Engineering (1967) -Ph.D. Chemical Engineering (1973)	-1968/78-University Lecturer in Chemical Engineering. -1978/81-Research official for UNEP/ECLA Project entitled "Caribbean Action Plan." -1981-Environmental Systems Analyst
Ecologist (Dr. Lord) USA	-B.A. Zoology (1950) -M.S. Zoology (1953) -D.Sc. Vertebrate Ecology (1956)	-1957/61-Ecological investigation of wild rabbits. 1962-PAHO Zoonosis Center, investigation and ecological studies of foxes -1963-U.S. Atomic Energy Commission, probable environmental effects resulting from a nuclear war. -1964/70-Center for Disease Control (Atlanta), ecological investigation of arbovirus. -1970/75-CEPANZO, PAHO/WHO, Argentina. -1975/79-Variou ecological investigations in the Venezuelan Institute for Veterinary Research, as a PAHO consultant. -1979/83-Ecologist in ECO working with problems of human health due to industrial development
Manager of the Technical Information System (Biol. M. Mitastein) Mexico	-B.A. Biology (1960) -M.S. Biology (1978) -Various short courses in: Landscape Architecture, Planning and Assessment of Rural Projects,	-1972/75-Chief of the Soils Office, Subsecretariat of Health and Assistance, Mexico. -1962/64-Teaching of Chemistry, History,

TABLE 1 (cont.)

POSITION TITLE	UNIVERSITY TRAINING	PROFESSIONAL EXPERIENCE
M. Mitastein (cont.)	Information on the Origins of Contamination, and Epidemiology	Embryology, Biology and Botany, UNAM, Mexico. -1981/82-Conferences in Ecology, Environmental and Occupational Health Information Systems. -March, 1979-Manager of the ECO Information System
Behavioral Scientist/ Sociocultural Anthropologist (Dr. Schorr) USA	-B.A. Social Anthropology -Ph.D. Ecological Anthropology, regional development and sociocultural change.	-1965/67-Assistant Professor, Department of Anthropology and Department of Tropical Medicine and Public Health, Tulane University and the Universidad del Valle, Colombia. -1967/77-Associate Professor, Department of Anthropology, University of Pittsburgh, and departmental Chairman, 1976-77. -Senior Behavioral Scientist in ECO since August 1977

In studying the information presented in Table 1, and considering the personal interviews with each of the professional staff of ECO the evaluating group considers that with the number and type of professional staff and the specialized disciplines represented in ECO, it is not possible to obtain the efficiency desired. Without doubt it will be difficult to comply with the objectives and missions of the Center.

The most adequate number of professional and administrative staff was employed in ECO in 1982. Subsequently, the continued loss of staff has caused serious problems for the Center. It has been difficult to ensure the continuity of projects of broad scope or long duration.

Similarly, the absence of a practical definition of human ecology accepted by the health agencies of the countries of the Region, especially as this term relates to large socioeconomic development projects, constitutes an evident impediment for the development of ECO.

2.5 Budget and Sources of Funds

The finances of ECO are based on three sources:

- a) Regular Budget of PAHO
- b) Contribution from the Mexican Government
- c) Extrabudgetary funds.

a) Regular Budget (Funds) from PAHO/WHO

The regular budget funds from PAHO/WHO allotted and approved for ECO for the 1982/83 biennium total U.S. \$1,586,400.00, which represents 1.2% of the operating budget of PAHO. PAHO contributes \$723,100.00 and WHO, \$863,300.00. Presented in Table 2 is a summary of regular funds allotted to ECO, in U.S. dollars from 1976 to 1983. The projected budgets for the biennia 1984/85 and 1986/87 include an increment of 0.9% for each period. This clearly constitutes a severe economic restriction for the future development of ECO.

b) Contributions from the Mexican Government

The signed Accord between PAHO and the Government of Mexico states in the relevant chapter that "...the Government of Mexico will contribute to the operation of ECO, with annual funds to be determined through mutual agreement between the Government and the Organization...."

The Mexican contribution will serve primarily to offset the operational costs of ECO, such as local, non-professional salaries, insurance for the building, public services, electricity and water, communication by telegraph, telephone and mail within the country.

The contribution of the Mexican Government, expressed in U.S. dollars, from 1976 to 1983 is also shown in Table 2.

TABLE 2

PAN AMERICAN CENTER FOR HUMAN ECOLOGY AND HEALTH
BUDGET (1976-1983)
ABSOLUTES AND RELATIVES
(US dollars)

	REGULAR FUNDS OPS/OMS	MEXICAN GOVERNMENT CONTRIBUTION	TOTAL
1976	158,041 (84.97)	27,959 (15.03)	186,000
1977	196,545 (75.72)	62,734 (24.28)	258,279
1978	349,200 (88.93)	43,478 (11.07)	392,678
1979	577,000 (86.53)	89,870 (13.47)	666,870
1980	624,550 (87.36)	90,440 (12.64)	714,990
1981	624,550 (79.37)	162,432 (20.63)	786,982
1982	767,550 (92.59)	61,492 (7.41)	829,042
1983	767,550 (82.76)	159,921*(17.27)	927,471

* Requested from S.S.A (Mexico) in accord with the terms of the signed Agreement.

In Table 2 one can see that the proportion of ECO support from regular budget funds has fluctuated between 75.72% (1977) and 92.59% (1982). In absolute figures this proportion has grown substantially during the eight years of ECO's existence, representing a little more than US\$750,000.00 for each of the last two years.

The Mexican contribution to the ECO budget has fluctuated between 24.28% and 7.41% (1982). For 1983 support in pesos equivalent to US\$159,921.00 has been requested: this represents 17.24% of the total ECO budget for this year.

In absolute numbers of pesos the Mexican contribution has increased during the eight years, without necessarily fully compensating for the problems caused by inflation and currency devaluation; in general the support has been determined according to the growth requirements of ECO and the availability of funds on the part of the Mexican Government. According to the agreement with the Mexican Government, payment of local salaries has been carried out according to the scale established by the United Nations.

According to the communication of 8 June 1983, Official No. 101 from Dr. Manuel Quijano Narezo to the PAHO/WHO Representative of Area II, the attitude of the authorities of the Mexican Government "...has absolutely not

changed in reference to the continued contribution to maintenance of the Center, and in the near future the amount of the Mexican participation will be received...."

The Director of the Center is faced with administrative difficulties related to finances and human resources. The financial resources of the Center are primarily allocated for payment of professional and support staff (approximately 75%) and to a lesser extent for short-term consultants (STCs).

During the last four years the uncertainty in allocation of regular budget funds and the variations in the contributions from the host country have confronted the Director of the Center with monthly resource allocation changes that have been reflected in the loss of support personnel, failure to replace professional staff, difficulty in providing technical assistance to Member Countries and morale problems among the personnel of the Center.

c) Extrabudgetary funds

There is a definite interest in establishing a mechanism to create rotating funds for the production and distribution of educational materials and technical information developed by ECO. There are also plans, in an early stage of development to seek extrabudgetary financing through funds provided by various agencies.

Although not of major significance, small extrabudgetary sums have been used to support limited STC activities and several multidisciplinary working meetings either at ECO or in other countries.

2.6 Description of the physical facilities of the Center

In the summer of 1980, new facilities for ECO were made available in a building constructed for the Center by the State of Mexico in the Municipality of Metepec. The building provides ample space, sufficient service areas, offices, an auditorium and meeting rooms, supply areas, gardens sanitary facilities, etc., in a location in the countryside. It is approximately 70 km from Mexico City, connected by an excellent asphalt highway, which is generally regarded as hazardous because of frequent accidents. There is no public transport to the Center, and the nearest bus stop is 4.5 km away. This distance presents serious transportation difficulty for the professional and service staff. This is also a problem for the Center and for national and international scientists who might wish to visit or to attend scientific or training sessions at the Center. The closest city, Toluca, does not offer adequate educational facilities generally thought suitable for the children of the international staff, creating serious family problems. At present a telex service and six telephone lines are available for national and international communications.

There is an agreement between the PAHO's Representative in Mexico and the authorities of the Government of Mexico which, if carried out, would result in construction of a building for the Center and other PAHO operations

on the grounds of the National Autonomous University of Mexico (UNAM). This building would be for the use of the offices of the PAHO/WHO for a period of 99 years, with an annual symbolic payment by PAHO/WHO; such building facilities would be available for:

- a) The offices of the Representation
- b) The Publication and Documentation Service (SEPU)
- c) The Pan American Center for Human Ecology and Health (ECO).

The space (in square meters) requested for ECO is in this facility presented below:

Director's Office

Director's office with sanitary facilities	30
Director's secretary's office	10
Waiting room	12

Technical Areas

- Consultants' offices (7)	70
- Office (STC) (2)	20
- Group working room (1)	15
- Secretary areas (3)	24
- Editor's office (1)	10
- Word processing room (1)	10
- Audiovisual and drafting room (1)	30
- Library	
Chief of the library (1)	10
- Assistants offices (2)	20
- Processing area	20
- Library stacks	60
- Reading area	24

Administration Area

- Administrator's office	10
- Secretary	10
- Finance	10
- Archives	<u>20</u>
Total (square meters)	415

Adequate spaces for meeting rooms, cafeteria, warehouse, receptions, telex and telephone, parking, etc. will be shared with the other PAHO operations in the country.

The transfer of ECO's facilities to the metropolitan area of Mexico City is a fundamental requirement if ECO is to operate effectively and efficiently.

3. GENERAL CONSIDERATIONS

3.1 Accomplishments of the past eight years

Unlike most other PAHO centers, ECO began its work in a field that was not clearly defined and not easily relatable to the health and environmental programs already being carried out by a substantial number of Member Countries. There were no clear guidelines for field programs in human ecology, and limited expertise available in such fields as toxicology and environmental epidemiology. With these factors in mind, it is not surprising that, during the tenure of its first director, ECO activities were largely developmental and reactive. During the last two years there has been an effort by the Center to narrow the focus of its programs and to make available its accumulated experience and expertise through publications, which should be helpful to many of the Caribbean and Latin American nations.

The Evaluation Group concurs with the expressed opinions of the two Center Directors and its Scientific Advisory Committees that a major accomplishment was establishing the Center and recruiting an interdisciplinary group to work together on specific problems through a human ecology approach. Major accomplishments of the Center and its interdisciplinary team include the following:

- The Center has provided advisory services and short-term consultation to 22 Member Countries. Eleven members have called upon the expertise of the Center and its panel of consultants more than once. The Center itself has responded to well over 85 per cent of all formal requests submitted to it. Other PAHO or WHO agencies were deemed more appropriate and more able to provide services to eight per cent of requests initially referred to ECO. Seven per cent of submitted requests could not be honored, due to resource limitations at the Center.

- The Center has an information service that is not yet fully developed, but is still responsive to the increasing needs and demands of Member Countries.

- The Center provides access to information published by WHO, relevant scientific reports not originally published in Spanish, and to relevant governmental summaries and reports not published in the scientific literature. Approximately 100 requests per year for such information are answered by the Center. On a number of occasions these requests are complex, requiring input from several members of the interdisciplinary team.

- The Center has initiated its own publication series comprised of the trimestral newsletter, "Human Ecology and Health," a guideline series and

training materials. The listings of publications (guidelines and training materials) available represents a modest but useful beginning.

- The Center has developed adapted or translated training materials dealing with environmental epidemiology, toxicology, rapid environmental assessment, and asbestos as an environmental and occupational health problems.

- The Center has worked collaborately with UNEP in the preparation for intergovernmental meetings to establish regional strategies for environmental protection and pollution control.

- The Center has worked formally and informally, but effectively, with universities, governmental agencies and governmental research, institutes in training programs.

- The Center has undertaken or participated in demonstration or applied research projects in eleven Member Countries. Such activities included developmental work needed for the preparation of guidelines (e.g. large hydroelectric projects) for Member Countries. A total of 28 projects dealing with a wide variety of problems were undertaken. During the first six years under the leadership of its first director eight projects were undertaken, four of these were cancelled and one is still in progress. During the last two years, 20 short-term projects were initiated. Many of these have been completed and only five were terminated before completion for various reasons.

- The Center has worked to narrow its program activities while continuing to pursue its original broad human ecology objectives. However, it is recognized that the interdisciplinary team available to the Center must acquire new capabilities and that the Center programs must be more carefully coordinated with those of other PAHO programs.

In summary, the Evaluation Group feels that the Center has made a number of useful contributions while seeking to establish itself in a complex, difficult field of endeavor.

3.2 Image of ECO

The Evaluation Group found that PAHO personnel in each of the offices visited were aware of the Center's existence and had a general idea of the mission and program activities of the Center. Officials working in the Ministries of Health visited, for the most part, were aware of the existence of the Center. These professionals also had a general interest in program activities undertaken at the Center and expressed an interest in future collaboration and cooperation with the Center. Many of those contacted knew the Center's Director, Dr. Jacobo Finkelman, who had personally travelled to all but one of the Member Countries visited by the Group. Dr. Finkelman was highly regarded by those with whom he had visited. Because of the sometimes rapid turnover in governmental personnel holding responsible positions,

continuing efforts are necessary on the part of PAHO to ensure that governmental officials are familiar with PAHO programs and advisory services including those of ECO.

This problem is even more difficult for ECO than for other PAHO centers because its programs and advisory services often are of interest to governmental bodies other than the Ministry of Health. Within many, but not all Member Countries, several governmental ministries or agencies are often involved in the environmental concerns of interest to ECO. These areas may include the economic benefits and potential health risks of industrial and agricultural development, health impact of environmental pollution and its abatement, and chemical safety programs, including the safe use of pesticides in agriculture and for control of vector-borne diseases. Likewise, several governmental agencies within a single country usually have some responsibility in occupational health. Most often these include the Ministry of Health, the Ministry of Labor and the Social Security institutions. The evaluation group found that governmental bodies, other than the Ministries of Health, were often not aware and were generally not knowledgeable about the Center and the parts of its program dealing with occupational health. In a few cases, individuals from governmental agencies, other than the Ministry of Health, even lacked general awareness and knowledge about PAHO and its mission.

When the mission and activities of the Center were explained to officials in agencies other than Ministries of Health, they, without exception, expressed interest in the Center and its programs. Most often the interest related to advisory services, information systems, health aspects of standards and regulations development, epidemiologic surveillance systems, and toxicologic assistance, especially in the area of pesticides.

Among those who were aware of the Center and its programs, the image of the Center was usually related to how effective its advisory services and information responses had been. When the Center had provided experienced personnel or carefully chosen short-term consultants for a well defined activity, the image of the Center was good. Special commendations were given to Drs. Sandoval and Fernicola for their efforts in advisory services to Member Countries. In one or two cases where terms of reference were poorly defined or where there was some disparity between the capabilities of the consultant and the problem encountered, the perceived image of the Center among some individuals in a country was not always good.

Individuals with whom the Evaluation Group met were for the most part pleased with the response of the Center to their requests for information. In general, they expressed a desire to see such services expanded. There were only one or two very minor complaints regarding timeliness of responses to information requests. The Evaluation Group commends ECO for its efforts in information services, while at the same time, recognizing that further development and integration of such services is necessary.

Most individuals consulted recognized that the Center was new and that its mission was both difficult and complex. It was also stated that the resources available to the Center were quite limited. Nevertheless, sentiment was expressed on several occasions that the Center and PAHO country personnel should improve their follow-up of initial, often informal, or personal contacts. The responsibility for follow-up is not always easy to assess. It may be that poor terms of reference or impediments in submission, consideration and approval of requests for advisory services or training programs are more of a problem in follow-through than the response of the Center.

The Evaluation Group concluded that PAHO personnel in Member Countries and the Center should work together on a continuing basis to improve awareness and ensure carefully defined terms of reference for advisory services. Likewise, the Center must always take care to ensure that experience, capabilities and approach of its personnel and its short-term consultants are appropriate for their assigned tasks.

3.3 Resources available and needed

The human resources available in ECO presently total 17 staff members (seven professionals, one on local contract which expires on July 31, 1983, and nine administrative supporting staff). Slightly more than 50% of the administrative and support personnel are employed on an uncertain short-term basis, and this is reflected in their feelings of frustration, despite good intentions. It is evident that this situation is serious since the support staff has eroded from 16 to 9 since March 1983. At present, the Director has 17 positions financed with funds from the Government of Mexico, but the Director of ECO has not as yet been authorized by PAHO Headquarters in Washington to initiate filling these posts.

ECO has three vehicles and two drivers. The national and international communications system consists of six telephone lines and a telex.

The Information System contains the following components:

a) Library collection

- Periodical publications (200 titles)
 - 30% by subscription
 - 70% through donations
- Books, manuals, technical documents and bibliographies (approximately 2,000 titles)

b) Duplicating facilities

- One mimeograph
- Two photocopying machines

At present, ECO does not have a fully developed Information System to respond to a large number of requests from the Member Countries. It does have a reasonably valuable library, unique in its focus on human ecology and

environmental health problems. ECO, especially recently, has not had the resources to expand, or even utilize properly this library facility. It is not linked in with REPIDISCA or BIREME (the latter does not have references in the environmental field, but is specialized in clinical medicine), and, primarily because of the location of the Center has not developed efficient interlibrary loan facilities. During the past three months (since March 1983), the Information System/Library has been crippled by staff lay-offs and has ceased to function, except for the use by the professional staff and visitors.

As described below, the functions of the Information System should be completely reassessed, and its scope limited to the major program areas of the Center. The additional staff, and linkage with other data basis, and improved use of existing data and literature not now in other information system are essential for a fully developed functional system.

Even with the obvious importance of an Information System in a center such as ECO, it must be demonstrated as cost effective.

Despite the operational difficulties encountered, the present Director of ECO was able, after some time, to reduce the 14 broad areas of work begun by the Center to a central focus, i.e., a multidisciplinary approach to industrial and agricultural development, and its impact on public health.

There are now two major program components: worker's health with emphasis on the production of training materials, and the effects of industrialization and agricultural modernization with their attendant environmental pollution and potential effects on the health of the people. These areas of work are in accord with the ECO Scientific Advisory Committee (ECO SAC IV, 1982) recommendations.

To efficiently develop these activities, ECO requires the following, in personnel and physical equipment:

- a) Transfer ECO and its facilities to a site within the metropolitan area of Mexico City.
- b) A basic staff to total 24, distributed between the following categories (professional and three service staff groups):

I. Professional staff

1 Director of ECO	P5
1 Environmental Engineer (Systems Analyst)	P4
1 Ecologist - Agriculture/Pesticides Vectors/Integrated Control	P5
1 Environmental Epidemiologist (Biostatistics/Surveillance Methods)	P4*
1 Clinical Epidemiologist (Toxicology/ cluster investigation)	P4*
1 Toxicologist	P4

* lacking

II. Information System

1 Person in charge
1 Librarian
1 Library assistant
3 Document processing specialists

III. Publications

1 Editor
1 Graphics technician (drafting and photo)
1 Bilingual secretary

IV. Administration

1 Administrator
1 Assistant administrator
3 Bilingual secretaries
2 Drivers
1 Clerical assistants (filing)
1 Office boy (mailing and duplication)

TOTAL: 24 functionaries

c) Equipment. At present, ECO has no computer or word processor equipment, and no means for publications, except subcontracting to outside firms. The lack of essential equipment has been a handicap for the Center in its development of an information system in data processing, general accounting and in the production of manuscripts, reports and publications.

The following items of equipment would be required to provide the basic capability needed by the Center. First, a basic computer system that is compatible with or can be adapted to data sources from within PAHO/WHO and other international agencies (ECLA, FAO, UNEP, etc.). This should include word processing facility and all general components and software for necessary administrative reports. ECO should have at least one of the systems, or their updated models, already in abundant use at PAHO headquarters. The second

piece of equipment needed is an offset printing machine. A third item of equipment required is a microfilm reader and reproducer.

3.4 Countries' needs, programs and technical capabilities

a) Communication. ECO is best known among workers in Ministries of Health. There are other institutions in a number of countries such as Social Security, Ministries of Labor, Secretariats of Ecology and Environment where ECO is less known. There are PAHO personnel in some countries who know little of the program of ECO. Complaints regarding the slowness of communication most often occur when personnel not familiar with the Center is involved in the communication channel. The countries need to receive more information relating to ECO and its mission.

b) Technical Information. All countries feel a great need to obtain more information concerning ecology and environment. The Center needs to have available for Member Countries the following types of assistance:

- Documents dealing with the establishment of environmental policies, environmental management and prevention of ecosystem deterioration.
- Material in Spanish that would assist those responsible for environmental regulation, health promotion, and disease prevention.
- Health-related guidelines for large industrial and agricultural development projects.
- Material on the health related aspects of environmental impact statements (EIS) for a variety of industrial plants.
- Assistance in those aspects of standards and regulations. Development or revision which deal with toxicology, environmental and occupational health problems.
- Ability to help coordinate multicountry studies of shared environmental health problems or industrial-agricultural development projects.
- Ability to serve as a focus or mechanism for the coordination of health related investigations selected dealing with environmental health problems within the countries.
- Provide efficient mechanisms for integration of information with existing systems in other institutions or Centers, especially with REPIDISCA.

c) Toxicology and pesticides. Toxic substances such as pesticides when used properly are beneficial in that their use can increase agricultural productivity and control disease vectors. However, when used improperly pesticides may cause damage to the environment and the health of populations.

There is a great concern in various countries regarding the safe use of pesticides as well as in the safe use of other industrial and commercial chemicals. Some of the needs expressed by the Member Countries include the following.

Ready access to information from national and international agencies and institutions that are concerned with these problems.

- Information on the toxicity of different exposure or residue levels for pesticides and other chemicals.
- Toxicological test methods, sampling and analytical methods for monitoring, mechanism of chemicals action and available criteria document.
- Acceptable residue or exposure levels used in various countries.
- Pertinent legislation in different nations.
- Methods in use to ensure safe transportation of chemicals and to minimize accidents.
- Training of specialized persons and establishment of laboratories.
- Toxicological and epidemiological studies of toxic substances, especially pesticides.
- Industrial profiles containing information on potentially harmful occupational exposures and environmental discharges.
- Pesticide residues in foods.
- Epidemiological methods for the study of health effects of pesticide exposure.

d) Industrialization and urbanization: Health and work. The process of industrialization is accepted as being important for the social and economic development of Member Countries. In some regions there has been little consideration of the consequences of pollution of water, air and soil that may result in long term damage to the environment and risks to the health of populations.

At the same time urbanization is increasing but urban areas, especially marginal areas, are not being provided with adequate supplies of drinking water, facilities for the treatment of effluents, or systems for the disposal of solid wastes. As a consequence, we have environmental contamination, destruction of forests along with needed construction of roads and dams with large lakes as a source of needed dependable water for the production of energy.

To cope with these problems the countries need:

- To establish appropriate methodologies for monitoring the environment, including air, water and soil.
 - To develop environmental epidemiological methods to monitor the health of people and any changes accompanying major environmental alterations.
 - Development of technologies, for recycling or permanently and safely disposing of wastes.
 - To obtain information on health problems associated with the colonization of new lands, such as in the forest products industry, and in the planning of other social, industrial, and economic development projects.
 - Assistance in health studies of marginal urban areas and internal migration.
 - To develop epidemiological methods to evaluate workplace conditions that may endanger the health of populations.
 - Assistance in developing epidemiological studies of the health effects of ambient air pollution.
 - Assistance in environmental epidemiological methodologies useful in investigation of occupational health and industrial toxicology problems.
 - Assistance in studies of the ecological impacts of dams, especially when combined with industrial development in river basins.
- e) Training. Training of personnel at various levels is of fundamental importance in identifying and solving the problems that have been mentioned.
- Short-term and in-service with special emphasis in epidemiological methods applicable to the study of clusters of cases that might be caused or aggravated by occupational/environmental factors and secondly, emphasis on epidemiological methods for health surveillance applicable to environmental health problems.
 - Training courses and symposia dealing with toxicology, toxicological research methods and toxicological aspects of selected environmental contamination problems or diseases where environmental factors might be some etiologic importance.
 - Cooperative efforts in short-term training and continuing education programs for health professionals and the community.

f) Countries' technical capabilities. ECO is completing an inventory of available resources in the following fields:

- Toxicology laboratories.
- Centers for Occupational Health.
- Centers for integrated management of agricultural pest problems.

Some countries of the Region have functional environmental monitoring systems, but there is generally no associated studies of the health effects of exposure to pollutants. A more complete inventory of the capabilities of the various countries is very important to ECO to help develop a network of national centers and coordinate their activities.

4. PROGRAM EVALUATION

4.1 General statement

The program activities of the Center were initially developed in conjunction with and as a response to the Scientific Advisory Committee. During subsequent years, a succession of Scientific Advisory Committees have continued to play a central role in determining the program structure and activities of the Center (see Table 3). While there have been several consistent program activity themes, e.g. concern about health benefits and health related risks of hydroelectric power project and other large-scale socio-economic development efforts, the overall program of the Center has lacked continuity, stability and coherence.

Problems of this nature could have been expected because the objectives of the Center are inherently complex, and because there has been a lack of the desired degree of continuity in membership of the Scientific Advisory Committees. Additional factors involved included difficulties in coordinating and integrating Center programs with the overall program of PAHO and a greater than desirable turnover in professional staff.

During the last two years, the current Center Director has worked with his professional staff and the last Scientific Advisory Committee to develop a more coherent, focused program and to ensure that the Center's program is a more responsive to the needs of Member Countries. Relationships between the Center and the PAHO headquarters environmental health program have also improved.

Nevertheless, a great deal more needs to be accomplished before the program of ECO and CEPIS form part of a well integrated, coherent PAHO environmental health program. Additional clarification of roles and programs is also required for the occupational health activity of PAHO.

The Evaluation Group wished to emphasize that the activities of the Center throughout its eight years have been responsive to the broad objectives established for the Center. Likewise, the program of the Center, broadly speaking, has been consistent with the program activities of other PAHO centers. ECO's program of advisory services, training, information, dissemination, applied research and close cooperation with relevant institutions in the Host Country, especially the Ministry of Health, is consistent with PAHO's policy for its centers.

4.2 Evaluation of past program activities not highlighted in the current Center program

Many of the program areas established and then later dropped have left little that is useful. The Committee also found that there were unexplained delays and/or cancellations in projects directed toward the preparation of reports, guidelines and training materials. Several factors may have been involved including the following: an overly ambitious program plan without appropriate periodic reviews of progress and realistic reassessment of what could be accomplished with available resources; excessive turnover of professional staff; rather rapid, usually unexplained or poorly documented shifts in program activities; and difficulty in achieving a balance between advisory and longer term program activities.

Individual scientists from the Center have published a number of scientific and technical reports in appropriate journals. This material has, undoubtedly, been of use and interest to the scientific and public health community, generally speaking. Specific program outputs of value to Member Countries include translation of WHO Environmental Health Criteria documents into Spanish, publication of Plaguicidas, which is a training program for health professionals and workers in the safe use of pesticides, preparation of a Guide to the Effects on Health of the Construction of Dams, preparation of training materials for toxicology and epidemiology, and the adaptation of training materials obtained from other sources. Much of this program output has occurred during the last two years, subsequent to the appointment of the current Director.

4.3 Evaluation of the current program of the Center

The current program of the Center groups all activities under one of two headings "health effects of industrial contaminants" or "workers health" (see Annex X). Under one or both of these headings, the Center plans to assist in the development of criteria and standards, provide information services, develop training materials, and develop methods necessary to evaluate health hazards. The health hazards of agriculture and emergency preparedness for chemical spills or accidental releases are considered under the broad heading "health effects of industrial contaminants." Specific publications are called for under each heading. There are a total of 24 planned projects, publications and major activities.

While the Evaluation Group may have difficulty rationalizing all aspects of the program of the Center as currently structured, the Group commends the Director for working to develop a more focused, coherent structure which should facilitate his review of progress in implementing the program and any necessary reprogramming. The Evaluation Group is of the opinion that the workers' health program of the Center should be restructured, taking into consideration that the Center lacks expertise in occupational medicine and industrial hygiene. The Center also lacks needed expertise in a number of relevant environmental epidemiology areas and the capacity to assist in the investigation of outbreaks involving clusters of cases of illness to determine whether or not environmental factors play a role. The Evaluation Group does not think it feasible for the Center to obtain expertise in all of these occupational and environmental health areas. For that reason, the Evaluation Group considers it prudent for PAHO to further develop its occupational health expertise at the Headquarters level and to concentrate in those skills needed for environmental health at the Center.

This is not to say that the Center might not have some activities integrated into the overall occupational health plan of PAHO. The Evaluation Group considers that such activities may be feasible if mutually agreed upon by PAHO Headquarters and the Center Director. The Evaluation Group suggests, for example, translating into Spanish and distributing WHO occupational health criteria documents and such other technical publications, monographs or governmental documents that are mutually agreed upon. Training materials should be handled in a similar fashion. The Group also observed that it may be useful to have ECO responsible for a number of activities outside the usual scope of occupational medicine and industrial hygiene. These include the health impact of unemployment and health aspects of the employment of children, since these topics are more related to social epidemiology. Likewise, the occupational health program, as well as other PAHO programs, should consider making the Center responsible for a coordinated PAHO program dealing with the health benefits and health risks posed by the use of pesticides. The expertise which the Center has in toxicology and the expertise which the group hopes can be developed in environmental epidemiology and for the investigation of clusters of environmentally related illnesses may also prove useful in the Occupational Health Program of PAHO.

If the Center is to be responsive to the perceived needs of the Member Countries visited by the Evaluation Team, ECO will need expertise in industrial processes and discharges, environmental monitoring and human exposure estimations, toxicology of agents encountered in industrial discharges, epidemiologic methods and diseases investigations. Expertise in the overall area of pesticides and appropriate personnel for a good information system are required. With this expertise ECO's program of advisory services, information dissemination, training and research, would be much more effective in meeting the needs of the Region.

No major restructure of the program is required. The Evaluation Group suggests that the program activity now called "health effects of industrial

contaminants" might be more appropriately labeled "health effects of industrial and agricultural activities" and that program activities in "workers' health" be confined to these previously discussed. With objectives as broad as those set forth for the Center and with the rapid changes in environmental health problems, it will likely be necessary to augment the core expertise of the Center through other mechanisms involving scientists who are not permanent PAHO employees.

TABLE 3

CHANGING ECO PROGRAM GUIDELINES

First and second scientific committees (1975 and 1976)

- Environmental impact evaluation
- Information and communication
- Training
- Research

Third scientific advisory committee (1980)

- Disease prevention and control
- Occupational health
- Ecotoxicology and environmental epidemiology
- Basic environmental sanitation
- Health in community socioeconomic development
- Information and communication

Fourth scientific advisory committee (1982)

- Workers' health
- Control of chemical hazards to health
- Environmental epidemiology
- Ecological strategies for control of vector borne disease and use of biological indicators for detecting environmental contamination
- Health effects of socioeconomic development projects
- Information system

Current program (1983)

- Health effects of industrial contaminants
 - Workers' health
-

5. PRIORITIES AND REPROGRAMMING

When seeking to evaluate the responsiveness of the program of the Center to priority needs of Member Countries, one is forced to ask whose priorities should be given what weight? What considerations should be given to the major needs of the Host Country? What resources should be directed towards meeting the short-term requirements of other Member Countries? Should the program of the Center be primarily responsive to its Scientific Advisory Committees? How well should the programs of the Center be integrated into the larger PAHO program for environmental health and occupational health? In an ideal situation there should be convergence in these priorities. That does not seem to have been the case in the past with the programs and activities of ECO. The current Director of ECO is commended for trying to balance these priorities and needs, but further efforts are required.

The Evaluation Group has observed the following:

- ECO seems to be working closely with the Host Country to meet the expressed needs of the Host Country.
- Several ECO programs (e.g. information services, toxicology activities, the published pesticide training materials, and in most cases the Center's advisory and consultation services) are meeting high priority needs of Member Countries.
- ECO programs have consistently been responsive to the recommendations of its Scientific Advisory Committees.
- A number of current ECO activities are responsive to high priority programs within PAHO. These include development of occupational health training materials which can be utilized by primary care physicians, Center activities relating to the International Chemical Safety Program and Center activities directed towards the control of environmental pollution.

In the matter of reprogramming, the Evaluation Group recommends that the Center be allowed to recruit, into the position vacated by Dr. Sandoval, an epidemiologist with experience in environmental health problems. This individual should have a strong background in epidemiologic methodology, demography and biostatistics. This professional would be able to help design epidemiologic surveillance systems and would provide assistance to Member Countries seeking assistance in deciding what impact environmental conditions may be having on larger populations groups. The Center should use one of its other vacancies to recruit a physician epidemiologist knowledgeable about the investigation of clusters of cases which are from time to time alleged to be aggravated or caused wholly or in part by environmental factors. This individual should be clinically astute and knowledgeable in the field of toxicology. The Center should also be allowed to recruit and hire a librarian and support staff for its information services.

These resources, along with most of the current interdisciplinary team, should work closely with the PAHO Headquarters staff responsible for environmental health and occupational health to assure that the program of ECO is more in accord with the overall programs of PAHO than has been the case in the past. Dr. Finkelman, the Center Director, Mr. G. Davila, Acting Head of the PAHO Environmental Health Program, and Dr. Rene Mendes, Regional Advisor for Occupational Health, have all assured the Evaluation Group that they intend to have a more responsive, well integrated Center program during the coming years. The Evaluation Group hopes that its report and its recommendations will facilitate their efforts.

6. PERSPECTIVES

ECO began operations eight-and-one-half years ago when emphasis was placed upon environmental and health effects of hydroelectric projects, industrialization and new lands colonization projects. Methodology for assessment of the likely environmental impacts of such projects was a major consideration. Training activities and advisory services to Member Countries have always been an important component of Center activities. The Center continues to have as its interests the health impacts and consequences of industrialization population and urban growth, energy production technologies and the sociocultural aspects of health promotion, disease prevention and disease control.

During the last two years, more emphasis has been placed on the health risk than can accompany industrialization, the heavy use of agricultural chemicals, the accidental release in chemicals, and environmental contamination problems. Likewise, emphasis has been placed on the health of workers during the last two years.

Current trends have brought ECO on a course that is more relevant to the goals of the Organization and its Member Countries.

- Intramural research is minimal and a network of national centers which may be developed to meet the needs of their own countries has been identified.
- Advisory services and direct technical assistance remains an important function for the Center. Another important function is the development of a framework through which Member Countries sharing a common problem can initiate needed applied research and monitoring studies. Likewise, the Center can assist Member Countries in their efforts to integrate national programs for development, health and environmental protection.
- Training will remain an important activity for the Center for the foreseeable future. Special needs exist for training programs in environmental epidemiology, toxicology, safe use of pesticides, response to chemical spills and occupational health.

- Information and communications will remain a valuable contribution of the Center to Member Countries. Well-trained experienced staff should be made available to assure that the ECO information system adequately covers relevant information sources and that its contents are integrated into a larger system such as REPIDISCA.
- The Center Director continues to face severe constraints imposed by month-to-month uncertainties in resource allocations and by the relative isolation of the Center facilities. The current plan to relocate PAHO activities to the campus of the National Autonomous University of Mexico should result in major improvements in accessibility to information sources, opportunities for professional development, efficiency of operations, and improvements in morale.

7. FINDINGS AND CONCLUSIONS

7.1 Evaluation of the progress made by ECO in accordance with the resolutions of the Governing Bodies and recommendations of the Scientific Advisory Committees

The Evaluation Group found that the programs of ECO have been developed in accordance with the resolutions of the Governing Bodies and its Scientific Advisory Committees. However, rapidly shifting emphasis in ECO programs, according to the recommendations of different Scientific Advisory Committees along with the advice of the Committees that ECO programs encompass more activities than could be accomplished, given existing resource constraints, have seriously hampered the development of the Center and the continuity of its programs.

The Evaluation Group observed that better continuity and improved quality of advice from Scientific Advisory Committees might be obtained through the following:

- Have meetings once each year.
- Appoint members to three-year terms with only one third of the membership changing each year.
- Have appropriate professional societies (ecology, toxicology, epidemiology, environmental sciences and engineering sciences), and submit to the Director of PAHO a listing of not more than five names, at beginning of the selection process, for his consideration.
- Ensure ex officio participation from the most important regional governmental and international programs (e.g., PAHO/AMRO, the United States National Toxicology Program and the IPCS).

- Ensure ex officio participation by PAHO Headquarters personnel responsible for and most interested in the ECO program (i.e., coordination for the environmental health program and the regional advisor for occupational health). Have the CEPIS Director or his designee also participate as an exofficio member of the Committee.
- Ensure that members of the committee receive from the Center relevant information on a regular basis (e.g., program plans, progress evaluations, the newsletter, relevant publications).
- Have a single advisory committee for the PAHO environmental health program with, if necessary, separate but overlapping panels for CEPIS and ECO.
- Require that the agenda for each meeting include a summary, review of the views and interests of at least one PAHO program other than environmental health relevant to ECO in order to better integrate the overall program of PAHO.
- Require that the agenda for each meeting include an item dealing with the needs and technical capabilities of one of more Member Countries. This report should be the responsibility of the ECO Director.

7.2 Importance of the Center for the Host Government, as well as for the other Member Countries

During the last two years the Center has begun to play a more important role in the Host Country. The Advisory Council, consisting of the Subsecretary for Health, the PAHO Country Representative and the Director of ECO, was formally constituted during the visit of the Evaluation Group to Mexico. The Subsecretary, Dr. Hector Fernández Varela, told the Evaluation Group that he viewed ECO as a very important national resource. He viewed ECO as providing a framework that could help to bring together various national groups interested in the health benefits of socioeconomic development and the real and potential health risks attributable to environmental contamination and the lack of basic sanitary services. Through its training activities ECO already works closely with a number of national programs dealing with environmental and occupational health.

Only a few of the Member Countries (Peru, Brazil, Colombia, Honduras and Mexico) were visited by members of the Evaluation Group. ECO has worked with over 20 Member Countries in projects or providing advisory or consultation services. The Evaluation Group has visited representative countries of different sizes and capabilities but does not have a complete picture of the needs and capabilities of each Member Country. With these limitations in mind, the Evaluation Group observed that there is a general interest in the mission of ECO and a specific interest in several of its programs and

activities. After visiting all the countries, the Evaluation Group expressed concern about the safe use of pesticides and the toxicologic aspects of pesticide production or importation, transport, formulation, application and fate in the environment. All countries visited expressed concern about the risks related to environmental contamination arising from industrial discharges and the use of agricultural chemicals. Likewise, all countries gave a high priority to protecting the health and work productivity of workers. Responsibilities for environmental health are often shared by several agencies within a country, it is sometimes difficult for these in the Ministries of Health to articulate the overall importance of ECO programs to their country.

Equally important is that sanitary engineers, epidemiologists and others working with PAHO Country teams need to become better-informed about ECO, its missions, capabilities and limitations. ECO needs clear terms of reference if it is to provide PAHO country teams and Member Countries the information and advice which they required.

The Evaluation Group concluded that the program of ECO, as restructured by Dr. Finkelman during the last two years, is directed towards the perceived needs of Member Countries. ECO needs to redirect and further develop professional capabilities in several areas to meet these countries' needs. Because of population increases, rapid urbanization, continued industrialization, and modernization of agriculture to increase productivity, it is likely that Member Countries in the future will become more interested in the programs of ECO and share its concerns about human ecology.

7.3 Need to integrate the programming of ECO within the overall programming of PAHO

Must of those contacted, including PAHO Headquarters personnel responsible for a number of different programs other than environmental health, join the ECO Director and the Evaluation Group in urging that the program of ECO be better integrated into the overall PAHO program. Especially important is better integration of ECO program activities within the PAHO program dealing with environmental health. ECO activities particularly need to become an integral part of PAHO activities dealing with environmental contamination, IPCS and occupational health. The Evaluation Group also agrees with efforts to integrate ECO activities with other PAHO programs which have linkages with ECO as is provided by the new PAHO organizational structure and operational policies.

The Evaluation Group endorses the interest of the acting coordinator of the PAHO environmental health program and the regional occupational health advisor in their efforts to assist the director of ECO in the integration of ECO programs. The evaluation group feels that this effort should be fully developed and carefully monitored by appropriate mechanisms established by the Organization. Needed improvements the Scientific Advisory Committee process, which is an important part of ECO program planning have already been discussed (see Section 7.1).

7.4 An assessment of mechanisms that ECO currently has for relating with countries and their effectiveness.

ECO relates with the countries through of the PAHO Country Representatives who establish communication links with the Ministry of Health, and through it with other national agencies as needed. Copies of ECO's communications are forwarded to HPE.

When a matter requires coordination with other PAHO programs, the communications are accomplished through HPE in Washington.

The communications with other international agencies, including other parts of WHO, are also accomplished through HPE. The communications flow is very slow as was mentioned in 6.1 and needs to be improved. Communications between interested national or international institution and ECO should be expedited. However, since the Ministries of Health of the countries need to be informed of the activities being proposed one possibility would be to send the original request through the Ministries of Health and PAHO channels and at the same time to send an information copy to ECO on a need to know basis.

The Director of ECO should be allowed to maintain communications with the recipient agencies directly. Once the official actions have been agreed upon between PAHO and the Government, and correspondence becomes of a day-to-day nature. Copies of such correspondence should be sent to the Country Representative and HPE.

In any event, it is of fundamental importance that the PAHO professionals in the Country, especially those in HPE, are familiarized with the ECO programs and with the needs and potentials of the national institutions in order to speed-up the channels of communication.

7.5 Supplementary activities in which the countries are interested

The countries visited were primarily interested in supplementing the ECO activities in the following areas:

- Expansion and improvement of information resources available through the Center and dissemination of information from the Center.
- Assurance that the Center will have adequate expertise in environmental epidemiology and the capability to investigate outbreaks of illness or clusters of chronic disease cases which may be casually related to environmental factors or aggravated by environmental conditions.
- Enhancement of the toxicology information and advisory services, provided through the Center. Toxicology assistance may be needed for investigation of disease outbreaks, assessment of

environmental impacts, control of environmental contamination, safe use of pesticides, disease control programs and IPCS' activities.

- Enhancement of the Center's capability to utilize environmental monitoring data in the assessment of human exposure and a better understanding of the exposure response relationship linking environmental contamination to increased risk for adverse health effects.
- Member Countries would like to be assured that the core professional capabilities of ECO can be augmented when necessary to answer specific specialized problems related to the health effects of environmental contamination. Some examples of these kinds of problems are assessment of the effects of contamination of underground water supplies from land disposal of wastes, biological monitoring techniques for workers exposed to potentially toxic chemicals, interactive effects of therapeutic drugs and environmental agents, health effects of air pollution on lung maturation in children, interactive effects of cigarette smoking and vegetable dust exposure in working children, and interactive effects of high altitude, air pollution and heat stress.

7.6 Priorities identified for the Center's activities, needs for reprogramming the Center's activities, and the technical composition that the Center's basic nucleus should have

According with the priorities identified earlier in this report (Section 5), based upon the countries' needs, (Section 3.4) and evaluation of the current ECO programs (Section 4.3), the technical composition of the Center's staff and recommended equipment purchases can summarized as follow:

a) Professional staff

- 1 Director
- 1 environmental engineer (health problems associated with use of agricultural chemicals)
- 1 clinical epidemiologist
- 1 environmental epidemiologist
- 1 toxicologist

b) Support personnel (*)

- 6 persons for the information system
- 3 persons for the publication system
- 9 persons for administrative support

(*) For details see Section 3.3 of this report.

c) Complementary equipment

- 1 microcomputer
- 1 simple type offset
- 1 microfiche reproducer and lecturer machine

8. RECOMMENDATIONS AND OPTIONS

The Evaluation Group wishes to advance a number of recommendations for consideration by the Director and other responsible officials within PAHO. In addition, the Evaluation Group developed two options for the Director's consideration. One option involves strengthening the Center with a minimal change in allocated resources. The second option involves an orderly phase out of the Center with the transfer of functions to PAHO Headquarters and CEPIS.

8.1 Recommendations

8.1.1 General

- Recognizing that the mandate of the Center as defined by its objectives is very broad and that only limited resources are available, the Evaluation Group recommends that the Center Director be supported in his efforts to narrow the focus of its activities giving special emphasis to toxicology, safe use chemical including of pesticides, environmental epidemiology and the health basis for control of contamination of the environment.
- The Center, its mission and its capabilities should be better promoted and explained to Member Countries and through the media.

8.1.2 Advisory services and technical assistance

- PAHO staff in Member Countries should become better informed about ECO, its mission and capabilities and about the problems in which the Center may help.
- PAHO staff in Member Countries should take care to prepare clear, double terms of reference for advisory and consultation services.
- ECO should upgrade its advisory and technical service capability in environmental epidemiology and for investigation of environmentally related disease outbreaks.
- As an alternate to expanding advisory and technical assistance services further, ECO should strengthen national institutions so that countries become more self-sufficient.

- It is recommended that the next external evaluation be undertaken in three years and that others follow at intervals of approximately three years.

8.1.3 Research

- ECO should help provide a framework for collaborative research carried out by national institutions in Member Countries when a group of coordinated projects can provide needed useful information of importance to the environmental health and environmental protection programs of Member Countries.
- ECO should help provide a framework for the coordination of applied research efforts conducted by several countries dealing with a common, shared environmental health problem, e.g., problems affecting border areas and shared natural resources.
- ECO should take steps through its information system to improve country awareness of research in progress and of recent relevant research reports in order to enhance the efficiency of research programs.
- ECO, working with other parts of PAHO, should assist cooperating national institutions in efforts to obtain financial support for multicountry research programs.

8.1.4 Information system/information dissemination

- The Information System of ECO should be strengthened by adding a librarian, and secretarial support positions for processing documents. This will enable ECO to make its collection available through REPIDISCA and BIREME.
- The ECO Information System should be linked with other relevant international data basis including those of UNEP, FAO, WHO, UNIDO and UNESCO.
- ECO should provide English language versions of relevant publications to Caribbean nations whenever these are available or through translation of a few selected, highly relevant documents.
- ECO should provide Portuguese translations of special interest to Brazil, especially training materials.

8.1.5 Training

- ECO should continue preparing needed training materials in toxicology, epidemiology, environmental assessment and occupational health.

- ECO should work through universities or appropriate national research institutions rather than act itself as a center for training.
- ECO should serve as a repository information dealing with training materials developed by others in the Region so that involved universities and research centers can operate as a network exchanging educational materials.

8.1.6 ECO leadership and staff

- The current Center Director should be commended for his efforts to define clearly the center program and for efforts to maintain morale among the professional staff in the face of severe resource constraints.
- A personal development plan for each professional staff member should be developed stressing scientific meetings and training within Mexico but recognizing that medium-term (several months) training outside the country may be required.
- A visiting scientist program should be instituted with a view towards providing both needed training for ECO professional staff and temporarily required enhancement of the capabilities of the care of professionals within the Center.
- ECO professional staffing should be changed with vacancies being utilized to recruit and hire an environmental epidemiologist and a physician epidemiologist knowledgeable about toxicology and experienced in the investigation of disease outbreaks or clusters of chronic diseases thought to be etiologically related to environmental exposures.

8.1.7 Interactions with PAHO and Member Countries

- Current efforts aimed at integration of ECO programs into the overall PAHO Environmental Health Program, including the activities of CEPIS, should be continued.
- Primary responsibility for planning and implementing occupational health programs should be in PAHO Headquarters, with ECO playing a mutually agreed upon role.
- Steps should be taken to utilize the country offices more and, toward this end, acquaint them as thoroughly as possible with ECO programs and plans.
- ECO should examine its programs to identify specific ones that appear susceptible to improvement through joint action with other centers, and then seek such cooperation.

- With the help of the country offices, ECO should assist countries in organizing a national network of centers with emphasis on in-country coordination among agencies and institutions.

8.1.8 Intersectoral coordination

- The PAHO Environmental Health Program should develop, with the Director of ECO, a mechanism for intersectoral cooperation within PAHO, initially emphasizing the use of pesticides and other agricultural chemicals.
- Within Member Countries ECO should foster intersectoral coordination of national environmental health research and environmental contamination control programs.

8.1.9 Fund-seeking

- PAHO Headquarters should make special efforts to help ECO gain access to extrabudgetary funding, involving the ECO Director and his professional staff in such efforts.

8.1.10 Disaster planning

- It is recommended that ECO develop and make known to Member Countries the capability to give the consultants assistance in disaster planning on related aspects of the accidental release of chemicals during transportation.

8.1.11 Science Advisory Committees

- The Science Advisory Committee should restructure to ensure better continuity, improved coordination with other parts of PAHO, more attention to country needs and more appropriate professional representation (see section 8.1. for details).

8.2 Options for consideration by the Director

- #### 8.2.1 Option one: Strengthen ECO by transferring its location to Mexico City and by assuring that the needed core professional staff, support staff and equipment are made available. No new professional positions need to be assigned. There should, however, be a modest increase in support positions needed for information services. The total incremental cost to PAHO should not exceed a one time cost of approximately an additional US\$20,000 for equipment.

The advantage of this option is that the Host Country and the Region can without interruption continue to benefit from the

professional expertise and information resources assembled by ECO. The disadvantage of this option is that additional resources will have to be expended for equipment and, in the future, some of the costs of locating the Center at the campus of the National Autonomous University of Mexico.

- 8.2.2 Option two: Phase out the Center in an orderly manner shifting certain of its functions to CEPIS and others to PAHO Headquarters. Under this option three professional positions would be assigned to CEPIS (one environmental epidemiologist, an information specialist and an ecologist). CEPIS would assume the responsibility for information dissemination and advisory services in applied human ecology. The occupational health function and two positions would be transferred to Washington (one toxicologist and the environmental analyst position, which would be redesignated for industrial hygiene). This would strengthen and consolidate the developing PAHO program in occupational health.

The advantages of this option are as follows: First, several (at least three) professional positions and overhead would be eliminated, achieving a substantial cost savings. Second, funds for new equipment and a new building would not be needed. Third, the consolidated PAHO environmental and occupational health programs would be more efficient with fewer problems in communication and coordination.

The disadvantages of this option are as follows: First, there would be a disruption of information and other services to Member Countries. Second, the Host Country would lose the benefits of having the Center and its staff nearby. Third, an orderly phase out would require incremental payments for termination, relocation and transfer of documents and equipment.

The Evaluation Group recommends the first option, if it is feasible. However, if ECO continues to lose support staff and cannot be allowed to recruit needed core professionals into current vacancies, it would be wise to phase out operations in an orderly manner.

ANNEX I

INFORMATION REQUESTED FROM ECO
BY THE EXTERNAL EVALUATION GROUP

1. An up-to-date statement of objectives, goals and strategies.
2. A concise statement summarizing present functions and program activity areas.
3. An up-to-date organizational chart.
4. Position descriptions for each professional staff member.
5. The most recently available curriculum vitae for each professional staff member.
6. Budget information since the beginning of the Center giving the following:
 - Funds available each year from OPS, from the Government of Mexico and from other sources. If each of these is expressed in US\$ it will be most helpful.
 - Funds requested each year from each of these sources.
 - Funds expended each year for the following categories.
 - . Personnel salaries and fringe benefits.
 - . Consultant personnel costs.
 - . Travel expenses.
 - . General operating costs.
 - . Costs of supplies and materials.
 - . Furniture and equipment.
 - . Contract services.
 - . Courses and seminars.
7. If information is available, express the budget as a whole in constant US\$ or some other inflation-adjusted format.
8. A brief description of physical facilities currently available and a statement as to perceived facility needs.
9. A listing of accomplishments during the last eight years with emphasis on the last five years.
10. An appraisal of the needs, programs and technical capabilities of each Member Country in the Region for the ECO program activity areas when this available as well as a similar appraisal of the Region as a whole.

11. In the matter of technical publications and reports the Evaluation Group requests the following:
 - . A listing of publications and separate listings for trip reports arranged chronologically.
 - . A listing of publications and trip reports arranged chronologically for each program area.
 - . Library facilities, number of titles (books, manuals, technical documents), copying facilities, cost of reprints and translation costs.
 - . Interchange technical and scientific publications with other libraries in Mexico and/or other countries, including collaboration with REPIDISCA and BIREME.
 - . Provide the committee with sample publications, technical reports and trip reports for each program area covered during the last five years.
 - . Provide a listing of requests for project development, for technical assistance and for other assistance submitted to the Center by Member Countries, but not included in program activities during the last two years, i.e. requests not receiving the highest priority. Arrange these chronologically.
12. A listing of current projects with a 1/2 to one page summary for each arranged according to program area. Include financial and personnel resources allocated to each project, when project began, anticipated length of the project, anticipated total costs and any major obstacles encountered.
13. A listing of projects completed during the last five years arranged chronologically and according to program area.
14. A one page description of the information/communication activity along with the following:
 - . A listing of data bases available to the Center.
 - . A listing of additional data bases which the Center feels need to be available.
 - . A tally of information requests received during the last five years arranged chronologically by program area and by Member Country.
 - . A listing of requests, if any, which could not be honored.
15. A description of how program areas/activities are/were selected, how priorities are assigned to projects, how projects are developed and how resources are reprogrammed.

16. What procedures are used to
- . Assess and review the progress of programs and projects?
 - . Select materials for translation and publication?
 - . Assess and evaluate the impact of completed projects and publications?
 - . Establish priorities for staff attendance at professional meetings.
17. To what extent have the program plans and projects of ECO been harmonized and coordinated with
- . The overall environmental health and occupation health program in PAHO?
 - . The programs and projects of CEPIS?

Explain how this was done in the past and what is planned for the future.

18. Provide agendas and minutes along with the schedule and list of these invited to ECO staff meetings for the last five years.
19. Provide a listing of short term consultants utilized during the last five years with a one paragraph description summarizing the procedure whereby consultants are selected.

ANNEX II

QUESTIONS AND TOPICS FOR DISCUSSION WITH THE DIRECTOR OF ECO OR WITH DESIGNATED STAFF MEMBERS

1. Explain how the performance of professional and non-professional staff is evaluated.
2. Outline the professional staff development program of ECO and discuss such plans for each professional.
3. How are priorities established for the allocation of travel funds?
4. Explain delegations of authority within the Center.
5. Discuss vacation/leave policy and its application.
6. List the five outstanding accomplishments of ECO since you became director and briefly discuss each of these.
7. What are the three major strengths of ECO? Briefly discuss each of these.
8. What are the three most important aspects of ECO that you feel need to be strengthened? Briefly discuss how this might be accomplished.
9. Explain how terms of reference are developed for your short-term consultants. Have there been any difficulties in this process? If so, discuss illustrative examples and remedial measures taken.
10. What is your perception of the image which ECO has in Member Countries? Specifically, address your perceptions of the Center's image in Brazil, Colombia, Peru, Honduras and Mexico.
11. Discuss the flow of communications/information within the Center.
12. Explain how ECO works and communicates with each of the following:
 - . PAHO country teams.
 - . National governments.
 - . Networks of national centers.
 - . Intersectorial communications within PAHO.
 - . Agencies funding large development projects.
 - . Working relations with CEPIS and other PAHO Centers.

13. Please give the Evaluation Group your thoughts regarding the following matters:
 - . The role of ECO's scientific advisory committees.
 - . The importance of the Center to Mexico.
 - . The importance of the Center to Member Countries.
 - . Your suggestions regarding any needed reprogramming actions.
 - . The kinds and numbers of personnel (professional and technical) required by the Center to conduct its program.
14. Does the ECO Director participate in the advance planning of the budget allocations for his program?
15. Is there an established procedure whereby the program Director is advised periodically regarding the budget status of his program?

ANNEX III

EXTERNAL EVALUATION GROUP: AGENDA FOR ECO MEETINGS
(July 15-16)

1. Introduction and tour of facilities
Dr. Jacobo Finkelman
Director ECO
2. Briefing on external evaluation
Guillermo H. Dávila
Acting Coordinator,
Environmental Health
Program, HPE
3. Discussions individually with each
professional staff member (one hour
for each professional)
Evaluation Group
4. Discussion of information submitted
and a list of agreed upon questions with
the Center Director (8 hours)
Evaluation Group

ANNEX IV

PAHO HEADQUARTERS

June 1983

1. ORGANIZATIONS AND INDIVIDUALS VISITED AT PAHO HEADQUARTERS

Dr. Pedro Acha
Acting Director, Health Programs Development (HPO)

Eng. Guillermo Dávila
Acting Coordinator, Environmental Health Program (HPE)

Dr. Rene Mendes
Regional Advisor, Workers' Health (HPW)

Dr. Ronald St. John
Coordinator, Epidemiology (HCE)

Dr. Francisco Lopez-Antuñano
Coordinator, Tropical Diseases (HPT)

Dr. Jorge Litvak
Coordinator, Health of Adults (HPA)

Dr. Primo Arambulo
Veterinary Public Health (HPV)

Dr. Nestor Suarez Ojeda
Maternal and Child Health (HPM)

Dr. Carlos Daza
Regional Advisor, Food & Nutrition (HPN)

Dr. Jorge Osuna
Coordinator, Health Services Delivery (HHC)

Dr. Jose Roberto Ferreira
Coordinator, Health Personnel (HHP)

Dr. Vicente Witt
Consultant, Environmental Health

Dr. Carlyle Guerra de Macedo
Director

2. BRIEFINGS

In the course of briefings held for the Evaluation Group by the Headquarters staff of the Pan American Health Organization, it was found that the degree of contact with ECO, as expected, varied greatly from program to program with the greatest interest and most intensive involvement being with the environmental and occupational health staff and program. Closer coordination of ECO activities and interests with complementary activities and interests in a number of different other areas may be possible. Such activities include the following:

- . In the Health of Adults program, health effects of pesticides, epidemiologic studies of cancer, study of psychosocial factors and health with a specific project dealing with rapid urbanization, and workplace based programs for the control of alcohol and drug abuse.
- . In the Veterinary Public Health program there is interest in the toxicologic aspects of pesticide residues and chemical contaminants in foods.
- . In the Maternal and Child Health program there is concern about diarrheal disease among migrant populations, the effects of ambient air pollution on respiratory diseases, and the food and nutrition aspects of urbanization and large development projects.
- . The Epidemiology program would like to be more involved with occupational and environmental epidemiology and toxicology problems.
- . The Tropical Disease program and ECO are both concerned with malaria control, control of Chagas disease, impact of economic development projects and educational programs.
- . The Health Services Delivery program is interested in exploring how occupational health services may be integrated into primary care services and in several other areas such as improved coordination between social security and ministry of health programs.
- . Both the Health Manpower program and ECO are interested in curriculum development, training and continuing education.
- . There was a suggestion that PAHO should consider how ECO might work more closely with other information and communications programs of PAHO.

Other briefings dealt with the genesis and development of ECO and overview of its program, and the terms of reference for the evaluation. The Evaluation Group was most appreciative of the excellent briefings and many kind considerations offered by the PAHO staff.

ANNEX V

PERU
June, 1983

I. Visits by One Member of the Group (June 1983)

In accordance with the procedures established by PAHO/WHO for the evaluation of the Pan American Center for Human Ecology and Health (ECO), the following institutions were visited by Mr. César Macher in the company of Mr. Carlos Cúneo, Country Engineer of PAHO/WHO.

A. Ministry of Health

Dirección General del Medio Ambiente
General Director: Eng. Javier Bacigalupo
Which consists of:

- i. Dirección de Salud Ocupacional y Laboratorios del Ambiente.
Director: Dr. Mario Espinoza
- ii. Dirección de Protección del Medio Ambiente (agua, aire, suelo)
Director: Eng. Oscar Cáceres
- iii. Dirección de Saneamiento Rural
Director: Eng. Carlos Marroquín
- iv. Dirección de Zoonosis y Control de Alimentos
Director: Dr. Veterinario José Palomino

B. Pan American Center for Sanitary Engineering and Environmental Sciences "CEPIS", (PAHO/WHO)

Director: Eng. Alberto Florez
Which consists of:

- i. Unit for the Development of Human and Institutional Resources.
Coordinator: Eng. Rodolfo Saenz
- ii. Unit for the Development of Information and Publications.
Coordinator: (a.i.) Eng. Alberto Florez
- iii. Unit for the Development of Technology.
Coordinator: Eng. Carl Bartone.

C. Oficina Nacional de Evaluación de Recursos Naturales (ODERN)

(Instituto Nacional de Planificación)
Director: Eng. Carlos Zamora

Executive Branches of ODERN:

- a. Dirección de Estudios Integrados
- b. Dirección de Estudios para la Preservación del Medio Ambiente

D. Universidad Nacional de Ingeniería

Eng. Enrique Jimeno, Director of the Sanitary Engineering Academic Program

E. Empresa de Servicio Nacional de Abastecimiento de Agua Potable y Alcantarillado

General Manager: Eng. Roberto Hart

F. Instituto Nacional de Desarrollo Urbano

(Ministerio de Vivienda y Construcción)

(Was not visited; it is in the process of implementation)

II. KNOWLEDGE AND IMAGE OF ECO

The national agencies have no knowledge of the activities which ECO undertakes in the region of the Americas and the Caribbean.

Practically all of the directors of the institutions visited would like PAHO/WHO to promote the ECO image, so as to be able to officially request pertinent collaboration.

III. NEEDS AND PROGRAMS OF THE COUNTRY

Among the principal needs of the country in which ECO technical assistance and collaboration could be received, the following are pertinent:

- . Motivated by the upcoming promulgations of the Environmental Bases law, assistance is wanted for the establishment of environmental policies, its prevention and control of ecological systems.
- . Acquisition of technical information in pertinent areas.
- . Development of technologies, principally of the type for the recycling of industrial residues (mining, agroindustry).
- . Training in methodologies for environmental epidemiology, occupational health and industrial toxicology.
- . With respect to CEPIS, its Director expresses the importance and potentials of ECO and the need to speed-up communications and coordination among: CEPIS/ECO/Country Representative/Central Office (Washington). Likewise, he offers the collaboration of his "REPIDISCA" information unit.

- . The planning and construction of the new city named "Constitución" in the upper Peruvian jungle offers a potential field for receiving ECO technical assistance.
- . The "Universidad Nacional de Ingeniería," through the Director of its Sanitary Engineering Academic Program, expressed interest in receiving assistance in the field of ecology, particularly in the field of curricula, technology and technical information, offering the structure of the U.N.I. as the collaborating entity.

ANNEX VI

BRAZIL

June 20-24, 1983

A. Initial visit by one member of the Group (June 20-24, 1983)

I. OBJECTIVE

With the objective of obtaining information which might be useful for the external evaluation of ECO, Dr. Manildo Favero of the Evaluation Group visited alone some of Brazil's institutions, according to the prearranged program. These visits took place one week before the beginning of the combined work of the External Evaluation Group made up of three professionals.

Inputs of information were obtained for the presentation of the Group's final report, in which information was presented with recommendations on the present involvement and future activities of ECO. This was undertaken in accordance with decisions of the Director of the Pan American Health Organization, Dr. Carlyle Guerra de Macedo, following the resolutions of the Governing Bodies of this Organization.

II. ORGANIZATIONS VISITED IN BRAZIL

1. Companhia de Tecnologia de Saneamento Ambiental - CETESB
Address: Av. Prof. Frederico Herman J.R. - 345
CEP. 05459 - Sao Paulo - Capital
2. Departamento de Saude Ambiental da Faculdade de Saude Publica da Universidade de Sao Paulo
Address: Av. Dr. Aranaldo 715
CEP. 01255 - Sao Paulo - Capital
3. Fundacao Estadual de Engenharia do Meio Ambiente - FEEMA
Address: Rua Fonseca Telles 121 - 15 andar
Rio de Janeiro
4. Secretaria de Estado de Saude e Higiene do Rio de Janeiro
Address: Av. Marechal Camara 350 - 3 andar - Centro
Rio de Janeiro
5. Secretaria de Saude Publica do Estado da Bahia
Address: Centro Administrativo da Bahia
Plataforma 6, 4a. Avenida
Salvador - Bahia

6. Departamento de Hidraulica e Saneamento do Escola Politecnica da Universidade Federal da Bahia
Address: Rua Aristicles Novis 2
Campus Universitario
Salvador - Bahia
7. Centro de Recursos Ambientais da Secretaria de Planejamento do Estado da Bahia - C.R.A.
Address: Rua Rio Sao Francisco 1
Montserrat - Salvador - Bahia

III. INFORMATION ON PREVIOUS ECO RELATIONS

- A. Of the seven institutions visited, three did not know about ECO.
- B. Of the four which knew ECO, one maintained some degree of interchange in the are of toxicology. One institution received a visit from the Director of ECO, but combined activities have not developed and it did not receive collaboration of any kind.

Two institutions had changed their directorships very recently, which hindered obtaining information. They maintained that at the moment, they did not have any combined activity with, nor any support from ECO. One of them said they had received a visit from the ECO Director and, in the past, maintained a kind of relationship, with an attempt to increase it from now on. One institutions said that they had requested ECO consultancy from PAHO. The consultancy was received at the opportune time, but as yet they have not received the report of the consultant and there has been no follow-up.

IV. INTEREST IN FUTURE ACTIVITIES

- A. All of the institutions visited expressed great interest in receiving support and to participate in activities with ECO in the future.
- B. All of the institutions recognized the existence of immense communication difficulties. They wish that better channels would be created for this purpose. On the other hand, then concur that ECO can be very important in the diffusion of knowledge and information on Human Ecology, in the areas of environmental pollution, toxicology, epidemiological methodology for the evaluation of environmental problems and their effects on health, etcetera.
- C. The institutions expressed a great interest in receiving consultation in the development of integrative programs between primary health care activities and occupational health.

AUTORIDADES ENTREVISTADAS

NOMBRE	PROFESION	CARGO	INSTITUCION
1. Ing. Carlos Celso do Amaral e Silva	Ing. Químico	Coordinador de Cooperación Externa	CETESB
2. Dr. Diogo Pupo Nogueira	Médico del Trabajo	Jefe de Departamento	Dpto. Salud Ambiental-Escuela de Salud Pública-Univ. de Sao Paulo
3. Dr. Nelson de Carvalho de Assis B.	Médico Pediatra	Secretario de Salud	Srta. de Salud Pública del Estado de Bahía
4. Dr. Gregorio Abreu Santos	Médico Pediatra	Superintendente de Salud	Srta. de Salud Pública del Estado de Bahía
5. Ing. Dr. Roberto de Araujo Reis	Ing. Civil	Coord. Salud Amb.	Srta. de Salud Pública del Estado de Bahía
6. Dr. Luiz Wladimir Vilalba N.	Ing. Civil	Jefe Dpto. Hidráulica y Saneamiento	Escuela Politécnica de la Univ. Federal de Bahía
7. Dr. Jorge Evrico Ribero Matos	Ing. Sanitarista	Coordinador Curso Ing. Sanitaria	Escuela Politécnica de la Univ. Federal de Bahía
8. Dr. Luiz Roberto Santos Moraes	Ing. Sanitarista	Vice-Coordinador de Cursos Ing. Sanit.	Escuela Politécnica de la Univ. Federal de Bahía
9. Severino Soares Agra Filho	Ing. Químico	Gerente de Análisis y Control	Centro de Recursos Ambientales (CRA) Bahía
10. Ana Virginia Cortes	Ing. Químico	Funcionario de CRA	Centro de Recursos Ambientales (CRA) Bahía
11. Armando Leitao Mendes	Arquitecto	Presidente Interino	Fundación Estatal de Ingeniería del Medio Ambiente-FEEMA-Río

B. Visit by the Evaluation Group (July 1983)

1. Organizations and individuals visited in Brazil by the ECO Evaluation Group

- 1.1 OPS/OMS, Area V, Brasilia.
Eng. Eduardo Gomez
Coordenador do Programa de Saude Ambiental
- 1.2 Ministerio de Saude - Brasilia
 - a. Dr. Joaquín Costa Pinto Dantas
Director, Divisao Nacional de Ecologia Humana e Saude Ambiental
 - b. Dr. José Xavier
Director da Divisao Nacional de Saneamento
 - c. Dr. Ivan Rud de Moraes
Chefe de Servico de Bromatologia
- 1.3 Coordenacao de Assuntos Internacionais de Saude - CAIS - Brasilia
 - a. Dr. Edinelson Pereira
Chefe do Servico de Cooperacao com Organismos Internacionais
- 1.4 Secretaria Especial do Meio Ambiente - SEMA - Brasilia
 - a. Stanislau Oliveira
Chefe de Planejamento e Area de Cooperacao Tecnica Extranjeira
 - b. Eng. Luiz Carlos Pereira
Coordenador de Controle da Poluicao
- 1.5 Conselho Nacional de Pesquisa - CNPq - Brasilia
 - a. Dr. Lynaldo C. de Albuquerque
Presidente do CNPq
 - b. Dr. Célio Cunha
Superintendente de Desenvolvimento Social
- 1.6 Companhia de Tecnologia de Saneamento Ambiental - CETESB - Sao Paulo
 - a. Eng. Carlos Celso do Amaral e Silva
Coordenador de Cooperacao Externa
- 1.7 Secretaria de Estado da Saude - Sao Paulo
 - a. Dr. Joao Yunes
Secretario de Saude
 - b. Dr. José da Rocha Carvalheiro
Director da Coordenadoria de Servicos Tecnicos.

2. Recognition and Image of ECO

In Brasilia, institutions have been established such as: PAHO, Area V, the Ministry of Health, the Special Secretariat of the Environment (SEMA), the National Research Council (CNPq), and the International

Coordination of Health Affairs (CAIS). These institutions receive routine requests for their collaboration on problems related to health and the environment in the different regions of Brazil. At the same time, the aforementioned requests are directed to the competent, international institutions.

If it be so that some of the Brazilian institutions visited were not sufficiently informed about ECO, they have submitted some requests for cooperation. The Ministry of Health, through the mediation of CAIS, presented a request for consultation on the part of the Health Secretariat of the State of Bahia, to PAHO, Area V, for ECO to help them find a solution to the problem of the contamination produced by industrial development.

In July of 1982, ECO sent an Environmental Systems Analyst. The report of this consultant has not been sent to the interested parties, who continue to expect that the collaboration which was requested will be maintained.

On the other hand, the State University of Campina (UNICAMP), located in the State of Sao Paulo, has maintained relations with ECO on a large scale, according to information from various institutions in Brasilia.

As a part of the program established by ECO to provide courses on the Use of the Epidemiological Method in the Evaluation of Environmental Risks in the different Latin American countries, with the objective of disseminating knowledge, one of these courses was given at UNICAMP in November, 1982. ECO's collaboration consisted of teaching material, two Mexican consultants and fellowships for students from other countries. Twenty-three professionals coming from five Brazilian states and one from Peru attended the course. CNPq of Brasilia financed a part of the resources.

ECO also financed the participation of a professor from UNICAMP in the course on Training for Risk Prevention in the Use of Pesticides, held in Mexico. The same professor prepared the Portuguese translation of the material for use in Brazil.

UNICAMP has received ECO consultants for different activities, such as setting up the research project on The Effects of Exposure to Solvents (Benzene), and the organization of the Program in Epidemiological Surveillance in Ecotoxicology.

ECO lent its help to UNICAMP when the latter created its Human Ecology Nucleus.

All of the Brazilian institutions visited recognized that it is necessary to receive more information about ECO's programs and activities, as well as more possibilities. Some of them, such as the Ministry of Health, SEMA, CNPq, CAIS and the Company for Environmental Sanitation Technology

(CETESB) in Sao Paulo, said that the last year they received a visit from the ECO Director. In the course of this visit, various possibilities for mutual cooperation were studied, which have not yet been undertaken.

3. Country Needs and Programs

All of the institutions visited expressed their interest in receiving help and participating in future ECO activities. They recognize that bureaucratic obstacles exist, which makes communication very difficult, and they desire the creation of better channels to facilitate it. The majority of the institutions expressed the need to receive ECO support in toxicology activities. The organizations responsible for standards and regulations expressed emphatically ECO's importance as a medium of information on the following activities: Toxicological legislation in other countries, level of toxicity of various products, acceptable parameters in other countries, etcetera. Given the increasing use of agropoisons and other environmental contaminants, the evaluation of their effects on health and the preparation of concrete control and prevention measures have acquired ever increasing importance. Institutions such as the Ministry of Health, SEMA, the Health Secretariat, CNP and CETESB, expressed great interest with respect to the area of toxicology.

Moreover, according to the majority of Brazilian institutions, there exists a great need to evaluate in populations, the health effects of environmental modifications, such as urbanization and industrialization, noise pollution, and contamination of water, soil and air. Various institutions mentioned the problem of contamination in the Cubatao Region, State of Sao Paulo, and in El Salvador, State of Bahia, as well as contamination by heavy metals, and pesticides.

There is a great interest in that ECO might collaborate in the evaluation of the state of health of exposed populations. The Government of Brazil created a special commission to solve the Cubatao problem, taking into account its gravity and the interest which it has awakened. Various institutions, like SEMA, the Ministry of Health, CETESTB, CNPq, the Health Secretariat, and the universities share this interest.

Great importance is granted for the training of personnel, so that toxic products may be used properly and environmental control implemented. ECO could help a lot to prepare the methodology for personnel training in these areas.

Finally, one activity which was mentioned as important to develop in Brazil is the preparation of personnel for rapid action in cases of public emergency and disaster.

On the other hand, institutions, such as the CETESB, which have great experience in environmental monitoring and have at their disposal great personnel and equipment possibilities, expressed interest in working with ECO in an integrated way, on projects directly related to health in populations.

ANNEX VII

COLOMBIA

1. Visit by the Evaluation Group (June 1983)

1.1 PAHO personnel working in Colombia:

Dr. Luis A. Valle, Country Representative
Henryk Weisenfeld, Sanitary Engineer
Roger A. Gamboa, Sanitary Engineer

1.2 Ministry of Health:

Dr. Jorge Garcia Gomez, Minister of Health
Dr. Carmelo Deladado, International Affairs Chief
Dr. Elmer Escobar, Director of Environmental Sanitation
Dr. German Jimenez Roza, Director of Human Resources
Eng. Clara Barrera, Coordinator of Health Education and Administration
Dr. Manuel Guillermo Gacharna, Support Group
Dr. Carlos E. Castro, Director of Investigations
Dr. Alberto Pinzon Sanchez, Director of Community Participation
Dr. Jose M. López, Occupational Health
Mr. Alfonso Peña, Chief of Toxicology Section
Dr. Hernandez Ramirez, Accident Control Program

1.3 Ministry of Labor:

Dr. Astrid Roza de Rivera, Chief of Occupation Health

1.4 Social Security Institute:

Dr. Simon Bossa, Chief of Occupational Health

1.5 Other governmental agencies and corporations:

Edgar Caicedo, Chief of Environmental Engineering
Regional Autonomous Corporation for Bogotá and the Valleys of the Ubaté
and Chiquinquirá
Jairo Escobar, Chief of Environmental Impact Program, INDERENA
Luis Alejandro Prieto, Section Chief, INDERENA

1.6 Javeriana University Interdisciplinary Studies Faculty:

Father Vicente Connally
Adela Morales, Department of Food and Nutrition

2. Awareness and Image of ECO-PAHO

Personnel from the Ministry of Health with whom the Group visited were

aware of the Center and its activities. The Center Director, Dr. Finkelman, visited Colombia and met with many of the same individuals with whom the evaluation group talked a short time before the evaluation group visited Colombia. For the most part, the Center was perceived as being responsive to needs of the Country and the quality of its assistance was felt to be quite good. The need to utilize appropriate communication channels and work closely with and through PAHO personnel in Colombia was emphasized. On the whole, the communications flow seemed satisfactory at the present time, though there may have been some occasions in the past when PAHO personnel were not always sufficiently informed of the Center's contacts and activities.

The Center was less well known outside the Ministry of Health. Individuals in the other agencies working in environmental and occupational health were not familiar with the Center or its programs.

3. Country Needs and Programs

The Center has provided assistance to Colombia in the investigation of enteric and other diseases among workers in a plant manufacturing clothing. The Center also plays a supportive role in the development of a national plan for the integration of occupational health services. The Center has further provided assistance in critically reviewing epidemiology protocols developed in the Country. Publications from the Center and its bibliographies were said to have been helpful by several individuals and groups.

Colombia has a National Plan for Health. Occupational health has been accorded a very high priority, with the health of workers ranking just behind maternal and child health. It was also pointed out that the Center could help establish framework in which several Member Countries could work together on shared environmental health problems, e.g. those involving the Amazon basin and health problems of indigenous populations. Specific needs included the following:

- . Assistance in studies of the ecologic impact of dams, especially when combined with industrial development in river basins.
- . Information on the toxicology of pesticides, along with epidemiologic methods to study the health effects of pesticides exposure.
- . Assistance in developing epidemiologic studies of the effects on health of ambient air pollution.
- . Epidemiologic methods for the study of the effects in community and worker health of large-scale coal mining.
- . Information on health problems encountered in colonization of new lands, in the forest products industry, and in planning other social industrial and economic development projects.

- . Assistance in health studies of marginal urban areas and internal migration.
- . Cooperative efforts in short-term training and continuing education programs for health professionals and the community.
- . Improvement of information services for environmental and occupational health programs.

A number of other specific environmental and occupational health problems of major concern were also discussed:

- . Exposure of workers in the flower growing industry to a variety of pesticides.
- . Reproductive effects of agricultural chemicals in a rice-growing area.
- . Malaria prevalence in the vicinity of newly constructed dams.
- . Pesticide residues in food.
- . Health effects of aerial application of herbicides used to control plants which are the source of abused drugs and pharmacologically active substances.

ANNEX VIII

HONDURAS

I. Visits by the Evaluation Group (July 1983)

In accordance with the procedures established by PAHO/WHO for the evaluation of the Pan American Center for Human Ecology and Health (ECO), official visits were made to the following institutions:

1. Pan American Sanitary Bureau

- . Dr. Norberto Martinez, Interim Representative during the vacation of the C.R. Dr. Hugo Villegas.
- . Dr. Alvaro Rueda, Epidemiologist, PAHO/WHO.
- . Ing. Alberto Amat, Vector Control, PAHO/WHO.

2. Permanent Technical Commission for Public Health, "El Cajón" Hydroelectric Project

- . Ing. J. Armando Berlioz, Coordinador of the Interinstitutional Group of the "El Cajón" Hydroelectric Project.
- . Dr. Edgardo Umaña Erazo, Delegate from the Ministry of Public Health.
- . Ing. Francisco A. Funez, Delegate from the Empresa Nacional de Energía Eléctrica (ENEE).

3. Empresa Nacional de Energía Eléctrica (ENEE)

- . Ing. Hernán Aparicio Velasquez, General Manager.

4. Ministry of Public Health

- . Dr. Gustavo Corrales, General Director of Health.

II. Knowledge and Image of ECO

The national entities make reference to an acquaintance with ECO through the participation of Dr. Schorr in the dam project "El Cajón", as technical assessor in matters related to human resettlement. Also, through the promotional work carried out recently by ECO Director (Dr. Jacobo Finkelman).

The General Director of Health expressed that he was not aware of the existence of ECO except in certain combined activities with the "Permanent Technical Commission for Public Health in the 'El Cajón' Hydroelectric Project."

In general, the national personnel appreciate the ECO image and hope for greater, realistic technical assistance on the part of the institution.

III. Country Needs and Programs

In principal, the national authorities concur in receiving greater assistance from ECO, once they know the areas of work which the Center can offer.

Among the principal needs of the country, the following are prominent, in order of priority:

1. Continue the ECO technical assistance in the area of the "El Cajón" hydropower project, based on the Memorandum of Understanding for the Development of Health Programs and its annexes, signed in April 1983 between the Government of Honduras and PAHO/WHO.
2. The General Director of Health of the Ministry of Public Health identifies a few, specific case problems in which ECO could participate, providing technical assistance, among them:
 - . Environmental contamination by pesticides, handling, mixing and application, as well as residual effects.
 - . Problems of environmental contamination by dust from a cement factory and the establishment of emission standards to avoid damage and/or insults to health.
 - . Problems and health effects of the use of organophosphates, especially in cotton zones, and peasant health education.

ANNEX IX

MEXICO

1. Visit by the Evaluation Group (11-13 July 1983)

1.1 Secretaría de Salubridad y Asistencia

Dr. Héctor Fernández Varela
Subsecretario de Salubridad

Dr. Manuel Quijano
Director de Asuntos Internacionales

Dr. Héctor Fernández Varela
Subsecretario de Salubridad

Ing. Enrique Tolibia
Director de Salud Ambiental

Dr. Sergio Estrada
Director de Investigación de Efectos del Ambiente sobre la Salud

1.2 Secretaría de Desarrollo Urbano y Ecología

Biol. Alicia Barcenás Ibarra
Subsecretaria Ecología

Ing. José Luis Calderón
Director General de Control de la Contaminación del Agua

Ing. Francisco Bahamonde
Subdirector de Aguas Residuales

Dr. Humberto Bravo
Director General de Control de la Contaminación Ambiental

Arq. Mario Fernández de la Garza
Director General de Ordenamiento Ecológico e Impacto Ambiental

1.3 Instituto Nacional de Investigaciones sobre Recursos Bióticos

Dra. Lilia Albert
Directora, Programa Contaminación Ambiental

1.4 Centro de Investigación Ecológica del Sureste de México

Dr. Raul Ondarza
Director

1.5 Instituto Mexicano del Seguro Social

Ing. Eduardo Escárcega
Jefe de los Servicios de Higiene y Seguridad del Trabajo

Dr. Juan Legaspi
Jefe de los Servicios de Medicina del Trabajo

1.6 Universidad Nacional Autónoma de México

Dra. Cristina Cortina de Navas
Coordinadora Programa de Investigación de Medio Ambiente y Salud

1.7 Secretaría de Agricultura y Recursos Hidráulicos

Ing. Jorge Aguirre Martínez
Director General de Usos del Agua y Prevención de la Contaminación

Ing. Mauricio Ettie
Subdirector de Evaluación Ambiental

1.8 Programa de las Naciones Unidas para el Medio Ambiente

Ing. José Lizarraga
Director y Representante Regional

1.9 OPS/OMS, Area II

Dra. Elsa M. Moreno
Representante Area II

1.10 Centro Panamericano de Ecología Humana y Salud

Dr. Jacobo Finkelman
Director

Dr. Andrew A. Arata
Ecólogo

Dra. Nilda A.G.G. de Fernícola
Toxicóloga

Dr. A. Mel Gajraj
Analista de Sistemas Ambientales

Dr. Rexford D. Lord
Ecólogo

Biol. Monique Mitastein
Sistema de Información

Dr. Thomas S. Schorr
Antropólogo Social

Martha Solís
Administradora

Dra. Jussara Teixeira
Salud Ocupacional (Contratación Temporal)

2. Awareness and image of ECO in Mexico

Because of the recent change in administration in Mexico and subsequent realignment of agency responsibilities for environmental and ecological matters, a substantial number of those contacted had assumed their current responsibilities during the last few months. There was a general awareness of the Center among most of those with whom we spoke. Those who had worked directly with ECO, usually on an informal basis, for the most part seemed pleased with the assistance, usually technical information, provided to them and their collaborative efforts in developing educational materials and guidelines. Many of those who had not worked with ECO, had personal contacts with the current ECO Director, Dr. Finkelman.

The Evaluation Team attended the first meeting of the Consultative Council and hopes that this group will provide assistance, when needed, for ECO and that the Council will help coordinate and facilitate ECO's collaborative activities with the Ministry of Health and other governmental agencies in the Host Country.

A number of those contacted were familiar with some of the problems engendered by the location of ECO facilities some distance away from Mexico City. At least one professional felt that staff changes, improved coordination within PAHO, changes in the Scientific Advisory Committee structure, better follow-up of initial contacts in Member Countries, an improved inventory of country needs, better identification of applicable expertise within countries of the region, and a sharpening of the focus of the Center programa was needed.

3. Country needs, programs and capabilities

The Evaluation Team met with individuals from governmental agencies, governmental research of service laboratories and university research personnel involved with environmental and occupational health. These

institutions and their laboratories were not visited for a lengthy period, and it is not the purpose of this report to prepare detailed comments on each of their capabilities.

Mexico is a large environmentally diverse country with many different kinds of environmental and occupational health problems. The resources available which might contribute to amelioration or solution of these problems are located in many different institutions.

Integration of available human resources and laboratory capabilities so as to deal most effectively and efficiently with environmental and occupational health remains a major problem in Mexico and in most other Member Countries. The relationships linking the Ministry of Health and other governmental and university groups that are responsible for conducting research and providing health-related information applicable to environmental health problems with a new agency, which is responsible for urban development and ecology are not yet clearly defined.

With the previously discussed limitations in mind, the Evaluation Group perceived the primary ECO related needs and interests of Mexico to be as follows:

- . Providing information in Spanish that would assist these responsible for environmental regulation and health promotion/disease prevention.

Among the areas of primary interest were toxicology and epidemiology studies of toxic substances (especially pesticides), industry profiles containing information about potentially harmful occupation exposures and environmental effluents and criteria documents from the World Health Organization and individual nations.

- . Short-term and in-service training with special emphasis, first, on epidemiologic methods applicable for the study of the relationships between clusters of cases of diseases that might be caused or aggravated by occupational/environmental factors and, second, epidemiologic methods for health surveillance applicable to environmental health problems.
- . Training courses and symposia dealing with toxicology, toxicologic research methods and toxicologic aspects of selected environmental contamination problems or diseases where environmental factors might be of some etiologic importance.
- . Assistance in developing or revising standards and regulations dealing with environmental and occupational health problems.
- . Providing guidelines for industrial and agricultural development projects.

- . Providing information needed for health-related aspects of environmental impact statements.
- . Serving as a focus for coordinating multicountry studies of shared environmental health or industrial-agricultural development problems.
- . Serving as a focus or mechanism for the coordination of health related investigations of selected problems within the country.

The Evaluation Group observed that most individuals contacted gave the highest priority to that area of activity that was of most relevance to their own program and that not all these consulted would necessarily agree with the opinion of the Evaluation Group.

ANNEX X

CURRENT PROGRAM OF ECO

I. HEALTH EFFECTS OF INDUSTRIAL CONTAMINANTS

Main problems

Several factors have led to increased public health concern related to chemical contamination in Latin America and the Caribbean. Among them are the following:

1. Increased industrial growth without adequate control relating to effluent treatment or location of effluent discharge.
2. Increased use of synthetic chemicals in the agricultural sector; inadequate planning or enforcement of laws relating to the location of industry particularly in urban and food growing areas.
3. Massive and sudden chemical contamination of the water, air or land can occur as a consequence of natural disasters if a chemical plant or storage facility is damaged and this aspect needs consideration in a country's overall disaster preparedness activities.
4. Shortage of manpower and materials: to identify chemical substances in the environment which constitute a health risk and to evaluate their risk; to propose and implement practical preventive and corrective measures; to deal with emergencies.
5. Lack of legal control measures and standards.
6. Lack of administrative and technical infrastructure; lack of public awareness.
7. Epidemiological activities in the Americas are concentrated mostly in the field of communicable diseases. Very limited activities are performed in the environmentally related problems.
8. There is an inadequate technique definition of the magnitude of the problem in the various countries of the Region.
9. Disease recognition of the pathology associated with environmental factors is in the majority of the cases beyond the technical capacity and resources available locally. Therefore its recognition, investigation and control is deficient.
10. Data collection is usually unreliable, systematic analysis and correlation of environmental information and disease occurrence is limited, fragmented, isolated and receive minimal support from the health services.

11. There is a lack of trained professionals specialized in the field of environmental epidemiology and the vast majority of the health personnel is unaware of many ecological problems which are subject to local prevention and control.

Long-term objectives

1. To develop the institutional capacities of the Member Countries to enable them to deal effectively with the health hazards associated with the manufacture of chemicals and toxic substances.
2. To promote the routine incorporation of epidemiological vigilance of environmental chemical risks in the institutional program of the Region.
3. The development of adequate standards and legislation.
4. The promotion and development of environmental toxicological courses for incorporation into the curricula for the training of chemists, physicians, biologists, agriculturalists, veterinarians, etc., and the identification of regional specialists who can assist the Member Countries in these fields.
5. The creation of efficient channels of communication for the exchange of toxicological information.
6. The coordination from one focal point, of all important toxicological activities with a view to developing a regional program.
7. To facilitate access of the Member Governments to relevant information related to technological disasters, their health risks and actions needed to mitigate or counteract associated health problems.
8. Contribute to the development of an evolving training strategy on epidemiology, suitable to the industrial growth expected in the Region.
9. Promote a research program on the following subjects:
 - a) New environmental health risks
 - b) Effectiveness of preventive and control measures
 - c) Health impact assessment methodology.

II. WORKERS' HEALTH

Main problems

Presently some problem areas can be identified that prevent the formulation and realization of occupational health programs in almost all countries of the Region:

1. Coverage. The majority of the programs in occupational health cover only the workers of the larger industries or those affiliated with social security schemes, often not exceeding 20% of the economically active population. This leaves workers of small industries (less than 100 employees), which represent almost 50% of the industrial labor force, without any access to specialized services, including preventive measures, diagnosis, and treatment. Rural workers are usually deprived of any occupational health care and they have limited access to general health services or do not avail themselves of such services when available.
2. Inter-institutional relations. In many countries occupational health programs are fragmented and scattered among several institutions belonging to different administrative sectors. The most frequent separation is between the health and labor sectors, where sometimes the functions of each are clearly defined and complement each other, but more often there is an overlapping of roles. Likewise, in many countries there exist powerful social security institutions which are partially or completely autonomous and which may be the only available occupational health program in the country.
3. Information. Data on work-related accidents and occupational diseases are frequently incomplete and sometimes non-existent. Numerous factors affect this situation:
 - a) Underreporting of workers' accidents either due to lack of information from the victims or for fear of reprisal on the part of the employer. Likewise, unreported are accidents of workers who are not affiliated with a social security scheme.
 - b) Occupational diseases are also under-reported because the correct pathology is not adequately diagnosed.
 - c) Partial registration of data by the interested institutions.
 - d) Economically active population censuses of workers are incomplete or non-existent making analyses difficult.
4. Social and cultural patterns. The perception of potential risks is very variable among workers and is related to educational level, urban or rural origin, age, sex, religious beliefs, professional qualifications and other sociocultural factors which are necessary for adapting the program to the community.

5. Lack of trained personnel. There exists a lack of trained specialists in occupational health as well as a lack of knowledge of occupational risks on the part of general practitioners and other health services workers (nurses, etc.).

Long-term objectives

PAHO's Occupational Health Program defines objectives and priority areas. In relation to the social objectives of "Health for All by the Year 2000" the incorporation of occupational health activities into the general health services programs is proposed to provide coverage to the whole of the economically active population.

To achieve this goal, three main areas of action are proposed:

- a) Training of general health services personnel in occupational health;
- b) Inter-institutional coordination and formulation of national occupational health programs; and
- c) Development of epidemiological investigations on occupational diseases and accidents.

PROGRAMACION OPERATIVA
NIVEL REGIONAL

ORGANIZACION PANAMERICANA DE LA SALUD
Oficina Sanitaria Panamericana, Oficina Regional de la
ORGANIZACION MUNDIAL DE LA SALUD
AMPLS

1 DIVISION OPERATIVA 3.00
2 NUMERO DEL PROGRAMA 01
3 TITULO DEL PROGRAMA SALUD DE LOS TRABAJADORES
4 AÑO COMPLETIVO 19 83
5 MES DEL COMPLETIVO 19 83

6 PROYECTO FINANCIADO POR LA PREXIPAMAT EN UN
7 MONEDA MONETARIA LOCAL

8 FECHA 10 / SEPT. / 1982.

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Actividades o mediano plazo					Cuentas de actividades de la OPS/OMS																			
Breve descripción					25		26		27		28		29		30		31		32		33		34	
					35		36		37		38		39		40		41		42		43		44	
1	Adi. mtr. de material educativo.	1	Actividades para el año operativo	Descripción	CF	Salud Ocup.	5000	5000																
2	Apoyo al desarrollo de estereos normativos.	2	Curso Básico de Salud Ocupacional	Guía sobre Prevención y Control de riesgos a la salud de la Industria Azucarera. Producción del material y promoción regional.	CF	Salud Ocup.	500	500																
3	Sistema de Información.	1	Organización del sistema, adquisición de material. Actividades de divulgación en la Región.	Organización del sistema, adquisición de material. Actividades de divulgación en la Región.	CF	Espec. Infor.																		
4	Publicaciones.	1	Traducción al español de la Guía del NIOSH sobre identificación de las Enfermedades Ocupacionales.	Traducción al español de la Guía del NIOSH sobre identificación de las Enfermedades Ocupacionales.	CF	Salud Ocup.																		

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