DOMINICAN REPUBLIC: HEALTH REFORM SUPPORT PROGRAM
(P076802)

Environmental Assessment

May 2003

I. Medical Waste Management Assessment in the Dominican Republic

The recent enactment of new General Health and Social Security Laws are an encouraging sign that the GODR is committed both to protecting the environment and to reducing the risks posed by the improper management of medical waste. These laws provide a new framework for managing infectious and other medical waste that poses health risks to patients and health care staff, as well as to people who are exposed to such waste outside health facilities.

The solid waste produced in health facilities is potentially hazardous, infectious, contagious, or toxic, producing the risk of the spread of diseases.

The proposed Program, building on the ongoing Provincial Health Services Project, and the recommendations in the assessment of medical care waste handling and disposal conducted under the HIV/AIDS Prevention and Control Project, would support activities related to the handling of medical waste in the Dominican Republic. Specifically, it would support (1) necessary investments under Component I to strengthen biomedical waste management systems and processes in participating facilities; and (2) related training of health personnel associated with these activities.

The following sections of this document:

- Describe what constitutes medical waste and discusses the management of medical waste;
- Provide an overview of the new legal and institutional framework for addressing the problem of medical waste in the Dominican Republic;
- Discuss investments financed under the ongoing WB-financed Provincial Health Services and the HIV/AIDS Prevention and Control Projects in the Dominican Republic; and
- Identify how the proposed Program would contribute to addressing the problem of medical waste in the Dominican Republic.

A. What Constitutes Medical Waste

Medical waste is defined as any material disposed of by a health facility, whether it be in solid, liquid, or gaseous state. Health facilities are understood to be public hospitals, private centers, clinical laboratories, pharmacies, etc.

According to the international standards dictated by the WHO, medical waste falls into the following categories:

General medical waste. This category includes paper and byproducts, plastic and glass products, and non-infectious materials.

Special biomedical waste. This is infectious or other waste produced by a health facility that poses health risks both within the health facility and beyond it.
Infectious biomedical waste. This includes blood, secretions, needles, syringes, vaccines, and pointed or sharp materials that may have been contaminated with infectious agents. Preventive measures in handling and final disposal of such waste are important.

Chemical waste. This includes disinfectants and other chemicals used for examinations, research, cleaning, etc. Special regulations are required for the handling and final disposal of such chemical waste.

Radioactive waste. This is waste contaminated with radioactive substances used in diagnostic examinations or special therapeutic procedures. The elimination of radioactive waste requires specialized procedures because of its hazardous nature.

Anatomical waste. This consists of corpses or human remains from births, abortions, mutilations, or surgical operations. Anatomical waste poses a great risk spreading infection. Both forensic medicine regulations and ethical considerations are important in the handling of such waste.

Internationally accepted standards establish a total production of medical waste between 3.3 and 11 pounds per bed per day. Eighty percent of this consists of general medical waste and the remaining 20% consists of special biomedical waste, approximately 14% of which corresponds to infectious waste. A study performed in 1992 by the Universidad Autónoma de Santo Domingo, based on the analysis of a sample of 29 public and private health facilities in the DR, found that the production of medical waste per bed per day was 5.5 pounds.

Internationally accepted standards for the percentages of waste produced by various components of health facilities are as follows: food service (50%); hospitalization service (18%); maternity service (8%); emergency service and orthopedics (8%); surgery (5%); and administrative, diagnostic and other services (11%). The 1992 study of 29 public and private health facilities in the Dominican Republic found the following distribution of waste production by type of service: (25.6%); kitchen (20.8%); surgery (11%), and outside consultation (9.2%).

B. Approaches to the Management of Medical Waste

The management of medical waste requires special care, including the provision of information and training to the staff of a health facility that are involved in the various aspects of waste production and management. The waste management process has several phases, which control waste from the point of production to its final disposal, as detailed below:

- **Classification.** Classification of waste at the point of production (i.e., separating infectious and hazardous waste from the conventional waste stream with the goal of reducing the amount of waste that needs to be specially treated) makes it possible to reduce the volume of infectious waste and minimize treatment costs.

- **Internal collection.** Internal collection refers to the use of special containers, designed for the type of waste to be handled, placed near where the waste is produced and used only once.

- **Internal transfer.** The shortest route between the point of production and intermediate storage of waste should be selected for the internal transfer of waste. Waste containers should be checked to ensure that they are closed. Special measures should be taken to protect the staff involved in transfers.

- **Storage.** The storage place where the containers with waste are held before the treatment and/or final disposal of the waste should be equipped with hermetically sealed containers.

- **External transport.** The transport of waste from the point of intermediate storage to the waste treatment point should be done using special vehicles that can be disinfected.
- **Treatment.** Waste treatment includes methods, techniques, or procedures that change the characteristics of waste, reducing or eliminating the possibility that the waste will affect people’s health or the environment.

- The WHO has identified several procedures for medical waste treatment:
  - **Incineration.** Incineration involves burning waste in a medium under controlled conditions to oxidize the carbon and hydrogen present in the waste. This method reduces the volume of solid waste by 80-95%. Although incineration can produce environmental toxins such as dioxin if adequate controls are not adopted, it is often recommended because it is the only waste treatment method applicable to all types of biomedical waste.
  - **Steam sterilization.** This method involves submitting the waste to steam inside an Autoclave, at an adequate temperature and pressure and for a determined time.
  - **Gas sterilization.** This method consists of destroying pathogens present in waste by placing them in a compressed air chamber in which sterilizing agents are introduced, such as ethylene oxide or formaldehyde.
  - **Chemical disinfection.** This process involves treating waste with liquid chemical disinfectants.
  - **Other methods of sterilization.** Other methods of waste treatment that are less commonly used are including exposure to ultraviolet radiation or microwaves.

### C. The Dominican Republic’s New Legal and Institutional Framework for Handling Medical Waste

The enactment of the General Law on the Environment and Natural Resources in August 2000 and the enactment of the General Health Law on March 8, 2001, that was prepared with support of the Provincial Health Services Project, are an auspicious development in the Dominican Republic. The enactment of these laws indicates that environmental protection and the improving the management of medical waste have become priorities for the GODR. As discussed below, the laws also provide a clear legal and institutional framework for addressing the management of potentially hazardous, infectious, contagious, or toxic waste produced in health facilities.

**General Law on the Environment and Natural Resources**

The purpose of the General Law on the Environment and Natural Resources was to establish guidelines for the conservation, protection, improvement, and restoration of the environment and natural resources, thus assuring their sustainable use and to create institutions to take the lead in addressing issues related to the protection of the environment and natural resources.

The General Law on the Environment and Natural Resources created the State Secretariat of Environment and Natural Resources as the lead agency for environmental management. In addition, it designated the National Council for the Environment and Natural Resources as the body responsible for programming and evaluating policies and for a biodiversity conservation strategy. This council is composed of the State Secretariats of Environment and Natural Resources, of Agriculture and Livestock, of Public Health and Social Assistance, Education, Public Works, Armed Forces, Tourism, Industry and Commerce, Foreign Affairs, Labor, along with the Municipal League, the Natural Resources Institute, and regional representatives of NGOs, peasant organizations, universities (public and private), and the national business sector.¹

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¹ Prior to the enactment of the General Law on the Environment and Natural Resources in August 2000, the responsibility for environmental protection in the Dominican Republic was shared by several institutions. They included the State Secretariat of Public Health and Social Assistance (SESPAS); the Dominican Social Security Institute (IDSS); city councils; the State Secretariat of the Armed Forces; and the General Bureau of Forestry.
Responsibility for the handling and disposal of waste water is distributed by territoriality: the Santo Domingo Aqueduct and Sewer Corporation (CASAD) of the National District; the Santiago Aqueduct and Sewer (CORAASAN) of the province of Santiago; and the National Institute of Drinking Water and Sewers (INAPA) in the country’s other provinces.

Several special offices and commissions created by decree also have objectives related to environmental preservation, including the Commission for the Study of Causes of Environmental Pollution (Decree 2596-72); National Council of Radiology Protection (Decree 413-91); National Commission to Monitor Agreements of the United Nations Conference on the Environment and the development of the “Land Summit” (Decree 340-92); Office for the Reform and Modernization of the Drinking Water and Sanitation Sector (Decree 203-98); National Institute of Environmental Protection (Decree 216-98); and the Coordinating Commission of the Natural Resources and Environment Sector, created by Decree 152-98.

General Health Law

The General Health Law enacted on March 8, 2001, incorporates major changes in the Dominican Republic’s health care organization and financing. Provisions of the General Health Law pertaining to the management of medical waste, which supersede provision of previous laws dealing with this topic, are summarized below.

SECTION IV—Solid Waste

Art. 46. The State Secretariat of Public Health and Social Assistance (SESPAS), in coordination with the State Secretariat of Environment and Natural Resources and other relevant institutions, shall prepare the official regulations that govern the disposal and management of solid waste whose use, collection, treatment, holding, recycling, industrialization, transport, storage, elimination, or final disposal may be hazardous to the population’s health.

Art. 47. The institutions of the health system and all those health facilities which, due to their operations, utilize toxic or radioactive materials or substances, contaminants or other substances that may spread elements which are pathogenic or harmful to health, should have waste elimination systems developed in terms of the pertinent regulation prepared by the SESPAS, in coordination with the State Secretariat of Environment and Natural Resources and other relevant institutions. Medical waste shall be stored separately, technically treated in the establishment of origin and/or delivered to the corresponding municipality or institution, as the case may be, for transport and proper final disposal.

Art. 48. Health authorities must inform the State Secretariat of Environment and Natural Resources about those establishments or places which constitute a hazard to the health or life of the population due to undue, unhygienic accumulation of solid waste, so that said Secretariat may order them to be cleaned and may execute the corresponding administrative and safety measures.

Prior to the enactment of the General Health Law, medical waste problems were addressed by a diversity of codes and laws, including the National Public Health Code (1956) and general health care guidelines contained in Health Law 456-38; Law 1459-38 on Health Procedures; the 1956 Labor Code; and Law 1896-62 on Social Security and General Hospital Regulations (Decree 351-99)
SECTION V—Disinfection and other Measures

Art. 67. Those substances or objects that, by favoring the spread of diseases and causing harm to people’s health, are considered hazardous shall be handled, sterilized, or destroyed by their owners or those in charge, or by the health authority itself, following the instructions and regulations that are prepared for this purpose by the health authority, in coordination with the relevant environmental authority and without jeopardizing compliance with prevailing environmental regulations and measures.

Paragraph SESPAS shall collaborate with the State Secretariat of Environment and Natural Resources on the preparation of a list of hazardous substances and products, on the constant updating of this list, and on the preparation of regulations governing the waste management of these substances.

Art. 68. The owners, directors or heads of health or medical care facilities and other places where human groups stay or pass through, should avoid the spread of transmissible diseases within their establishment or towards the community, and shall be responsible for ensuring that the establishment has the necessary elements to avoid such spread, and that the staff of their agency carry out prophylactic practices in a timely and proper manner.

Art. 100. SESPAS is responsible for equipping the institutions or health establishments and, together with the advisory unit of the National Commission for the Accreditation of Clinics and Private Hospitals, for accrediting these institutions, ensuring the application of rules related to the minimum requirements which, according to their classification, said institutions should meet, with regard to physical installations, equipment, personnel, organization and operation, to ensure that the user receives a proper level of care, even in the case of disasters.

Paragraph I. In coordination with the corresponding institutions of the national health system, SESPAS shall regulate, by resolution, the equipping, operation and accreditation of health establishments and promote quality assurance, which shall be carried out through the assessment of public and private establishments, by rules and mandatory minimum criteria, and of their staff.

Paragraph II. SESPAS shall establish the general regulatory guidelines based upon which the duties assigned in this article shall be complied with.

Art. 101. The professionals or technical directors of health establishments in which natural or artificial radioactive material, or equipment designed for the emission of ionized radiation for diagnostic, medical therapy or dental purposes or for scientific research, is used should seek a permit from SESPAS that endorses their activities, without jeopardizing the duties of the State Secretariat of Environment and Natural Resources in this regard.

Art. 102. The boards of directors and the administration of health establishments shall be responsible for ensuring that staff correctly and properly performs their duties, so as not to expose the health or life of patients to unnecessary risk due to the lack of technical or therapeutic elements for reasons of unhealthy environmental conditions.

Art. 106. Health laboratories shall be directed by an expert in the subject who is duly accredited in the corresponding discipline and who shall be responsible for the establishment’s progress, compliance with biosafety regulations, suitability of operations, and precision and quality in reports issued on the results of analyses.

Paragraph. Authorized staff who perform analyses or special testing in public, private, civilian, military, and other laboratories, should adjust their work to the technical regulations stipulated by the Laboratory and Blood Bank Divisions of SESPAS. Said staff shall be subject to technical control of the quality of their analyses of the aforementioned divisions.
SECTION VI - Blood Banks, Blood Transfusion Services, And Serology Control

Art. 107. The drawing of human blood, the fractionating and industrial transformation of human blood, and the practice of any of the activities mentioned in this article, may only be performed in blood banks and in blood derivative plants authorized SESPAS, which shall define, through the corresponding regulation, the rules for the installation, operation and control of these establishments, in coordination with pertinent institutions.

Paragraph I. The supply and transfusion of blood and its derivatives constitutes an act of legal and ethical responsibility. Doctors shall be the health professionals trained and authorized to therapeutically prescribe human blood, its components and derivatives, in accordance with the disease to be treated.

Paragraph II. The institutions of the National Health System shall ensure that their blood banks perform mandatory testing of blood and its derivatives, according to the prevailing international regulations of WHO, as well as pre-transfusion compatibility testing. No product may be transfused without the respective quality certification. SESPAS shall ensure compliance with this provision.

Paragraph III. A duly accredited staff member in terms of the nature of such banks and centers shall direct blood banks and hemotherapy centers.

Paragraph IV. The technique of aphaeresis, as a means of fractionating to obtain blood derivatives, may only be used by blood banks that are qualified and expressly authorized by authority of SESPAS. This should correspond to a concrete program, associated with the country’s needs, in accordance with the regulation prepared by SESPAS, and in coordination with institutions specialized in this subject.

D. Related investments financed under the WB Provincial Health Systems Project in the Dominican Republic

In 1999, SESPAS, requested that CERSS, through the Provincial Health Systems Project and a parallel project financed by the IDB, support the provision of technology for the treatment and final disposal of waste in the main health facilities around the country. As a result, the Provincial Health Systems Project has invested nearly US$1 million to date to strengthen the medical waste management capacity of some of the main SESPAS’ health care facilities. The vast majority of the resources (apart from about US$50,000 devoted to civil works) has been used to helped several hospitals purchase incinerators to treat medical waste and to support training of staff in the operating of this equipment and the management of medical waste:

- **Purchase of incinerators by hospitals for the purpose of treating medical waste.** Incinerators, along with peripheral equipment (identified containers) and services related to training in the operation and maintenance of equipment, have already been purchased and installed in several hospitals. They include the San Vicente de Paul Hospital in Duarte Province, Luis Bogaert Hospital in Valverde Province, Pascasio Toribio Piantini Hospital in Salcedo, Jaime Mota Hospital in Barahona, as well as the Armed Forces Central Hospital, Nuestra Señora de la Altagracia Maternity Hospital, Los Minas Maternity Hospital, Moscoso Puello Hospital, Robert Reid Cabral Children’s Hospital, and the Luis E. Aybar Complex in the city of Santo Domingo. Of the incinerators installed, most of them are operating at full capacity.

- **Training.** Training courses in the operation and maintenance of the medical waste incinerators and in managing medical waste within the hospital were carried out successfully in all hospitals:

Training in the operation and maintenance of the medical waste incinerators was provided to at least three people per hospital. It included training relate to the features of the equipment (e.g., electrical installation, gas-oil connection, ash removal) and the operation of the equipment (e.g., startup, shutdown of the installation, operating regulations, safety checks),

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Training in the management of medical waste within the hospital was provided to hospital staff (20 per establishment). This course was generally well accepted, both in terms of attendance and participation, and it has raised expectations about improving the way in which medical waste is managed. At most hospitals, attendance was complete, with between 25 and 30 people, including mid-level and higher level staff, on average per course. The exception was Los Minas Hospital, where only about 10 people (mostly maintenance staff) attended. At Luis E. Aybar Hospital, about 50 people attended, including nursing students who were very interested in the subject. In some cases, technical staff, especially from central services departments attended the course at different hospitals. At several hospitals, the instructors were asked to repeat the talks at another time so that staff that was not able to attend the first time could then do so.

A key challenge in the Dominica Republic’s health facilities is to devise mechanisms to keep the trained personnel who work in the waste collection and storage process. Furthermore, it was confirmed during the training process that the problem of handling such waste in health facilities is considered a housekeeping problem—so medical and paramedical staff does not participate in the waste management process.

**Hospitals’ Strong and Weak Points in Addressing the Problem of Medical Waste**

The Provincial Health Systems Project assessment team reported prior to the installation of the incinerators in 2001 that there is no management of medical waste in most of the Dominican hospitals, with the exception of Robert Reid Children’s Hospital, where waste selection is performed and some clear criteria exist. In general, hospitals exhibit the same strengths and weaknesses in addressing the problem of medical waste:

**Weak points in addressing the problem:**

- All waste at the hospital is treated in the same way.
- There is no differentiation of medical waste by types, based on their danger and/or the social alarm produced, except for the separation of needles and sharp objects in some hospitals.
- The only type of waste that is treated differently is a placenta, which in some centers is washed manually to keep fluids from dripping (La Altagracia Maternity Hospital) and in others ends up in septic tanks (Pascasio Toribio Hospital).
- Where bags are used for waste, they are only one color;
- Where bags are used, they are not as thick as is advisable (>55 m.), so they often break.
- In most cases, sufficient means for possible waste separation are lacking. There are no proper trash containers.
- There are no special containers for sharp or pointed objects.
- The staffs that generate waste lack proper training in the elements of correct management. The bags are so overfilled that they cannot be closed. Capped and uncapped needles are thrown in the bags. In some emergency units, needles can be observed on the floor.
- Waste collection personnel are unaware of minimum safety standards for waste management. In some cases, they do not use gloves or they use inadequate ones, and they do not wear specific clothing for the task. Bags are not handled correctly (e.g., bags are sometimes carried on the shoulders).
- The transport of waste from the units to the waste dump is sometimes done in vehicles, sometimes not.
- In waste dumps, it is common to find a large quantity of waste that has been thrown out without use of plastic bags.

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With the exception of centers whose installations have a municipal storage container, waste storage sites are in poor conditions. They lack doors and allow the access of children and animals. They lack cleaning hoses and/or fire extinguishers.

**Strong points in addressing the problem:**

- There is awareness in hospitals of the issue of waste, both by personnel and management. Awareness is not as strong among janitorial and trash collection staff, especially because they are unaware of the risk.
- There is an important potential among persons interested in participating in and doing something about waste management.
- There is external awareness about the current way in which waste is eliminated, both among the public and authorities.
- A credible process has begun, aimed at improving waste management. The installation of incineration plants in the seven hospitals is a sign of this.
- A draft plan for Hospital Hygiene Standards developed by SESPAS has been put in place.

**Conclusions**

The Provincial Health Systems Project assessment team concluded that implementation of a waste policy for any hospital would come up against two essential difficulties: (i) material means, and (ii) the awareness and preparation of staff. The assessment team made the following recommendations currently under implementation with respect to improving the preparation of staff:

- **Create a Waste Management Commission in each hospital.** Each hospital's Waste Management Commission should include staff from different occupations who participate in the hospital’s daily operations or in that environment—i.e., an epidemiologist, a nurse, a janitor, and an engineer—and should be charged with preparing a Waste Plan for the hospital that establishes waste generation points, collection routes, storage points, and waste management responsibilities for various parties.

- **Offer hospital staff training in waste management.** Staff should be offered a three to four hours training course on waste management that is tailored to their particular needs. For example, maintenance and janitorial staff are at special risk in handling waste. Nursing staff and nursing students (very important) could benefit from training related to the generation of medical waste.

- **Involve outside consultants.** Outside consultants should be involved in the presentation of training courses and subsequently to provide support to the Waste Management Commission in: (i) the establishment of an initial work plan, (ii) follow-up/correction, and (iii) final evaluation.

**E. Related Investments financed under the HIV/AIDS Prevention and Control Project**

As suggested earlier, public health problems generated by the management of medical waste affect the hospital population—that is, medical and paramedical staff, patients (and visitors), and service employees—but also affect the population outside the hospital. One of the main concerns regarding medical waste in the DR is the possible transmission of diseases such as HIV/AIDS or hepatitis B through wounds caused by contaminated needles. The population groups at greatest risk from this are: (i) patients and health personnel; (ii) staff of hospital support services (trash collectors, treatment plant operators, etc.); and (iii) patients at high risk of contracting infections (e.g., people with diabetes, people with AIDS; drug addicts).

The HIV/AIDS Prevention and Control Project, building upon and complementing the activities supported under the Provincial Health Services Project, contemplates interventions under Component 2 to
reduce HIV/AIDS transmission, aimed at protecting high-risk human groups such as patients and health staff within and outside hospitals, preserving the environment by establishing proper systems and processes for the management and treatment of contaminated hospital waste. Specifically, it is supporting: (i) an assessment of medical care waste handling and disposal related to HIV/AIDS programs and activities under the project; (ii) the revision and updating by COPRESIDA (the Presidential Commission for HIV/AIDS), through the SESPAS' General Directorate of Sexually Transmitted Infections and AIDS (DIGECITSS) and other specialized institutions, of the existing manual for medical waste handling and disposal; and (iii) the training of health personnel associated with HIV/AIDS programs and activities under the project in the application of these standards to protect high-risk human groups such as patients as well as health staff in the participating facilities.

The manual addresses procedures for health center staff with regard to the handling, transport, treatment, and final disposal of medical waste, as well as the provision of required equipment and inputs, with special attention to the handling of sharp and pointed objects (the main risk of viral contamination inside hospitals), beginning at the point where the waste is generated, through the use of receptacles for the collection, storage, and disposal of sharp and pointed objects. The receptacles for sharp objects should be synthetic fiber containers, with a hermetically sealable translucent cover to keep liquids from spilling. They should have rounded edges to avoid cuts to staff involved in handling and should be identified with international coding for biohazard us waste. Differentiated routes within the health establishment are being defined to transport the special containers, physical identification of routes, as well as inputs and training for the staff responsible.

F. The Proposed Health Reform Support APL

The proposed project would complement the provision of hospital waste treatment equipment financed under the Provincial Health Services and the HIV/AIDS Prevention and Control Projects, and the parallel IDB project, as well as the training of staff assigned to do this work. Technical assistance would be provided to the local governments of each participating locality in order to improve the disposal of residual waste, without any risk to their staff or to the environment. More specifically, to strengthen the biomedical waste management system in the participating health facilities, the proposed project will support under Component I the following activities:

- **Create a Waste Management Commission in each hospital.** Each hospital’s Waste Management Commission should include staff from different occupations who participate in the hospital’s daily operations or in that environment—i.e., an epidemiologist, a nurse, a janitor, and an engineer—and should be charged with preparing a Waste Plan for the hospital that establishes waste generation points, collection routes, storage points, and waste management responsibilities for various parties.

- **Purchase of incinerators by hospitals for the purpose of treating medical waste.** Incinerators, along with peripheral equipment (identified containers) and services related to training in the operation and maintenance of equipment, would be purchased and installed in the hospitals according to the findings of investment needs assessments. To this end, the project’s Operations Manual will include the World Bank guidelines for such investments.

- **Offer hospital staff training in waste management.** Staff should be offered a three to four hours training course on waste management that is tailored to their particular needs. For example, maintenance and janitorial staff are at special risk in handling waste. Nursing staff and nursing students (very important) could benefit from training related to the generation of medical waste.
- **Involve outside consultants.** Outside consultants should be involved in the presentation of training courses and subsequently to provide support to the Waste Management Commission in: (i) the establishment of an initial work plan, (ii) follow-up/correction, and (iii) final evaluation.

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Boletín Estadístico Año 1, No.1-SESPAS 2001 [Statistical Bulletin year 1]
II. Environmental/Social Impact related to Civil Works

A. Current Legislation on Management of Environmental Risks of Civil Works in the Dominican Republic

Until the year 2000 when the Ministry of the Environment and Natural Resources was created through the passing of Law 64-00, the Dominican Republic did not have a set of environmental standards and regulations except for a series of codes and laws that dealt generally on certain environmental aspects.

In this portfolio a series of environmental standards and regulations are designed, discussed, and approved and, as of today, the following have been designed and approved: “Air Quality Standards and Control of Atmospheric Issues” establishing the maximum allowable pollutant values in the air aimed at protecting the health of the general population, with special emphasis on the most vulnerable groups; “Noise Protection Standards” establishing the maximum allowable levels as well as the general requirements for protection against environmental noises produced by fixed and mobile sources; “Solid Waste and Radioactive Waste Standards” establishing the guidelines for solid waste management and the sanitary and management requirements to be met in the storage, collection, transportation and final disposal of the same; “Water Quality and Discharge Control Standards” that classify surface and coastal waters in accordance with their prevalent use, aimed at protecting the quality of these bodies of water through the control of liquid effluents, both industrial and municipal, public and private, produced by different human activities. On the subject of forests, the following standards have been prepared: “Technical Standards for the Establishment and Certification of Forest Plantations,” “Technical Standards for Forest Management Plans,” “National Transportation Route of Forest Products”, “Standards and Procedures for Forest Permits”, “Regulations for Environmental Permits and Licenses Systems,” “Forest Regulations” and “Operational Regulations for the Wood Processing Forest Industry in the Dominican Republic.”

The Ministry of the Environment and Natural Resources has not issued specific regulations with regard to restrictions on building materials; on the other hand, the sector’s regulatory entity, the Ministry of Public Works and Communications (SEOPC) has issued 22 (twenty-two) regulatory manuals of which only one, the M-20 “Environmental Manual for the Design and Construction of Road Works,” deals with specific aspects on environment preservation, that is, the construction aspect which is not part of the investments of our project.

Environmental Guidelines to be used by Contractors for the Civil Works Components of the Project

The conditionalities established in the technical specifications of the bidding documents for the public works to be financed through the Health Sector Reform Support Project with regard to the materials to be used in public works are based on the regulations contained in M-009 “General Specifications for the Construction of Buildings” issued by the Ministry of Public Works; these are the current regulations that establish the nature, origin and composition of materials, aggregates and inputs used in construction works.

This standard specifies the manner in which the construction of structures should be carried out, from clearing the land up to the conclusion of the works. Certain environmental aspects are
included in the regulations, such as procedures for land clearing indicating the need to "conserve and protect trees, shrubs or decorative plants located within the construction area;" indicating also the need to have the corresponding permits for final disposal of waste products derived from clearing of land for the works. With respect to building materials to be used in the works, both for the composition of land fillings, as well as for coarse and fine aggregates, it establishes the need that the latter be free from "organic matter, organic rubble, or other harmful materials" and, in the specific case of water, that it be "free from excessive quantities of organic matter, oils, colloids, alkalis, acid salts and other impurities."

In addition to what has been formally established, there are certain restrictions observed through use and custom in the use of construction materials as is the case of roofing plates made with asbestos-cement, now in disuse since the public became aware of their polluting potential and the danger they represent to health.

In regard to management of waste products derived from public works, the Environmental Standards for Solid Waste and Radioactive Waste of the Ministry of the Environment and Natural Resources, in its Article 5 "Technical Specifications", paragraph 5.1 "Prohibitions and General Requirements", subparagraph 5.1.1, states: "The deposit or disposal of any type of solid waste on roads or public areas, lots, vacant properties, sewerage systems, wells, and in any type of open or closed space on state, municipal or private lands that has not been duly authorized for this purpose in accordance with the Environmental Law and Standards, is hereby prohibited."

Likewise, the Standards designate the Municipal Councils of the different localities in the country responsible for managing the final disposal of solid wastes.

In this regard, the section on technical specifications of the standard documents for the rehabilitation, expansion, and substitution of physical infrastructure financed with Project funds states that: "The Contractor will be equally responsible for obtaining the permits from the responsible authorities for forest felling, as well as for the disposal of waste materials in the sites authorized for these purposes." This is a priority aspect in the supervision of works and one that is vigorously monitored by the local authorities in our country.

Compliance with current legislation by contractors is mandatory in the Dominican Republic, and is thus specified in the bidding documents for works under Section 3 "Conditions of the Contract", paragraph 3.3 "Language and Applicable Law" and its provision in Section 4 of the "Special Conditions of the Contract."

With respect to the safety of construction workers, the Dominican Republic ratified Agreement C-167 "On Safety and Health in Construction" approved at the session of the 75th Conference of the International Labor Organization in Geneva on June 20, 1988, that became effective on January 1, 1991. This agreement includes recommendations on prevention and protection measures for the safety of workers, and covers safety aspects of hand ladders and scaffolding; elevators and hoisting devices; transportation vehicles and earth movement and manipulation of materials machinery; installations, machines, equipment, and manual tools; works in heights, including roofs; excavations, wells, ramparts, underground works, and tunnels; cofferdams and caissons; frames and casings; works above water surface; demolition works; electricity and management of explosives.
This agreement sets conditionalities to diminish the health risk to workers “exposed to any chemical, physical or biological hazard to such extent that it may be dangerous to their health” and recommends measures to prevent exposure. It also makes recommendations on precautions against fires, on clothes and equipment for personal protection, first aid and declarations on accidents and diseases.

The recommendations in this agreement have been included in Dominican legislation, such as in the following resolutions of the Secretariat of Labor:

- Resolution No. 34-91, which defines the content of first aid emergency kits in the workplace.

- Resolution No. 02-93, which defines dangerous and unhealthful jobs in the workplace and establishes the responsibility of the contracting party in providing workers with adequate means of personal protection to alleviate the existing danger or unhealthful conditions.

- Resolution No. 03-93, which defines dangerous and unhealthful jobs for children.

With respect to those aspects concerning social protection of workers, the Dominican Social Security System was created through Law 87-01, which was drafted with support from the Provincial Health Systems Development Project, cofinanced by the World Bank, which establishes and regulates the mutual rights and duties of the State and of citizens with regard to the financing of protection against the risks of old age, disability, pension due to old age, protection of surviving dependents, disease, maternity, infancy and occupational risks.

The responsibility of the Contractor regarding occupational risks is established in the bidding documents for public works to be financed by the project, Section 3 “Conditions of the Contract”, paragraph 11, “Risks of the Contracting Party,” and insurance obligations on behalf of workers is also established in the same section, paragraph 13 and its provision in Section 4 of the “Special Conditions of the Contract.”

These regulations will be included as an Annex to the Operating Manual of the Project (effectiveness condition), as well as part of the bidding documents for public works.
B. Site screening criteria capable of detecting the possibility of environmental or social impacts from the rehabilitation or construction of health facilities such as involuntary resettlement, presence of historical monuments, cemeteries or other physical cultural aspects, and critical natural habitats.

Health facilities to be covered under the proposed project. The implementation of the Support to the Health Sector Reform Project (PARSS, in Spanish) will encompass 17 (seventeen) provinces in the III, IV, VI, VII and VIII Health Regions, which include 311 (three hundred eleven) Health Ministry facilities, 57 (fifty-seven) of which have hospitalization services and the remaining 254 (two hundred fifty-four) are ambulatory, distributed as follows:

<table>
<thead>
<tr>
<th>Health Region</th>
<th>Province</th>
<th>Facilities with bed</th>
<th>Ambulatory facilities</th>
</tr>
</thead>
<tbody>
<tr>
<td>III</td>
<td>María Trinidad Sánchez</td>
<td>5</td>
<td>16</td>
</tr>
<tr>
<td></td>
<td>Samaná</td>
<td>3</td>
<td>12</td>
</tr>
<tr>
<td></td>
<td>Salcedo</td>
<td>3</td>
<td>7</td>
</tr>
<tr>
<td></td>
<td>Duarte</td>
<td>4</td>
<td>38</td>
</tr>
<tr>
<td>IV</td>
<td>Bahoruco</td>
<td>3</td>
<td>8</td>
</tr>
<tr>
<td></td>
<td>Barahona</td>
<td>5</td>
<td>16</td>
</tr>
<tr>
<td></td>
<td>Pedernales</td>
<td>1</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Independencia</td>
<td>3</td>
<td>13</td>
</tr>
<tr>
<td>VI</td>
<td>San Juan de la Maguana</td>
<td>4</td>
<td>25</td>
</tr>
<tr>
<td></td>
<td>Comendador</td>
<td>3</td>
<td>7</td>
</tr>
<tr>
<td>VII</td>
<td>Dajabón</td>
<td>3</td>
<td>17</td>
</tr>
<tr>
<td></td>
<td>Montecristi</td>
<td>5</td>
<td>18</td>
</tr>
<tr>
<td></td>
<td>Valverde</td>
<td>2</td>
<td>12</td>
</tr>
<tr>
<td></td>
<td>Santiago Rodríguez</td>
<td>3</td>
<td>9</td>
</tr>
<tr>
<td>VIII</td>
<td>La Vega</td>
<td>4</td>
<td>33</td>
</tr>
<tr>
<td></td>
<td>Monseñor Nouel</td>
<td>3</td>
<td>9</td>
</tr>
<tr>
<td></td>
<td>Sánchez Ramírez</td>
<td>3</td>
<td>11</td>
</tr>
<tr>
<td></td>
<td><strong>TOTAL</strong></td>
<td><strong>57</strong></td>
<td><strong>254</strong></td>
</tr>
</tbody>
</table>

Civil works financed under ongoing Provincial Health Services Project. The geographical scope of the Provincial Health Systems Development Project, was comprised by the III, IV and VII health regions, giving priority among them to region IV formed by the Barahona, Bahoruco, Independencia and Pedernales provinces, and as a result of the integral development of the implementation strategies of the project, this region has been the entry point of the new Dominican social security system.

The objective of the interventions to improve the infrastructure within the framework of the Provincial Health Systems was to enhance the response capacity of health facilities that faced physical plant and equipment problems, after determining the level of complexity of the facility according to the role it will fulfill in the delivery network. In this regard, the first stage of the execution of the component included a preliminary diagnosis and the activities leading to the creation of a planimetric file of the health facilities.

Subsequently, field visits were undertaken to ascertain the basic intervention needs, which determined the prevalence of the following problems: ceiling leaks, deficiencies in sanitary and electric systems, inoperability in Emergency area, as well as in the Obstetrics area and waste...
disposal in facilities with bed; also, general rehabilitation needs in rural ambulatory centers.

As a result of the PDSPS, there is now a Planimetric file in CAD platform containing all the ambulatory centers in the III, IV and VII Health Regions, totaling 169 (one hundred sixty-nine), as well as 26 (twenty-six) facilities with bed.

In this regard fifty-one (51) interventions were carried out through prudent shopping processes and twelve (12) through Local Competitive Bidding processes, aimed at improving serious problems such as ceiling leaks in nine (9) facilities with bed; improvement of water supplies, drainage, and electrical installations in eleven (11) facilities with bed; functional rehabilitation in Emergency and Gynecology/Obstetrics areas in nine (9) facilities with bed; expansions and general rehabilitation in eleven (11) rural ambulatory facilities; substitution of one (1) provincial hospital and four (4) ambulatory facilities; rehabilitation and/or expansion works in four (4) Provincial Health Departments; conversions for the implementation of MIS and VE in eleven (11) facilities with bed; functional conversions in seven (7) operational units at the SESPAS central level; in addition to installation of solid waste management system in ten (10) facilities with bed.

With respect to interventions for the improvement of solid waste management, double chamber pyrolytic-static type incinerators were acquired, with standards required by the World Health Organization. This equipment decomposes the waste in the first chamber through a thermal combustion process in an oxygen-poor environment, a process that reduces waste volumes between 85 and 95% without need of prior treatment to its incineration and processes waste containing 40-60% moisture; in a second reaction chamber, these unburned gases are forced to circulate in close union to a large input of secondary air, i.e. in a very oxidant atmosphere, they post-combust, all this with the assistance of a burner that maintains a minimum temperature of 1000°C at all times. This burner regulates its operation through a thermocouple-regulator, which is programmed at the adequate temperature in the process.

Complementing the acquisition of the equipment, within the incidental services included with the acquisition of the incinerators, was the training of at least three (3) persons per hospital in the operation and maintenance of the equipment, as well as in the identification and solution of low complexity operational problems; training of hospital personnel (20 per facility) in hospital management of sanitary waste; recommendations per facility for packaging instead of production of sanitary wastes, including the supply of color-coded containers for the first year of operation.

**Civil works investments contemplated under the proposed project.** The interventions to be carried out within the scope of the PARSS will include similar aspects to those of the PDSPS. To date, the interventions pending implementation in the III, IV and VII health regions have been identified, where waterproofing will be carried out in three (3) facilities with bed; general functional rehabilitation works that will include expansions in the Emergency and Gynecology/Obstetrics areas in at least thirteen (13) facilities with bed; substitution of two (2) facilities with bed and general rehabilitation works in approximately twelve (12) ambulatory facilities. In the rest of the regions of the new project, that is, regions VI and VIII, interventions are planned in seventeen (17) facilities with bed and thirty (30) ambulatory facilities.

It is important to point out that, as observed during the implementation of the Provincial Systems Project and based on recent evaluations made by the Project team, it is expected that the environmental and social impacts resulting from the execution of public works during the implementation of the new project will be minimal, in view of the following: for the most part health system facilities are located in rural centers with low population density; the vast majority
of the interventions are rehabilitation works within the interior of the facilities, thus they will not affect the activities nor the traffic in the neighborhoods; substitution of facilities is carried out prior to the demolition of those existing in the same location, thus acquisition of new land implying resettlements or new environmental impact assessments are not foreseen. The project’s Operations Manual will include World Bank guidelines and framework in the event of any resettlement caused by the project, alongside guidelines for small construction works and for improving biomedical waste management and disposal in the participating institutions.

As indicated previously, programming of works for the new project includes the updating of procedures for supervision of works with the inclusion of the regulations in force, and in detail in the bidding and contracting documents for the protection of the environment and occupational safety.

**Investments Proposed under the Project to Improve Medical Waste Management**

As done with the support of the ongoing Provincial Health Services Project, resources would be allocated under Component I to assist participating health facilities in project areas, as needed, in the: (i) undertaking of assessment of medical care waste handling and disposal; (ii) updating of manual to address proper handling and disposal of medical wastes; (iii) rehabilitation of infrastructure and the installation of equipment in the main local hospitals for the disposal of medical wastes; and (iv) training of health personnel in the application of standards to protect patients, health workers, and the community.

**Public Consultation**

The Project PCU’s has held several meetings during project preparation with public, private and nongovernmental sectoral stakeholders grouped under the National Health Council to discuss and obtain feedback on project objectives, components, assessments (including technical, environmental, and economic and financial assessments), and implementation strategies. The consultation program has involved both formal and informal presentations and meetings with the target groups. More recently, in a National Health Council meeting held on May 2, 2003, presided by the Secretary of Health, the latest version of the PAD was reviewed and the proposed standards and guidelines for project implementation and required investments were endorsed.