WASH Field Report No. 429

CONSTRAINTS TO PRODUCING AND COLLECTING URBAN ENVIRONMENTAL HEALTH DATA IN CENTRAL AMERICA

by

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December 1993

RELATED WASH REPORTS

1993 Update: Planning for Water and Sanitation Programs in Central America. WASH Field Report No. 404. September 1993. Prepared by Gail Rothe.

Planning for Urban Environmental Health Programs in Central America: The Development of Water and Sanitation-related Environmental Health Indicators and the Survey of Existing Data in Three Cities. WASH Field Report No. 420. October 1993. Prepared by Gail Rothe.

Environmental Health Assessment: A Case Study Conducted in the City of Quito and the County of Pedro Moncayo, Pichincha Province, Ecuador. WASH Field Report No. 401. October 1993. Prepared by Gustavo Arcia, Eugene Brantly, Robert Hetes, Barry Levy, Clydette Powell, José Suárez, and Linda Whiteford. Joint paper with PRITECH.

Environmental Health Assessment: An Integrated Methodology for Rating Environmental Health Problems. WASH Field Report No. 436. October 1993. Prepared by Eugene Brantly, Robert Hetes, Barry Levy, Clydette Powell, and Linda Whiteford.

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ACRONYMS

A.I.D.	U.S. Agency for International Development (Washington)
AMSS	*Area Metropolitana de San Salvador* (Metropolitan Area of San Salvador)
ANDA	*Administración Nacional de Acueductos y Alcantarillados* (Salvadoran national water and sewerage agency)
ASIES	*Asociación de Investigación e Estudios Sociales* (Association of Research and Social Studies)
BANVI	*Banco de la Vivienda* (Housing Bank)
CONAMA	National Commission for the Environment
COPECAS	*Comité Permanente de Coordinación de Agua Potable y Saneamiento* (Guatemala Permanent Water and Sanitation Coordinating Committee)
DRDB	*Departamento de Recolección y Disposición de Basuras* (Department of Solid Waste Collection and Disposal)
EMPAGUA	*Empresa Municipal de Agua de la Ciudad de Guatemala* (Guatemala City Municipal Water Authority)
ESA	external support agency
GOES	government of El Salvador
GOG	government of Guatemala
IDB	Inter-American Development Bank
IGSS	*Instituto Guatemalteco de Seguridad Social* (Guatemalan Social Security Institute)
JICA	Japanese International Cooperation Agency
LAC	Bureau for Latin America and the Caribbean (A.I.D.)
LOGROS	Local Government Outreach Strategy (RHUDO/CA project)
MAG	*Ministerio de Agricultura* (Ministry of Agriculture)
MGOB	*Ministerio de Gobierno* (Ministry of Government)
MIPLAN	*Ministerio de Planificación* (Ministry of Planning)
MIS	Management Information System
MOP	*Ministerio de Obras Públicas* (Ministry of Public Works)

MSPAS	*Ministerio de Salud Publica y Asistencia Social* (Ministry of Public Health and Social Assistance)
MTRAB	*Ministerio de Trabajo* (Ministry of Labor)
NGO	nongovernmental organization
OPAMSS	*Oficina de Planificación de la Area Metropolitana de San Salvador* (Office of Planning for Metropolitan San Salvador)
PAHO	Pan American Health Organization
PLADES	*Plan de Acción de Desarrollo* (National Action Plan for Development)
RIC	Regional Information Center (part of ROCAP, A.I.D.)
RHUDO/CA	Regional Housing and Urban Development Office for Central America (A.I.D.)
ROCAP	Regional Office for Central America and Panama (A.I.D.)
SEGEPLAN	*Secretaria General de Planificación* (Secretariat for Planning)
SEMA	*Secretaria del Medio Ambiente* (Secretariat for the Environment)
SRH	*Secretaria de Recursos Hidraulicos* (Secretariat for Hydraulic Resources)
UEDA	*Unidad de Estadisticas de Agua* (Special Water Unit of ANDA)
UNEPAR	*Unidad Ejecutora del Programa de Acueductos Rurales* (Implementation Unit for Rural Water Systems)
UNICEF	United Nations Children's Fund
USAID	U. S. Agency for International Development (overseas missions)

EXECUTIVE SUMMARY

In 1986, the Bureau for Latin America and the Caribbean (LAC), U.S. Agency for International Development (A.I.D.), asked the WASH Project to prepare a report on the coverage of water and basic sanitation service in Central America. The study, which analyzed the availability of water and sanitation services, has since been updated several times. Again in 1993, the LAC Bureau requested WASH to update the report, but this time asked that information on seven environmental health indicators be collected as well. These indicators were water quality, sanitation and wastewater, solid wastes, hazardous wastes, water pollution, food hygiene, and morbidity and mortality. The 1993 update was to include the seven countries of the region, but data for the environmental health indicators was to be gathered for three selected urban areas: Tegucigalpa, Honduras; Guatemala City, Guatemala; and San Salvador, El Salvador.

When the study was implemented in summer 1993, the water and sanitation coverage data, as expected, were available, but data for the seven environmental health indicators were almost nonexistent. Approximately 25 percent of the data sought were actually found.

This report describes a follow-up task in which an effort was made to further assess the constraints to data collection, analysis, and use for decision-making in cities in developing countries. The assessment study included a review of relevant experience and lessons learned in the subject area within A.I.D. and other external support agencies, and visits to two of the originally selected urban areas, Guatemala City and San Salvador. During the visits, the WASH consultant conducted in-depth inquiries and analyses to determine why constraints to data exist.

Site visits to Guatemala and El Salvador were made September 13-25, 1993. Interviews were held with 53 professionals (27 in Guatemala City and 26 in San Salvador) from 35 governmental, nongovernmental, and international development organizations. During the site visits, the consultant tried to determine which institutions were providing service delivery and which institutions were collecting data for each of the seven indicators in the greater metropolitan areas of the two cities.

This follow-up study generally confirmed what was observed in the earlier attempt. (See WASH Field Report No. 420.) Since environmental health is not a developed concept in either of the two countries visited, data are not readily available for all seven indicators. Moreover, of any data available, almost none of it is complete.

Various institutions in both countries provide some service for water, sanitation, solid waste, water pollution, food hygiene, and morbidity (i.e., health clinics). Also, some institutions are collecting data on these indicators, but usually not the same ones as those providing service, and the performance is spotty. As might be expected, service delivery and data collection are most complete for water and sanitation, but in both countries, service and data were confined mostly to the formal urban areas.

Service delivery and data collection in peri-urban areas are very limited. Service and data collection on water pollution and food hygiene in both formal and peri-urban areas are fragmentary. There is no service or data collection activity related to hazardous waste. In both countries, health service is provided, and morbidity data are collected through the health infrastructure. However, data are not correlated to water and sanitation disease.

The assignment yielded insights that, while not exhaustive, provide some generalizations regarding information and decision-making and help clarify the constraints to data availability. Some recommendations for short-term and longer-term actions also emerged.

Regulatory Environment

Implementation of sectoral activities is not linked to the policy-making and coordinating bodies such as national committees or secretariats at the presidential level. Policy implementation is vertically operationalized but has no horizontal linkage. Evidence of this is provided by the lack of data available on morbidity related to water and sanitation diseases. An effective regulatory environment would be characterized by linkage between policy bodies and implementing agencies at the conceptual level, and outcomes would reflect this linkage when operationalized. For example, any correlation between morbidity data and incidence of water-related diseases would be instinctively sought out if these linkages were in place.

Institutional Capacity

Institutional capacity—the ability of an institution to design, manage, and implement activities—is lacking and is one of the constraints affecting the availability of information. The problem involves not only lack of skills but also patterns of behavior that are brought about by a variety of forces, including external ones. For example, external support agencies play a very large role in the existence of many public institutions. The cumulative influence of many external agencies on a public institution can shape its basic behavior, all too often in unintended ways.

Donors and lenders attach sanctions to their assistance. These sanctions, which differ among external agencies, have the effect of making recipient institutes reactive so they can adjust as needed on a case-by-case basis. The external influence is both overwhelming and convenient.

The ministries of health in Guatemala and El Salvador tend to adopt or adapt policies as prescribed by donors rather than to develop policies based on public health data that they collect and analyze for themselves. In El Salvador, the ministry of health generated a just-in-time health impact analysis to meet the requirements of a sewage project financed by the Inter-American Development Bank. In Guatemala, the ministry of health's principal focus remains fixed on its historic core interest in hospital construction and maintenance, while accommodating donors as needed. When cholera broke out, notwithstanding the years of influence through externally financed child survival programs, the ministry's first response was to seek an increase in hospital beds. In other words, the influence of external agencies has been inter-marginal in that as they have signed on to sectors within the ministry of health, they

have been allowed to proceed with their own agendas which are only nominally integrated into the ministry. The ministry assumes responsibility for the project, but the capacity to satisfy that responsibility expands and contracts with the specific project only.

Absence of a Tradition of Data-based Decision-making

Another major constraint is the lack of a tradition for policy-making and decision-making based on or supported by access to information. Most sectors do not have data collection and analysis tools in place to help them set policies or to make decisions. Because of the way institutions function and obtain assistance from external sources, the need for management information systems has not made itself apparent.

Recommendations

Some opportunities, both short-term and long-term, are available to improve the collection and use of environmental health data.

Short-Term Opportunities

There are two areas of opportunity for A.I.D. that could improve data availability in the short term. First, A.I.D. could work with other external agencies which are trying to develop information systems in the water and sanitation sector. In Guatemala, a local NGO, the Association of Research and Social Studies (ASIES), has developed a monitoring system for a UNICEF program that will become a national social information system once implemented. Some adjustment to the ASIES design would be necessary to make the system capture environmental health information, but such an adjustment is possible and would be welcome. The system is presently awaiting government approval. Also, PAHO/Guatemala has been developing a hospital management information system that presents another opportunity for modification to include environmental health data. This system is still in an early development stage.

Second, A.I.D. could seek linkages between ongoing A.I.D.-sponsored projects as well as with other donors' projects in the region. The various decentralization movements underway create opportunities for promoting environmental health and for advocating the role of information in environmental health policies. RHUDO/CA's Local Government Outreach Strategy (LOGROS) project, for example, is making resources available to help newly empowered municipalities assume responsibility for water and sanitation services; the project tends to place more emphasis on the cost and physical management of the activities. There is room to promote the environmental health dimension of these municipal responsibilities.

In El Salvador, USAID's new municipal development project would benefit from attention to environmental health. This is a country-specific project. Also, taking place in El Salvador is the restructuring of the environmental sector. The Secretariat for the Environment (SEMA) is being strengthened through an Inter-American Development Bank activity. This creates an

opportunity for environmental health to become an important ingredient in SEMA's new role as the environmental regulatory agency for the country.

Long-Term Challenges

- **Develop an Environmental Health Model**

A model that articulates the essential linkages between the vertical and horizontal lines of decision-making described above at both the conceptual and operational levels needs to be developed. The case for environmental health has not been made in Central America, and the role of information in ensuring it is not understood. The model should make clear the role of government at national, provincial, municipal, and local levels and the linkages between them. It should also describe the role of information in explaining the relative risks of activities that affect the environment and, thus, human health.

- **Advocacy of Environmental Health**

Once a model of environmental health is developed, an advocacy movement should be started up. Several actions by A.I.D. would advance the state of knowledge about the sector:

- Support for environmental health research activities in university departments of public health.

- Support for (or creation of) interest groups to promote environmental health issues among the public at large, government agencies, and legislative bodies.

- Support for legislators interested in the sector, e.g., funding for public forums. (None of the regional congresses has its own research unit. It would be useful to link existing research units in universities with legislative groups.)

- Create opportunities or encourage USAID missions in Central America to seek out environmental health indicator data annually. The process of seeking the data is a good way of bringing the issue forward for all the principal counterparts.

Chapter 1

INTRODUCTION

In early 1993, the Water and Sanitation for Health (WASH) Project updated a previous study of water and sanitation coverage in Central America and Panama. WASH was also asked to provide new data on urban environmental health problems in the capital cities of three countries. The effort was successful in finding the basic water and sanitation sector data, but the results on urban environmental health problems fell short of expectations. This follow-up task was designed to obtain insights into why there was such a shortage of urban environmental health information.

1.1   Background

In 1987, at the request of the Bureau for Latin America and the Caribbean (LAC), U.S. Agency for International Development (A.I.D.), the WASH Project was asked to prepare a study of the water and sanitation sector coverage in Central America. The study reported on the extent of water and sanitation service provided to rural and urban populations as well as on the targets for expanding service and planned investments in the sector in each country. The study was updated in 1989, 1990, and 1991. In 1993, the LAC Bureau again asked that the report be updated, but this time requested that a survey of existing data on water supply and sanitation-related environmental health problems in urban areas be included. Two reports were the product of this effort. WASH Field Report No. 404, titled 1993 Update: Planning for Water and Sanitation Programs in Central America, continues the series on coverage data, committed funding, and estimates of funding needed to reach coverage targets in the future. Planning for Urban Environmental Health Programs in Central America, WASH Field Report No. 420, looks at broader environmental health data and specifically examines data availability (or non-availability) in three Central American cities.

The purpose of adding the urban environmental health component was to identify geographic and sectoral areas of environmental health problems to assist in programmatic decisions, and to assess follow-up data collection needs based on the availability and quality of data collected. The methodology called for developing a set of indicators that would rapidly and accurately characterize the urban environment. The seven indicators finally selected were water supply, sanitation and wastewater, solid waste, hazardous waste, water pollution, food hygiene, and morbidity and mortality (see Table 1 for a summary breakdown of the indicators).

In 1993 as in previous years, the basic water and sanitation coverage data were collected for all seven countries of Central America and Panama with the help of USAID missions. A decision was made to limit the environmental health indicators data collection to three urban

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Table 1

Summary of Environmental Health Indicators

Basic Area Data

Population
Number of households
Median annual income
Legal status (incorporation into the city)

Water Supply

Access
    Type of water consumed (tap, vended, surface,
    well, rainwater)
    Percentage of total population consuming each
    type
    Quality of each type of water
    Per capita quantity consumed of each type of
    water
    Cost to consumer of each type of water
Financial sustainability of municipal water system
    Percentage of operating and interest costs that
    are covered by user fees
    Percentage of unaccounted for water (leakage)
Health impact and the state of infrastructure
    Qualitative judgements
Regulatory overview

Sanitation and Wastewater Drainage

Access
    Type of sanitation facilities used (sewage,
    latrines, none)
    Percentage of population using each type
Industrial, commercial and medical wastewater
disposal
    Percentage treated
Financial sustainability of the municipal sewage
system
    Percentage of operating and interest costs that
    are covered by user fees
Health impact and the state of infrastructure
    Qualitative judgements
Regulatory overview

Hazardous Wastes

Industries
    Total number
    Type and volume of wastes generated
    Method of disposal
Regulatory overview

Solid Waste

Source of waste (household, commercial,
industrial, and medical)
Volume of each source
Composition of each source (percentage organic,
recyclable, hazardous)
Disposal system by source
    Collected or not
    Percentage private, public, formal, informal
Financial sustainability of the system
    Percentage of operating costs covered by user
    fees
Health impact and the state of infrastructure
    Qualitative judgements
Regulatory overview

Water Pollution

Industrial and domestic wastewater
    Volume and percentage treated
Impacts on city water supply and downstream
users (e.g., for irrigation)
    Qualitative assessments
Regulatory overview

Food Hygiene

Percentage of population with refrigerators
Food inspection
    Quality
    Frequency
    Coverage
Regulations
    Existence
    Enforcement

Morbidity and Mortality

Infant mortality rate
Under-five mortality rate
Morbidity rates for water- and sanitation-related
diseases

areas of Central America: Guatemala City, Guatemala; San Salvador, El Salvador; and Tegucigalpa, Honduras. To collect environmental health indicator data, one consultant was hired in each country to survey the appropriate institutions. The consultants surveyed existing data; it was assumed they could obtain the data on a routine basis via institutions in the selected cities. Tables were developed for presenting the data on the assumption that urban data could be disaggregated between formal sectors and peri-urban or marginal areas. The work was carried out in early summer 1993.

The consultants found that environmental health data were often nonexistent, were inaccessible in the form needed, or did not document the environmental conditions specific to cities' peri-urban areas. Approximately 25 percent of the data sought were actually found.

As a result of this effort, a report was written (WASH Field Report No. 420) to present some information on access to water, water quality, water quantity, access to sanitation services, solid waste disposal, hazardous waste disposal, cost and cost recovery of water, sanitation and waste disposal services, and water pollution. However, the information did not provide a basis for a comprehensive assessment of the urban environmental conditions as hoped. Nonetheless, the quality of the data demonstrated the increased risk for urban populations from contamination and also pointed out the need for developing an environmental health information system.

1.2   Constraints Encountered

Inaccessibility to data was the main constraint to carrying out the objectives of the study. The reasons for inaccessibility presented in WASH Field Report No. 420 included:

- **Nonexistent data**. Information on hazardous wastes in San Salvador, for example, are not collected at all.

- **Political factors**. Water-testing procedures and results are not available either because they are politically sensitive or because they are not processed in a manner that facilitates access.

- **Poor documentation**. Unit measures, sources, and dates are frequently unclear or missing.

- **Widely differing values**. Data exist but with widely different values for the same indicator.

- **Ever-shifting population base**. Lack of clarity about jurisdictions often leads to overlapping and hence multiple counts by different agencies. Data were reported on varying population bases.

- **Lack of data on informal sector populations**. This factor led to the greatest bias in any estimates regarding population. Informal sector populations are often living on marginal land or public land not being used for its zoned purpose. Official agencies collecting information do not recognize the inhabitants as "legal." Hence, they are undercounted or even ignored.

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- **Data in unusable form**. Data are frequently kept in raw form and are not processed or analyzed in any useful way. Moreover, survey and collection efforts are many and varied and often produce an overwhelming amount of data. The numbers were not useful for linking environmental conditions to health impact, the ultimate purpose of the indicators. The study indicated the need for increased data collection. Of far greater importance, however, the study pointed to the urgent need for strategic planning with links to a management information system (MIS) to generate data for decision-making.

Given the ever-increasing importance of urban environmental health concerns, the constraints identified in this three-country experience suggested further investigation into why information plays such a small role in decision-making in Central America.

1.3 Purpose and Scope

Under a specific assignment for the LAC Bureau, WASH devoted substantial time and effort to developing the urban environmental health indicators and collecting the data, yet the data collected were insufficient to provide a comprehensive assessment of conditions in the three cities. The results of the field test pointed out the inadequacies of the information base in these cities. The results also pointed out a significant barrier to A.I.D.'s ability to assess urban environmental health conditions and to make programming decisions on where to focus its resources. The purpose of this current study was to further assess the constraints to data collection, analysis, and use for decision-making in developing country cities.

To conduct the study, a WASH consultant visited Guatemala City, Guatemala, and San Salvador, El Salvador, to carry out in-depth inquiries and analyses as to why the constraints to data collection, analysis, and use for decision-making exist. The consultant also contacted international agency representatives and host-country institution personnel to inquire about and get insights into the following:

- Demand and need for data by host-country institutions

- Institutional capacities for collecting and managing data

- Need for and use of data in carrying out existing regulations

- In-country capabilities for MIS

1.4 Methodology

Preparation and site visits for this study were carried out September 6 to 24, 1993. Following a team planning meeting at WASH operations center and several days of preparation (reviewing related WASH documents and documents prepared by other agencies), site visits were made to the two capital cities. The consultant visited Guatemala City September 13-18

and San Salvador September 20-25. A list of persons contacted and institutions visited in each country is provided in Appendix A.

In the next two chapters, observations and findings are presented for Guatemala and El Salvador. The presentation follows the order and content of the environmental health indicators as laid out in Table 1. This approach provides a framework for demonstrating institutional responsibility for service delivery and data collection for each indicator. The narrative discussion expands on the current status of service delivery and data collection and addresses the formal and peri-urban dichotomy, where appropriate. The final chapter presents conclusions and recommendations. Some generalizations are provided on the major constraints regarding data availability, and several short-term and long-term recommendations are put forth for improving the availability of environmental health information in Central America.
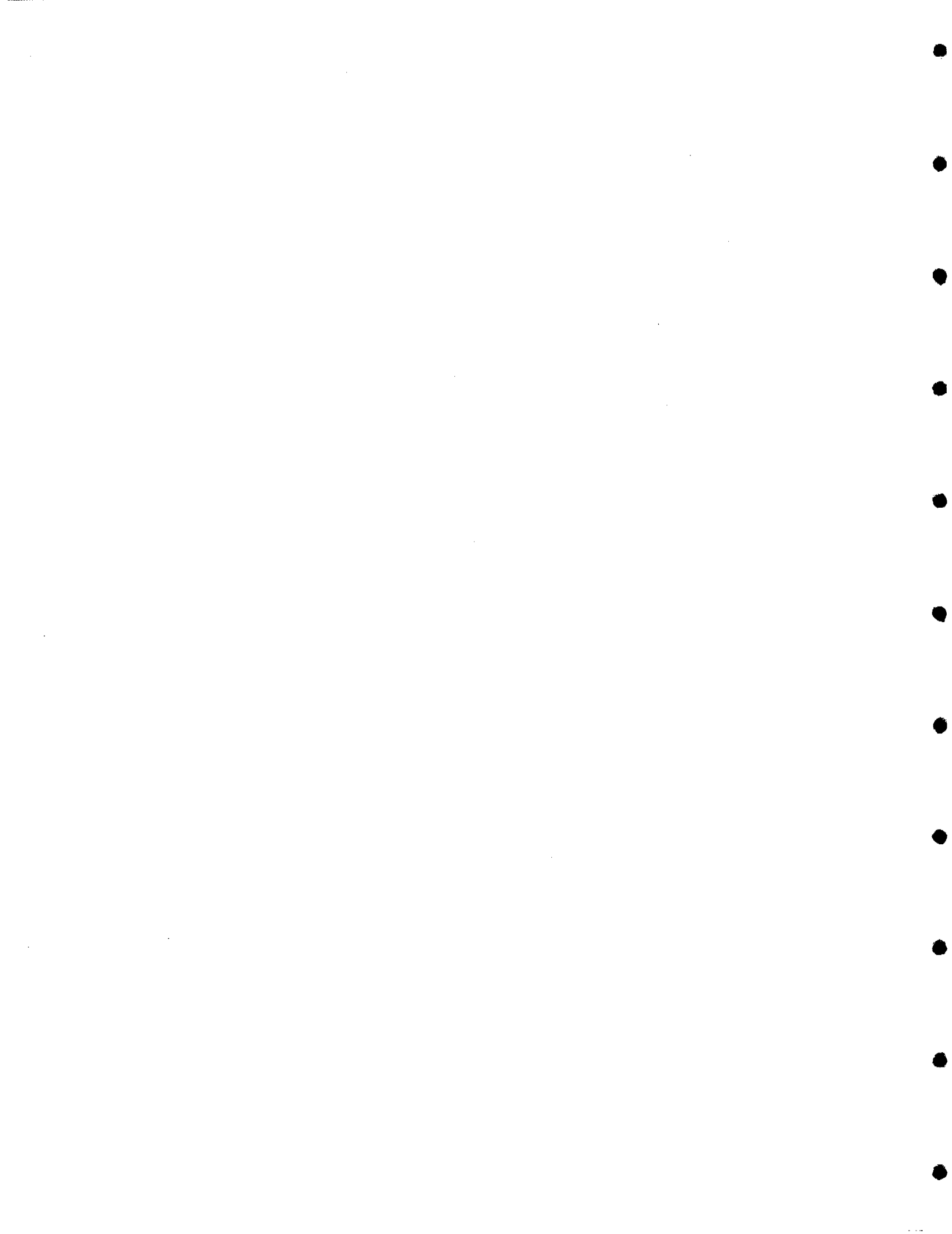
Chapter 2

INFORMATION AND URBAN ENVIRONMENTAL HEALTH
IN GUATEMALA

Between 1981 and 1987, the urban population of Guatemala increased by 7.5 percent. Along with population growth, increased industrialization and increased production of waste have put pressure on the urban environment generally, and specifically have increased health risks to the urban population, particularly those living in precarious or marginal areas. Nonetheless, environmental health is just beginning to enter the vocabulary of Guatemala. There are no well developed policies on the issue, nor is there an active regulatory agency or approach for environmental health. A number of agencies and institutions have responsibility for providing water and sanitation services to some areas of the urban population; they also collect some data on their service areas. A few other agencies assume some responsibility for collecting data in other urban areas that receive service from a variety of sources. A closer look at these institutional arrangements provides a better understanding of the constraints to data collection and use in Guatemala City.

Institutional responsibility for provision of services in Guatemala is divided between local agencies and central authorities (see Figure 1). What little data collection goes on is performed by the service-providing institutions in some cases, and by other institutions in others. The discussion that follows is based on each of the seven environmental health indicators listed in Table 1.

2.1   Water Supply

The population of the greater metropolitan area of Guatemala City is about two million. This encompasses both formal and peri-urban areas, including the municipality of Guatemala City and six other municipalities. Of this total, 1.2 million receive water through EMPAGUA (Municipal Water Utility for Guatemala City), a semi-autonomous utility under the municipality of Guatemala City. All of the water delivered through EMPAGUA's network is chlorinated and regularly checked through a laboratory at San Carlos University.

The other 800,000 inhabitants of greater Guatemala City, most of whom reside in peri-urban areas, receive their water from a variety of sources including open wells, drilled wells, rivers and streams, and other surface sources. No agency monitors this water so its quality is unknown, although the epidemiology division of the Ministry of Public Health (MSPAS) runs bacteriological tests on occasion on some of these sources, but with no regularity. Very little is known about how much water these people actually use.

Table 2 presents a summary of institutions that provide service and those that collect data on water supply.

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FIGURE 1

NATIONAL INSTITUTIONS RELATED TO ENVIRONMENTAL HEALTH IN GUATEMALA

Presidential Level

Ministerial Level

Autonomous Entities

Public Utilities

Presidency

CONAMA (Environment)

SEGEPLAN (Planning)

SRH

COPECAS

MSPAS (Health)

MGOB

MTRAB

Health Areas

Municipality of Guatemala

DRDB

IGSS

EMPAGUA

BANVI
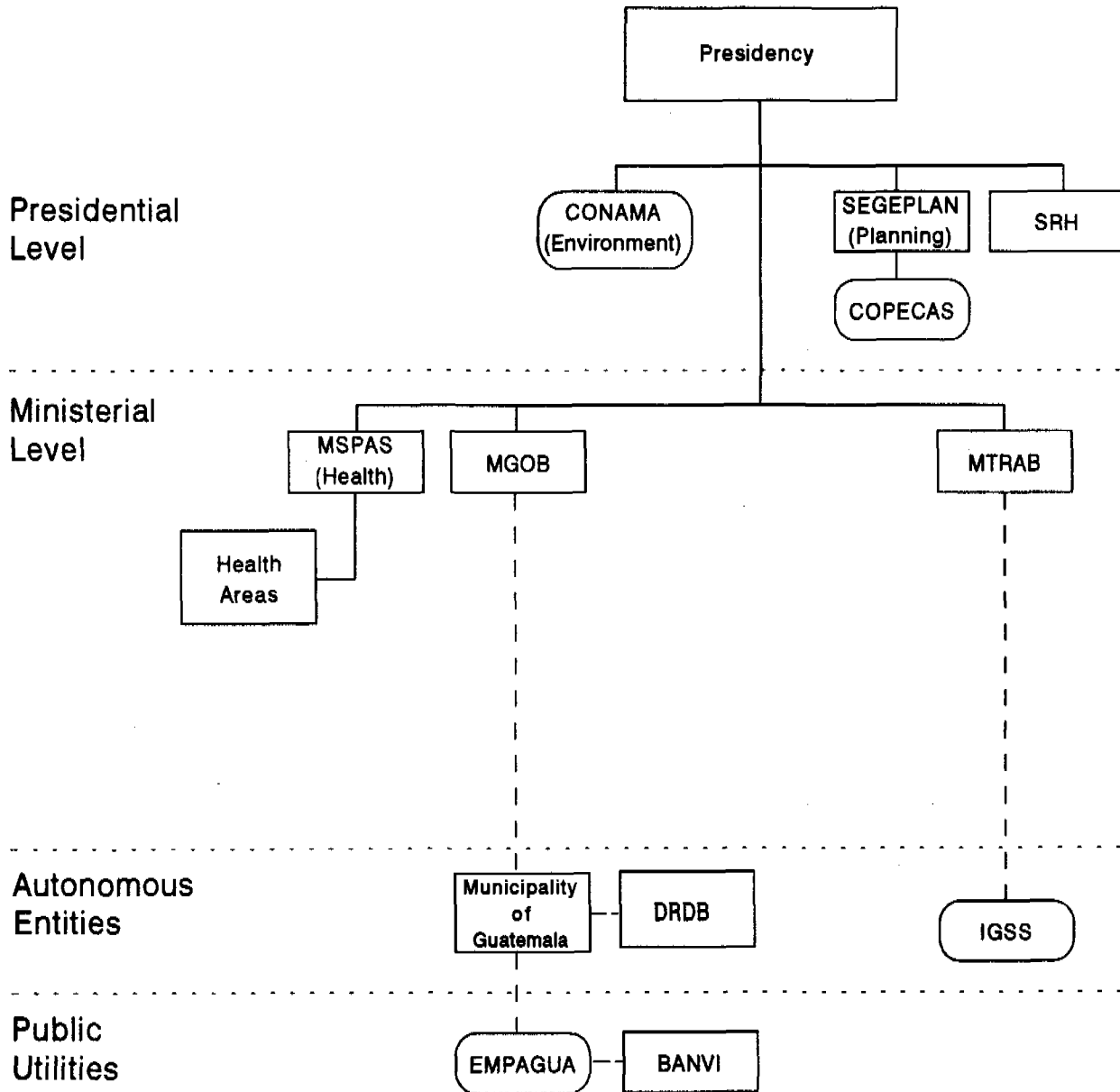
Table 2

Access to Water Supply in Urban and Peri-Urban Areas

Category of Responsibility

Type Service	Service	Data
Tap	EMPAGUA f	EMPAGUA f
Vended	Tankers p	MSPAS p
Surface	Users p	None
Well	Users p	None
Rainwater	Users p	None

Key: f = formal urban area
p = informal periurban area

EMPAGUA provides service to the formal area of the city only, and data collected is also limited to that area. Meanwhile, the peri-urban areas are served by several nonformal systems. In fact, as indicated in Table 2, many of these "systems" are user-provided, that is, users find and access their own sources.

Tanker trucks (about 200 in the metropolitan area) deliver water to a significant number of peri-urban residents. The main water sources for tankers are open wells, drilled wells, and rivers. The total quantity delivered by these trucks can be estimated based on their average load and the number of trips in a given period. The available data do not give any information on how many of the 800,000 people living outside the formal area are actually served by this tanker system. And very little is known about the quality of the water they receive.

Historically, tankers have not been regulated or monitored. With the arrival of cholera, however, the MSPAS, through its metropolitan region office for food control, initiated a monitoring program in June 1993. An outbreak of cholera in two marginal barrios, in which more then ten deaths occurred in just two days, prompted an outcry. In response, MSPAS' food control office, working with the epidemiology division, was able to isolate cholera vibrio in eight tanker trucks, all of which were taking water from the same dug wells. The wells were found to have high fecal coliform counts and cholera vibrio. As a result, a monitoring system was imposed that requires all tankers to submit to a chlorine disinfection training and licensing program. Drivers are required to chlorinate each load of water using liquid bleach, following a dosage table prepared by MSPAS. Drivers must also carry a comparator to test for residual. MSPAS staff, with the help of police, conduct spot checks of the tankers. Trucks delivering water with no chlorine residual are impounded, and drivers are fined.

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Aside from MSPAS' spot-check quality control of tankers and the data it collects through its licensing and monitoring of tankers, other consumers are left to their own devices and luck. For that portion of the 800,000 peri-urban dwellers who get their water through self-service, no institution monitors the sources for quality or for other characteristics such as quantity consumed or number of people using these sources. Water access data, therefore, are simply not available for these areas.

Table 2 also makes transparent the health impact of the service delivered and the state of infrastructure. What is suggested is that consumers of EMPAGUA service are getting reasonably good water since it is monitored for quality on a continual basis. Moreover, EMPAGUA knows the number of consumers it has on its network, the level of demand, and other data such as operation and maintenance costs. With initiation of the tanker monitoring program, some information is also available about that system (i.e., number of trucks involved). Estimates can be made of how much water they deliver. Next to nothing is known about the consumers, however.

Essentially, regulatory overview of the entire water delivery system for greater metropolitan Guatemala City is weak and currently does not extend beyond the efforts of EMPAGUA and the MSPAS tanker monitoring program. Some efforts have been made to improve oversight. In 1985, the Permanent Committee for the Coordination of Potable Water and Sanitation (COPECAS) was created to provide coordination among the various institutions working in the water and sanitation sector. COPECAS, however, has been ineffectual in coordinating water resource issues. Recent developments are somewhat more encouraging in this regard with the creation of the Secretariat for Hydraulic Resources (see Section 2.5 below).

2.2   Sanitation and Wastewater Drainage Access

Like water service, wastewater collection in Guatemala City proper is the responsibility of EMPAGUA, but its service is limited to the formal areas of the city. The six municipalities that ring the city immediately beyond the boundaries of Guatemala City are responsible for their own systems. Not all areas have service. In addition to limited service, very little of the wastewater collected is treated. Most is discharged raw into the network of rivers, streams, and gullies found in the greater metropolitan area. Table 3 summarizes the wastewater collection and distribution infrastructure that serves the metropolitan area along with the institutions responsible for collecting data in the sector.

Table 3

Access to Sanitation and Wastewater Drainage

Category of Responsibility

Type Service	Service	Data
Sewers	EMPAGUA, BANVI f	EMPAGUA, BANVI f
Latrines	Users p	MSPAS p
None	Users p	None

Key: f = formal urban area
      p = informal periurban area

Wastewater is collected only from the formal sectors of the city; service is provided by EMPAGUA. The Housing Bank (*Banco de la Vivienda* or BANVI) is responsible for maintenance and operation of sewage treatment, of which there is very little in fact. Reliable information on the number of people who use latrines or the number with no service is scant. MSPAS, through 46 health posts located throughout the peri-urban area of Guatemala City, collects some information, but it is not intended to provide a health map or an environmental infrastructure census of the area.

2.3 Solid Wastes

The newness of environmental health in Guatemala City is characterized by the solid waste sector. Management of solid waste is limited to collection, for the most part. Very little information is available on the composition of solid waste or the health impact related to collection and disposal. The municipality of Guatemala manages collection activity through its Department of Solid Waste Collection and Disposal (DRDB). However, its span of responsibility is limited to areas of public use. Private firms provide collection service to other sectors of the urban area, a system which works with efficiency and is held in some esteem by residents. Table 4 presents a summary of solid waste service and data collection experience available in Guatemala City.

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Table 4

Access to Solid Waste Collection and Disposal

Category of Responsibility

Type Service	Service	Data
Household, Commercial, Industrial	Association, Co-op, Independents f	None
Public Areas	DRDB f	None
Medical	Association, Co-op, Independents f	None

Key: f = formal urban area
      p = informal periurban area

The DRDB is directly responsible for collection and disposal of all solid waste generated in the public sector such as streets, parks, and stadiums. For this purpose it has a fleet of 18 compactor trucks and 14 dumptrucks. Solid waste collection from businesses, factories, medical installations, and private homes is carried out through three private-sector entities. These include an association of garbage collectors comprising 370 trucks, a cooperative with 40 trucks, and 40 independent operators. Individual homes, business establishments, and medical installations enter into contracts with these private providers.

Both the DRDB trucks and the private-sector trucks dump at one landfill located within Guatemala City. While the DRDB can provide estimates of total tonnage, it does not separate the garbage by organic, recyclable, or dangerous/toxic categories.

The DRDB does not collect nor oversee solid waste management in the adjoining six urban areas of greater metropolitan Guatemala City. These municipalities are responsible for their own solid waste collection and disposal. As far as the DRDB knows, the collection and disposal of solid waste is virtually free of any control. Moreover, the disposal takes place at an unknown number of clandestine dumps. There are estimated to be 450 or more clandestine dump sites in the greater metropolitan area.

As presented in Table 4, there are no institutions maintaining data on solid waste collection and disposal. Moreover, what is known about collection appears to be limited to the service provided to formal sectors of the city. The peri-urban areas and the surrounding cities are not addressed in any way by the municipality of Guatemala City.

Some efforts have been made to improve solid waste management. The Japanese International Cooperation Agency (JICA) conducted an assessment of the solid waste management system in Guatemala City in 1990. This study is providing the basis for developing a new landfill, one which would meet somewhat stricter environmental controls. At the same time, the Pan American Health Organization (PAHO) is helping to develop an

improved system for disposing of hospital and medical wastes. Individual hospitals and health centers are now responsible for disposing of their own waste. The PAHO approach will be to put into operation an incinerator already in place for disposing of medical waste. However, these efforts do not address the larger issue of regulatory overview, which is totally lacking in the sector.

2.4   Hazardous Wastes

Attempting to gather information on the collection and disposal of hazardous waste is a discouraging task. Apparently no effort is currently expended at defining hazardous wastes and prescribing methods of collection and disposal. As a result, data on the industries generating such wastes, and the quantity and type of wastes generated, are not available. Many industries and commercial activities generating hazardous wastes are located in peri-urban areas, where pollution of the immediate environment including water sources is likely. This should be a clear concern to environmental health planners. Table 5 illustrates the lack of information available.

Table 5

Hazardous Waste Collection and Disposal

Category of Responsibility

Type Waste/Service	Service	Data
Textiles, Dyeing	None	None
Metal Plating	None	None
Pharmaceutical	None	None
Disposal	None	None

2.5   Water Pollution—Industrial and Domestic Wastewater

This sector is just beginning to take shape. Currently, there are no data on water pollution resulting from industrial wastes, impacts on city water supply or downstream users, or qualitative assessments. Table 6 provides a summary of current efforts in Guatemala City for monitoring water pollution.

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Table 6

Water Pollution

Category of Responsibility

Type Service	Service	Data
Industries	None	None
Monitoring of Industrial Pollution	None	None

The future looks brighter for this sector because, in 1992, the government created the Secretariat for Hydrological Resources (SRH) which is charged with the coordination, planning, direction, supervision, and administration of all water resources. The original design calls for employing a watershed management approach to address the conservation and protection of water resources, and to promote their efficient use. The first step of the SRH is to carry out a national-level watershed survey to inventory resources and to develop appropriate water use policies. The policies the SRH is expected to create and implement will also deal with contamination of water sources, which makes SRH a potentially important player in environmental health issues in Guatemala. A new water law, now in final draft form awaiting congressional action, is expected to spell out a restructuring of the sector and pave the way for the creation of appropriate water use policies by the SRH.

2.6   Food Hygiene

The MSPAS metropolitan region office for food control is responsible for overseeing food hygiene in greater metropolitan Guatemala City. Following a hygiene code developed by MSPAS, the regional office has a roster of approximately 100 inspectors to monitor food hygiene. Two or three health inspectors are assigned to each of the 30 health centers in the metropolitan region. The inspectors are able to provide good quality inspection, but the inspections are infrequent and coverage is limited to spot checks. These are the same inspectors who, with the assistance of police, monitor water tankers (see Section 2.1). Data on other elements of food hygiene, such as the percentage of the urban population with refrigerators, are not collected. Therefore, available data should be considered incomplete. Table 7 summarizes the current situation for food hygiene.

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Table 7

Food Hygiene

Category of Responsibility

Type Service	Quality/Frequency/Coverage	Data
Food Inspections	MSPAS f*, p*	None
Regulations	None	None

Key: f = formal urban area
          p = informal peri-urban area
          * = partial

2.7 Morbidity and Mortality

As shown in Table 8, data on the infant mortality rate and the under-five mortality rate are collected by MSPAS. The accuracy of the data is unclear. In the greater metropolitan area, health data are collected on a regular basis through the 46 health posts run by MSPAS in the peri-urban areas and the 30 health centers in the formal areas. Basic health data are collected by health inspectors assigned to each type of center. Also, each center keeps records on patient visits.

Table 8

Morbidity and Mortality

Category of Responsibility

Rate	Service	Data
Infant Mortality	MSPAS f, p	MSPAS f, p
Under-five Mortality	MSPAS f, p	MSPAS f, p
Morbidity Rates for Water and Sanitation Diseases	MSPAS f, p	None

Key: f = formal urban area
           p = informal peri-urban area

As indicated in Table 8, the MSPAS does provide service and does collect data on mortality. What is missing is an attempt to correlate morbidity (or mortality, for that matter) with water and sanitation-related diseases. Similarly, no institution is trying to correlate other environmental concerns, such as solid or hazardous wastes, with morbidity or, where appropriate, with mortality. This kind of horizontal linkage still needs to be made.
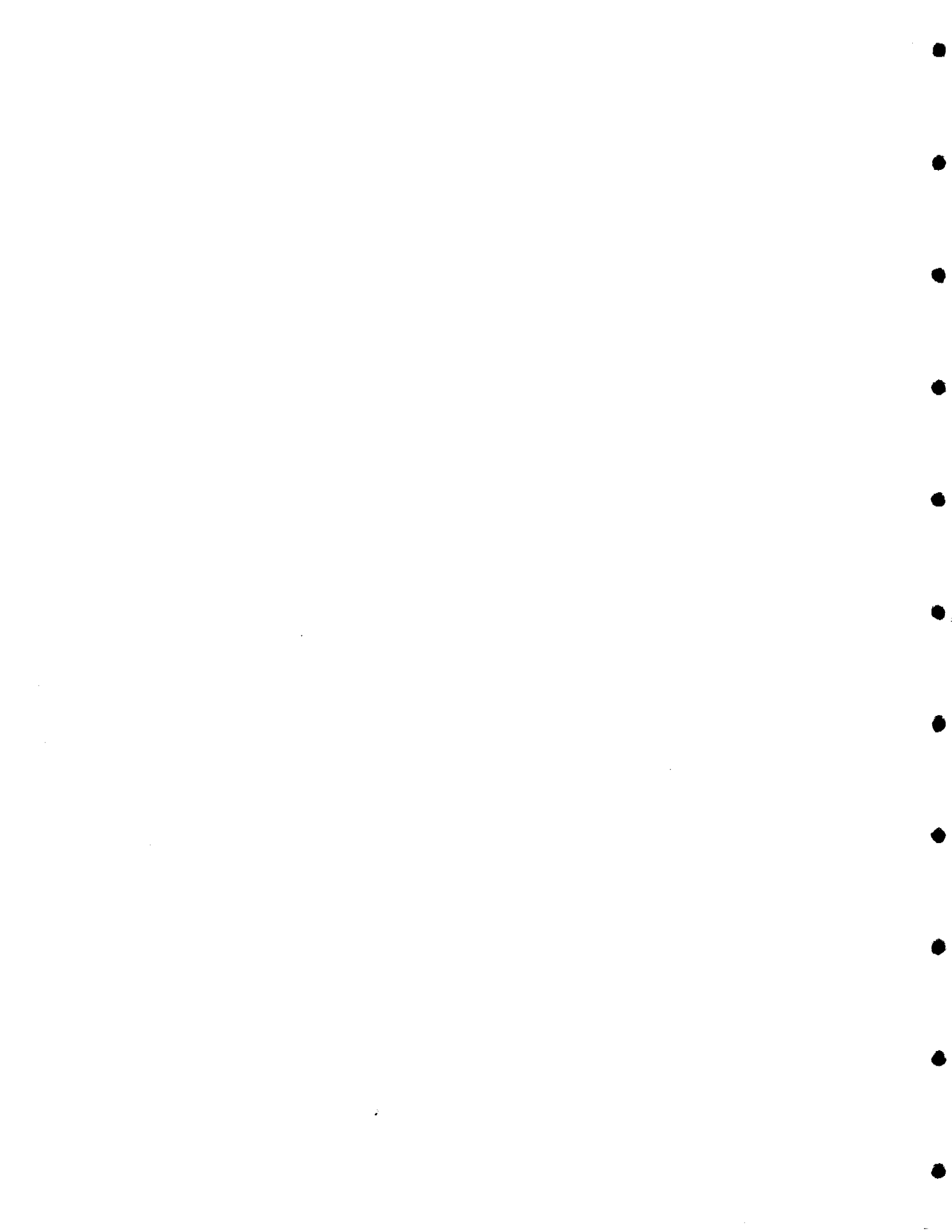
Chapter 3

INFORMATION AND URBAN ENVIRONMENTAL HEALTH
IN EL SALVADOR

A decade of civil war and general neglect have made environmental health conditions in El Salvador hazardous for large numbers of people, yet precious little environmental health information is available and even less infrastructure for gathering and analyzing data is in place. The constraints to data collection and use of information in El Salvador can be better understood by reviewing the institutions currently providing services and collecting data. The review that follows will address each of the elements of environmental health, as presented in Table 1, in terms of the institutions providing services and collecting data.

The principal institutions associated with the provision of water, sanitation, and related environmental services in urban El Salvador are both central (such as ministries) and decentralized or local autonomous entities (such as utilities and municipal departments). The institutions and their various levels or categories are shown in Figure 2.

3.1   Water Supply

In metropolitan San Salvador, as well as in most of the municipalities of El Salvador, water supply is managed by the National Administration for Aqueducts and Sewage (ANDA). Table 9 summarizes the water service provided to urban San Salvador through ANDA as well as other sources.

Table 9

Access to Water Supply in Urban and Peri-Urban Areas

Category of Responsibility

Type Service	Service	Data
Tap	ANDA f, p*	ANDA/UEDA, MSPAS f, p*
Vended	ANDA f, p	ANDA/UEDA f, p
Surface	Users p	MIPLAN p
Well	Users p	None
Rainwater	Users p	None

Key: f = formal urban area
       p = informal peri-urban area
       * = some standpipes

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FIGURE 2

NATIONAL INSTITUTIONS RELATED TO ENVIRONMENTAL HEALTH IN EL SALVADOR

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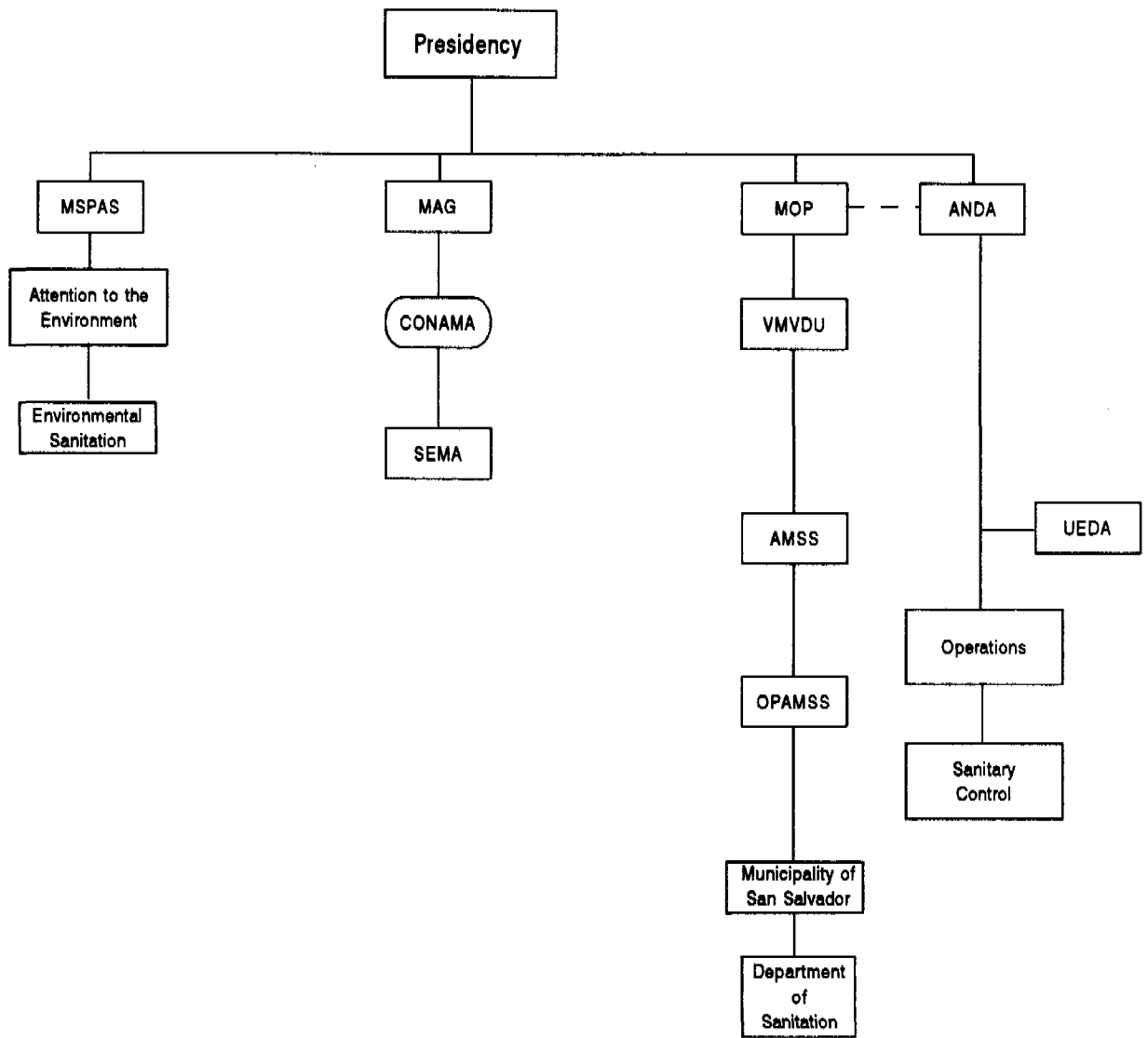
ANDA, which is under the Ministry of Public Works (MOP), provides water to all of the metropolitan area, i.e., the municipality of San Salvador plus nine municipalities that encircle it. ANDA claims to reach all of the metropolitan area, which has a total population of about 1,450,000, including marginal areas. Marginal areas not served with house connections are served with public standpipes. In some cases, water is delivered by tanker trucks from treatment plants. ANDA has 13 tanker trucks to facilitate delivery to neighborhoods when service is down, or to urban areas that ANDA says are technically beyond the reach of the network, i.e., are in elevated areas where getting and sustaining pressure in the lines becomes problematic.

ANDA regularly tests the water for bacteriological, physical-chemical, and chlorine residual and carries out a total of 500 tests a month. Samples are collected from source points, tanker trucks, treatment plants, and the distribution network by ANDA's operations division. Samples are then turned over to ANDA's *control sanitario* laboratory which runs the tests. Test results are maintained in a database held by ANDA's Special Water Unit (UEDA).

The Ministry of Public Health (MSPAS), through its environmental sanitation division, also has laboratory facilities for monitoring drinking water quality. There is no regular testing of water by this laboratory, however, and when tests are run, samples are from the ANDA network.

While ANDA claims to deliver service to the entire metropolitan area, Table 9 suggests that this may not be the case. In 1992, the Ministry of Planning (MIPLAN) conducted a survey of 1,740 communities, some of which are within the nine municipalities that border San Salvador. The resulting data show that many metropolitan area communities do not have piped water. Data from the MIPLAN survey, which was undertaken to facilitate planning for national reconstruction following the guerrilla war, do not make clear if these communities receive water by tanker from ANDA. However, MIPLAN provides a listing of communities that should be given priority for piped systems, suggesting that whatever service they do have is inadequate.

The difficulty with both the ANDA and MIPLAN data is that they do not provide percentages of the population receiving piped water, vended water, or water from other sources. The same uncertainties apply to water quality, with the exception of the ANDA water which is monitored regularly by ANDA's operations division.

3.2   Sanitation and Wastewater Drainage Access

Sewage collection and treatment are also the responsibility of ANDA in the metropolitan area (as well as in most of the other municipalities in the country). A very small percentage of the sewage is treated. Two projects currently underway are expected to improve the situation in metropolitan San Salvador. One is a primary collector project to collect sewage from a number of the encircling municipalities and transport it further downstream. The second project is for the construction of two treatment plants. Table 10 summarizes the current sanitation and wastewater drainage situation in metropolitan San Salvador.

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Table 10

Access to Sanitation and Wastewater Drainage

Category of Responsibility

Type Service	Service	Data
Sewers	ANDA f	ANDA/UEDA f
Latrines	Users p	MSPAS, MIPLAN p
None	Users p	MSPAS, MIPLAN p

Key: f = formal urban area
        p = informal peri-urban area

Table 10 implies that the formal areas of the city are served with a piped sewage system, but the available data do not make clear what percentage of the population is served. The data also do not show the proportion of the urban population using latrines or having no sanitation system.

Some data have been collected by MSPAS health centers on the presence or absence of latrine facilities and latrine use in peri-urban areas. The data are collected by the Ministry of Health for a rural community health project in El Salvador. The difficulty with these data is that peri-urban areas are treated as rural communities; population growth has transformed areas that were rural two years ago into peri-urban areas now. In order to use the data for analysis of peri-urban conditions, effort would have to be expended to disaggregate the peri-urban and rural areas.

The MIPLAN community survey also provides some data on latrine use in peri-urban areas. However, as with the water access indicator, MIPLAN's data are not refined enough to provide detailed information on percentage of population using the service type.

3.3   Solid Wastes

Solid waste management in metropolitan San Salvador is the responsibility of the environmental sanitation department of the municipality. Table 11 presents a summary of solid waste management in San Salvador.

Table 11

Access to Solid Waste Collection and Disposal

Type Service	Service	Data
	Category of Responsibility	
Household, Commercial, Industrial	Sanitation Department f Private f, p	Sanitation Department*
Public Areas	Sanitation Department f	Sanitation Department*
Medical	Private f	None

Key: f = formal urban area
      p = informal peri-urban area
      * = estimates

The department runs 22 trucks a day serving the municipality of San Salvador and 12 other encircling municipalities. It is estimated that the metropolitan area produces a little under 1,100 tons of garbage per day, of which 54 percent is collected by the department and disposed of at the Mariona landfill. The 46 percent that is not collected is disposed of through private means, and much of it is being disposed of illegally.

Currently, the department does not separate garbage by type (organic, recyclable, toxic); all of it is treated as organic. Also, the department does not monitor the impact of the current landfill on the local environment, e.g., its effect on the aquifer.

The shortfall in coverage, the large amount of illegal dumping, and the apparent loss of revenue has prompted the municipality to undertake a needs study (to be financed by the municipality). The study will be implemented from October 1993 to March 1994. It will be carried out initially in 4 of the metropolitan area's 36 zones and will have three components: a tariff study to determine appropriate charges for different waste producers in terms of amounts, a study of routes to see who is dumping illegally, and a study of residential areas in terms of income levels, i.e., marginal, middle, and upper. Following this study, an effort will be made to close the current landfill and open a new one that more closely meets environmental standards.

3.4   Hazardous Wastes

No effort is currently made to define hazardous waste and prescribe methods of collection and disposal. As a result, data on the industries generating such wastes and the quantity and type of wastes generated are not available. Table 12 summarizes the service and data collection status for this sector.

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Table 12

Hazardous Waste Collection and Disposal

Category of Responsibility

Type Waste/Service	Service	Data
Textiles, Dyeing	None	None
Metal Plating	None	None
Pharmaceutical	None	None
Disposal	None	None

3.5   Water Pollution — Industrial and Domestic Wastewater

Monitoring water pollution, especially from industrial sources, is the responsibility of ANDA's special water unit, UEDA. This unit was created in 1981 within MIPLAN and was moved to ANDA later in the decade. UEDA is charged with monitoring industrial sewage; it also has a larger mandate to develop norms for (and regulate and coordinate) an inventory of all water resources in the country and to monitor those resources for quality, quantity, demand, and remaining reserves. At present, UEDA directs most of its efforts at monitoring industrial waste. Table 13 presents the summary of water pollution monitoring and data collection activity for San Salvador.

Table 13

Water Pollution

Category of Responsibility

Type Service	Service	Data
Industries	UEDA f, p	UEDA* f, p
Monitoring of Industrial Pollution	UEDA f, p	None

Key: f = formal urban area
p = informal peri-urban area
* = no analysis

UEDA maintains a database for all the data it collects on industrial discharges, but does not produce any reports on a regular basis, nor does it attempt to make any correlations on the water quality data with water-related disease.

3.6 Food Hygiene

Monitoring food hygiene is carried out by MSPAS through its Environmental Sanitation office of the division for Attention to the Environment (Atencion al Medio). For metropolitan San Salvador, commonly referred to as AMSS (Area Metropolitana de San Salvador), the Environmental Sanitation office has laboratory facilities for water and food testing. Food hygiene monitoring, however, is performed less frequently and coverage is less extensive than a large urban area deserves. Table 14 presents the current data collection status for food hygiene.

Table 14

Food Hygiene

Category of Responsibility

Type Service	Quality/Frequency/Coverage	Data
Food Inspections	MSPAS f*, p*	MSPAS f*, p*
Regulations	MSPAS	MSPAS

Key: f = formal urban area
p = informal peri-urban area
* = partial

Generally, the regulatory and enforcement environment is weak. However, some changes now being planned will improve the situation. Increasingly, environmental issues are being taken up by the Office of Planning for Metropolitan San Salvador (OPAMSS). Created in 1986, the office, which is located in the municipal building of San Salvador, is charged with land use responsibilities. Any commercial, industrial, or private party wishing to locate or build new facilities within the metropolitan area must secure authorization from OPAMSS. The office currently serves under the auspices of the Vice Ministry of Housing and Urban Development, which in turn answers to the MOP. In March 1994, the Vice Ministry will be moved out of MOP and will be elevated to the ministerial level to become the Ministry of Housing and Urban Development. With that change OPAMSS will have increased responsibilities; it will be expected to provide oversight to all sectors including water, sanitation, food hygiene, and other environmental concerns in addition to land use. If fully staffed, the new OPAMSS will become a focal point for information collection and analysis including food hygiene and other elements of environmental health.

3.7 Morbidity and Mortality

MSPAS collects data on the infant mortality rate and the under-five mortality rate. As in Guatemala City, the accuracy of data is questionable. In the greater metropolitan area of San Salvador, health data are collected on a regular basis through the MSPAS health centers. Table 15 summarizes what is known currently about of these data.

Table 15

Morbidity and Mortality

Category of Responsibility

Rate	Service	Data
Infant Mortality	MSPAS f, p	MSPAS f, p
Under-five Mortality	MSPAS f, p	MSPAS f, p
Morbidity Rates for Water and Sanitation Diseases	MSPAS	None

Key: f = formal urban area
        p = informal periurban area

As shown in Table 15, MSPAS provides health services and collects data on mortality and morbidity. However, as in Guatemala, the missing element is the horizontal linkage between morbidity rates and water and sanitation-related diseases. Similarly, no institution is trying to correlate other environmental concerns, such as solid or hazardous wastes, with morbidity or mortality.

Chapter 4

CONCLUSIONS AND RECOMMENDATIONS

When questions were put to 53 professionals in 35 water, sanitation, and health organizations in Guatemala and El Salvador about the constraints to obtaining environmental health information, it was hoped that a better understanding about the demand and need for information, the capacity to collect and manage information, and the role of information in policy-making and decision-making would emerge. The insights that surfaced, while not exhaustive, provide some generalizations regarding information and decision-making and help clarify the constraints to gathering and using data.

4.1   The Constraints to Environmental Health Information

The study to update water and sanitation coverage and gather environmental health data, carried out in summer 1993, encountered a number of obstacles. Specifically, the investigation encountered areas where no data existed, poor documentation of information, varying measures for the same indicator, shifting population figures, no disaggregation of population (i.e., urban/peri-urban), and data available only in raw form or otherwise unusable. The discussion of these diverse constraints is broadly grouped into three areas: regulatory patterns, institutional capacity, and historical patterns for decision-making.

4.1.1   Regulatory Environment

In Guatemala and El Salvador, the regulatory environment is weak. However, institutional weakness itself appears to be only part of the problem. Both countries have some institutions in place that are intended to address the environment in one way or another. In Guatemala, for example, several bodies at the presidential level have mandates to advise or direct various environmental sectors. The national committee for the environment (CONAMA) provides overall guidance to the sector; the committee for potable water and sanitation (COPECAS) coordinates water and sanitation; and the Secretariat for Hydraulic Resources (SRH) monitors water resources and develops policies for their use (see Figure 1).

Meanwhile, at the ministerial level, the Ministry of Public Health (MSPAS) or municipalities under the Ministry of Government (MGOB) deliver services, ostensibly in line with the presidential-level coordinating groups. In practice, however, the implementation of health sector activities is carried out de-linked from the coordination of the national committees or secretariats at the presidential level. Policy implementation is vertically operationalized but has no horizontal linkage. An example of this is the lack of data on morbidity related to water and sanitation diseases (see Table 8).

The problem has two dimensions. Linkage between the vertical implementation agencies and the horizontal policy agencies is lacking. An effective regulatory environment would be

characterized by a relationship between policy agencies, implementing agencies, and the general public at the conceptual level, and between policy bodies and implementing agencies when operationalized. For example, any relationship between morbidity data and water diseases would be sought out if these linkages were in place.

In El Salvador, the same vertical versus horizontal decision-making issue applies. However, the current institutional framework is more problematic. The Ministry of Agriculture (MAG) currently has the most direct influence on environmental and resource management issues (see Figure 2). For example, the MAG has coordination and policy-making authority for all environmental issues. Also under MAG, the Commission on the Environment (CONAMA) coordinates all government agencies involved in environmental issues. More importantly though, the MAG also houses the Secretariat for the Environment (SEMA) whose mandate embraces policy-making for the full spectrum of environmental issues including water, sanitation, solid waste, and so on. The problem is an obvious one since the MAG is predisposed to natural resource management issues (preserving and protecting resources or "green" issues) as opposed to the "brown" issues of environmental health and sanitation.

In recognition of the inherent weakness in this institutional arrangement, efforts are underway to restructure the environmental sector. In September 1993, the Inter-American Development Bank (IDB) signed a grant agreement with the government of El Salvador for $1.7 million to study and strengthen the environmental sector. The overall thrust of the restructuring is multisectoral. SEMA will be taken out of MAG and given more authority, prestige, and autonomy. This should increase SEMA's span of control to all areas of the environment. The move was scheduled to take place by October 1993. The longer-term goal is to convert SEMA into a normative agency for the full spectrum of environmental concerns in El Salvador ("brown" and "green").

The IDB is currently exploring the possibility of doing something similar in Guatemala. Discussions are underway for IDB assistance to strengthen CONAMA to improve its capacity to regulate environmental health. The MSPAS would be involved. Presently, CONAMA is quite weak. Another indication that the regulatory environment in Guatemala can be improved is an incipient environmental movement in the Guatemala congress. Made up of five deputies, this group of activist legislators has played an important role in crafting the new water law which is up for consideration by the full congress. These legislators are well positioned to promote policies on sectoral regulation.

Although the current regulatory environment in both countries is weak, changes are underway, and resources are in place that present real opportunities for improving the management of environmental health.

4.1.2   Institutional Capacity

In many developing countries, severe managerial weakness within public institutions hinders development. One measure of a nation's or government's soundness is institutional capacity—the ability of (private or public) institutions to design, manage, and implement activities. Specifically, in environmental health areas in developing countries, institutional capacity is often lacking and is one of the constraints affecting the availability of information. Institutional capacity, however, involves more than internal management skills and ability. Problems with institutional capacity often stem from lack of skills but can also result from patterns of behavior and management practices brought about by a variety of forces, including external ones. External support agencies (ESAs) play a large role in the existence of many public institutions in developing countries. ESAs are often principal actors in the national institutions and shape their attitudes. The cumulative influence of many external agencies on a public institution can shape its basic behavior, all too often in unintended ways. This seems to be the case in both Guatemala and El Salvador.

Donors and lenders tend to attach sanctions to their assistance. These sanctions, which almost always vary among external agencies, have the effect of making recipient institutions reactive so they can adjust as needed on a case-by-case basis. For example, in preparing the loan application to IDB for the large sewer collection project in San Salvador, ANDA was required to demonstrate how the improved sewage collection facility would impact on health. ANDA's program office had no off-the-shelf information, but generated an analysis based on raw data from MSPAS and its own database to meet the requirement. When A.I.D. wanted to implement a rural water project in El Salvador but did not want it implemented through MSPAS (which is responsible for rural water), ANDA created a special unit for the task; like an accordion, ANDA expanded to accommodate the request. A similar approach was used for a Salvadoran rural health project: a unit was created within MSPAS which, as it turns out, is the most efficiently run but least integrated component in the institution. This scenario is repeated time and again.

The external influence is both overwhelming and convenient. The ministries of health in Guatemala and El Salvador tend to react to and accommodate policies as prescribed by PAHO or other donors rather than basing policies on public health data they collect and analyze for themselves. For example, the blanket immunization activities in the child survival programs fostered by ESAs have contributed to significant reductions in mortality rates, but morbidity rates have remained constant because the monitoring mechanisms required to find and target health risks have not been established. The ministries of health have not assumed the responsibility for obtaining this information, nor have they been asked to. In other words, the influence of ESAs has been inter-marginal in that as they have focused programs on sectors in specific regions through the ministry of health, the ESAs have been allowed to proceed with their agenda, which is only nominally integrated into the ministry. The ministry of health assumes responsibility for the project, but the capacity to meet that responsibility expands and contracts with the specific project only.

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In Guatemala in the 1960s, the approach of MSPAS was to emphasize construction, mainly hospitals, and not infrastructure, e.g., information systems to monitor public health. The core focus is still on hospital buildings, staffing, and maintenance. When cholera broke out, notwithstanding the years of influence through child survival programs, the first MSPAS response was to seek an increase in hospital beds. The ministry's emphasis remains fixed on hospitals, while trying to meet the expectations of donors as needed; the response to donors and specific programs has determined the ministry's activities. An unintended consequence of this is that a larger commitment to sustained responsibility—and capacity—on the part of the institution has not taken hold.

4.1.3   Limited Role of Data for Decision-Making

A corollary to the constraints on institutional capacity is the lack of a tradition of policy-making and decision-making based on access to information. An exception to this statement must be made for economic indicators. As a result of years of influence from international commercial and public lenders, ministries of planning (or economy or finance, as the case may be) possess the necessary tools to generate information on gross domestic product, inflation, employment rates, and levels of economic activity by sector. But beyond that, most other sectors do not have data collection and analysis tools in place to help set policies or to make decisions, and as described above, they do not feel the need to have them.

Further evidence of the institutional demand for and use of information is presented by the Regional Information Center (RIC) set up by A.I.D.'s Regional Office for Central America and Panama (ROCAP). The purpose of the RIC is to catalog information sources that exist in the region and in each country and to make some assessment of the quality and quantity of information available. The sectors addressed by RIC have been defined by ROCAP and the Regional Housing and Urban Development Office (RHUDO) project activities. The sectors include trade and investment, natural resources and the environment, and democratization. RIC's experience in the past year shows that very few resources in the region are dedicated to information data collection. What little efforts are made focus mainly on the economic sector, but even then data are questionable because of a variety of factors similar to the constraints experienced by WASH in attempting to find environmental health data. In summary, the RIC experience bears out the observation that no tradition exists for policy-making based on or supported by access to information.

4.1.4   A Formal-Informal Conundrum

Most of the information collected in urban areas pertains almost exclusively to the formal urban sector. This occurs because institutions providing services are most often the ones collecting information, and for the most part they are providing services only to the formal sectors of the city. By reporting only on the areas they serve, utilities can accurately demonstrate the quality of service provided; but by excluding the areas not served, the quality of service delivered appears enhanced. For example, in Guatemala City, EMPAGUA provides water service to the

formal urban sector, which includes about 1.2 million of the metropolitan area's 2 million inhabitants, and collects information about its service in terms of water quality and quantity. The other 800,000 inhabitants receive water of variable quality and quantity from other sources for which no accurate information is collected. Were EMPAGUA to include these sources in its monitoring activities, it would, in addition to taxing its resources, obviously reflect adversely on the quality of service to the population as a whole.

In its defense, EMPAGUA limits its data collection to the areas it serves in large part because of requirements imposed by lenders, usually the Inter-American Development Bank. The requirements call for the utility to monitor the quality and quantity of water provided. Were the utility to collect and co-mingle data from the entire metropolitan area with data from the formal area served, it would be misrepresenting the service it is actually providing.

The formal-informal conundrum is also convenient. In order to meet the full demand of the 2 million people living in the metropolitan area, EMPAGUA has estimated it would require an investment of approximately $100 million; and to satisfy demand to the year 2010, about $500 million. Obtaining funding at these levels is not realistic. Therefore, it is advantageous to have data on the formal area only, both because it is required and because it looks positive in performance terms.

4.2   Recommendations

Taking into account the various constraints to data collection and analysis that exist, there are some opportunities available, both short-term and long-term, to improve environmental health data.

4.2.1   Short-Term Opportunities

Two areas could provide better data on environmental health. The first has to do with seeking some common ground among the various ESAs trying to develop information systems in the water and sanitation sector. In Guatemala, a local NGO, the Association of Research and Social Studies (ASIES), has developed a monitoring system for a UNICEF program. This monitoring system will become a national social information system once implemented. In a joint effort to address development needs of women and children, UNICEF, working with the secretariat for planning (SEGEPLAN), elaborated a set of goals for the period 1996 to 2000 as part of the National Action Plan for Development (PLADES). The goals are traditional UNICEF concerns including strengthening the family, basic education, promotion of women, health, nutrition, children in special and difficult circumstances, and the environment.

The ASIES monitoring system will draw from secondary sources and, when necessary, will be supplemented by primary data collected through sample surveys. Although the UNICEF goals include health and the environment, the indicators established by ASIES do not match those identified by WASH and the LAC Bureau (Table 1). Some adjustment to the ASIES design would be necessary to make the system capture the desired environmental health information.

Such an adjustment would be possible and would be welcome. The system is presently awaiting government approval.

Also, discussions could be taken up with PAHO/Guatemala regarding the hospital management information system it is developing. Modifications to that system may be possible to capture environmental health data. Moreover, it may be possible to extend this kind of cooperation to a regional forum where ESAs could adopt a common approach and a compatible set of indicators.

As a potential second area for data improvement, it would be advisable to seek linkages to ongoing projects in the region. The various decentralization movements underway create opportunities for promoting environmental health and for advocating the role of information in appropriate environmental health policies. Basic water and sanitation services are important components within most of the decentralization efforts directed at municipalities. RHUDO/CA's Local Government Outreach Strategy (LOGROS) project, for example, is making resources available to help newly empowered municipalities assume responsibility for water and sanitation services, but it tends to place more emphasis on the cost and physical management of the activities. The project could be adapted to promote the environmental health dimension of these municipal responsibilities. LOGROS is a seven-year project, now into its first year. It has three components: political development, technical assistance for problem solving, and financial assistance. The political development component, which promotes municipal decentralization and local management, is a potential program area where local authorities could become engaged in environmental health issues.

In El Salvador, USAID's new municipal development project would benefit from attention to environmental health concerns. Also, restructuring the environmental sector creates an opportunity for environmental health to become an important ingredient in SEMA's new role as the environmental regulatory agency for the country. Similarly, when the new Ministry of Housing and Urban Development is created and responsibilities of OPAMSS are expanded, there will be a good opportunity to introduce environmental health concerns. OPAMSS would probably welcome a strong and sustained voice in environmental health.

4.2.2   Long-Term Challenges

- Develop an Environmental Health Model

In both countries, a model should be developed that spells out the essential linkages between the vertical and horizontal lines of decision-making described above. This linking is needed at both the conceptual and operational levels. The case for environmental health has not been made in Central America, and the role of information in ensuring it is not yet understood. The proposed model should make clear the role of government at national, provincial, municipal, and local levels and the linkages between them. It should also describe the role of information in explaining the relative risks of activities that affect the environment and thus human health.

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■ Create an Advocacy Voice for Environmental Health

Once a model of environmental health is developed, the implementation of an advocacy movement should be started. Several actions would advance the state of knowledge about the sector:

    □ Support environmental health research activities in university departments of public health.

    □ Support or create interest groups to promote environmental health issues among the public at large, government agencies, and legislative bodies.

    □ Support legislators interested in the sector, e.g., through funding for public forums. (None of the regional congresses has its own research unit. It would be beneficial to link existing research units in universities with legislative groups.)

■ Keep raising the questions; provide continuing opportunities to search for (elusive) data.

LAC Bureau should request USAID missions to seek out environmental health indicator data annually. The process of seeking the data is a good way of bringing principal counterparts into direct contact with the concept and an indirect way of getting various parties engaged in the issues.

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