



ANNUAL REPORT 1999



Mission Statement

To ensure the protection, wise use and enhancement of the environment in Trinidad and Tobago, thereby contributing to an improved quality of life, through:

- Active partnership with all sectors of the community
- Public Awareness and Education
- Co-operation with public entities in respect of environmental Management Programmes
- Development and Enforcement of Environmental Laws
- Being proactive as well as responsive to environmental concerns





Chairman's Message

The 1999 annual report is the third in the series that strategically assesses the status of a critical aspect of environmental management, which the Environmental Management Authority (EMA) has prioritised for special attention in the coming year. This has been done in Part A which contains the State of the Environment Report. While the 1997 and 1998 Reports analysed the status of our Biodiversity and Freshwater respectively, this Report looks at the current situation with regard to environmental legislation and its enforcement. It is being released as a precursor to the Environmental Code, which will evolve during the year 2000. The Code will be a dynamic document. It will unfold as Government consolidates, rationalises and modernises all of Trinidad and Tobago's environmental laws and programmes. The process requires consideration of the Authority's draft legal rules and recommendations by the Minister of the Environment as required by the Environmental Management Act, 2000. The draft legal Rules developed with public participation under the Environmental Management Act, can then only become law when Government brings into being a tribunal known as the Environmental Commission which shall be a superior court of record. The Commission will have jurisdiction to hear appeals from decisions or actions of the EMA.

The major draft legal Rules, Regulations, Orders and programmes prepared by the EMA, which will modernise the Environmental Code and herald the new age of environmental management in Trinidad and Tobago, are:

- **The Certificate of Environmental Clearance (CEC) Rules.** Certain designated activities that may have significant environmental impacts will require a CEC from the EMA. In some instances an Environmental Impact Assessment will be required.
- **CEC Designated Activities Order.** Activities requiring a CEC will be published in the Gazette.
- **Environmentally Sensitive Areas (ESA) Rules.** Provision will be made for the designation of National Park and other protected areas in co-ordination with other relevant government entities such as the Ministry of Agriculture, Land and Marine Resources, and the Water Resources Agency.
- **ESA Regulations.** Allows for ESA management plans, use fees and penalties for violations.
- **Environmentally Sensitive Species Rules (ESS)** Protects endangered species and fulfills domestic legal obligations under several international treaties.



- **Water Pollution Rules.** All industry putting water pollutants into the environment from a point source will be required to register with the EMA. Those exceeding specified water pollutant effluent standards will require a Permit.
- **Air Pollution Rules.** Establishes a permitting system and air pollution emission standards for industrial processes.
- **Vehicle Emissions Standards Regulations.** Establishes vehicle exhaust emissions standards to be enforced through the Motor Vehicle and Road Transportation Act private garage inspection system and spot checks on the roads.
- **Noise Pollution Rules.** Establishes ambient noise pollution standards and a National Noise Abatement Advisory Panel.
- **Waste Handling, Permits and Licences Rules.** Establishes a Permit and Licensing system for solid and hazardous waste handling, recycling and disposal.
- **Proposed Beverage Container Legislation.** Proposes a deposit/refund system for beverage containers such as plastic soft-drink bottles. Allows for the establishment of recycling centres and voluntary industry stewardship programmes.

This Report on environmental legislation represents part of the process of educating the public and enlisting support for environmental protection as the appropriate legal and institutional support is put in place. Even so we should not delude ourselves into believing that new law and more prosecutions will in themselves solve the environmental management problems facing the country. Success should rather be measured in terms of cleaner air and water and soil, less noise, increasing forests and wildlife and so on. The indications are that in order to attain these goals our long-term strategy must concentrate on attitudinal and behavioral re-orientation of people towards the environment at all levels in the society. If our country is to have a future, it is vital that every person who resides within Trinidad and Tobago co-operates as new approaches to environmental management are introduced and tested.

Dr. John Agard
CHAIRMAN

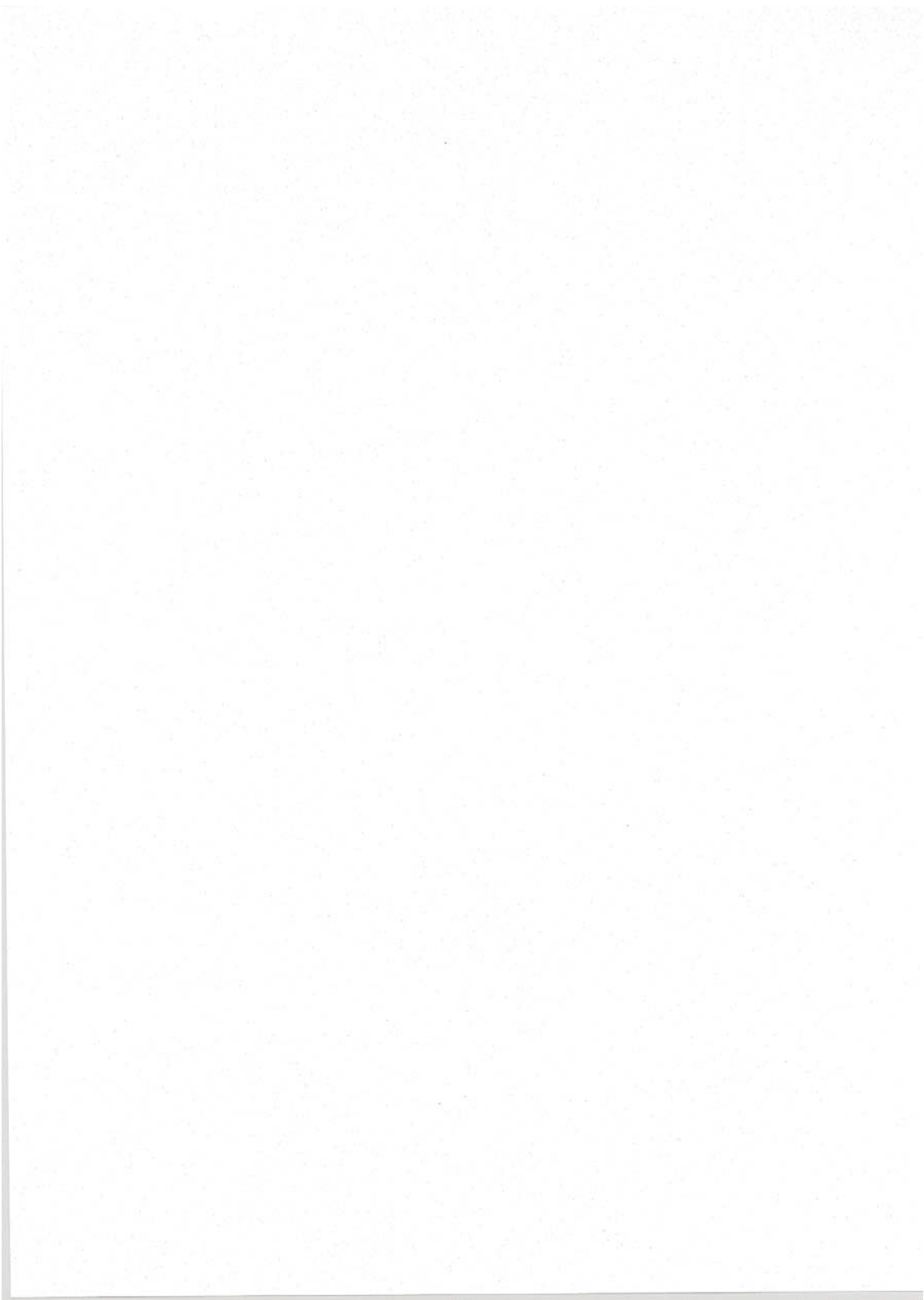


ANNUAL REPORT 1999

PART A

STATE OF THE ENVIRONMENT REPORT 1999

THE LEGISLATIVE
AND
INSTITUTIONAL LANDSCAPE
FOR
PROTECTION OF THE ENVIRONMENT
IN TRINIDAD AND TOBAGO





ANNUAL REPORT 1999

PART A

STATE OF THE ENVIRONMENT REPORT 1999

TABLE OF CONTENTS

| | | |
|--------------------|--|-----------|
| | List Of Acronyms And Abbreviations..... | 7 |
| | Executive Summary..... | 8 |
| 1.0 | Introduction..... | 9 |
| 2.0 | Existing Institutional and Legislative..... | 10 |
| | Regime for Protection of the Environment..... | 10 |
| 2.1 | Legislative Regime..... | 10 |
| 2.1.1 | Air Pollution..... | 10 |
| 2.1.1.1 | Health Implications..... | 12 |
| 2.1.1.2 | Legal Mechanisms and Controls..... | 12 |
| 2.1.2 | Biological Resources..... | 12 |
| 2.1.2.1 | Fauna..... | 12 |
| 2.1.2.1.1 | Legal Mechanisms and Controls..... | 13 |
| 2.1.2.2 | Flora..... | 13 |
| 2.1.2.2.1 | Legal Mechanisms and Controls..... | 13 |
| 2.1.2.3 | Ecosystems..... | 14 |
| 2.1.2.3.1 | Forests..... | 14 |
| 2.1.2.3.1.1 | Legal Mechanisms and Controls..... | 14 |
| 2.1.2.3.2 | Wetlands..... | 14 |
| 2.1.2.3.2.1 | Legal Mechanisms and Controls..... | 15 |
| 2.1.2.3.3 | Marine Ecosystems and Fisheries..... | 15 |
| 2.1.2.3.3.1 | Legal Mechanisms and Controls..... | 15 |
| 2.1.3 | Water Pollution..... | 17 |
| 2.1.3.1 | Health Implications..... | 18 |
| 2.1.3.2 | Factors Affecting Water Quality..... | 19 |
| 2.1.3.3 | Legal Mechanisms and Controls..... | 21 |
| 2.1.4 | Noise Pollution..... | 22 |
| 2.1.4.1 | Health Implications | 22 |

Cover photo courtesy: Information Division, Office of the Prime Minister



| | | |
|-------------------|---|-----------|
| 2.1.4.2 | Legal Mechanisms and Controls..... | 22 |
| 2.1.5 | Chemical Pollution..... | 23 |
| 2.1.5.1 | Pesticides..... | 23 |
| 2.1.5.2 | Health Implications..... | 24 |
| 2.1.5.3 | Legal Mechanisms and Controls..... | 24 |
| 2.1.6 | Waste..... | 25 |
| 2.1.6.1 | Hazardous Waste..... | 25 |
| 2.1.6.1.1 | Legal Mechanisms and Controls..... | 25 |
| 2.1.6.2 | Non-Hazardous Waste..... | 26 |
| 2.1.6.2.1 | Sewage..... | 27 |
| 2.1.6.2.2 | Legal Mechanisms and Controls..... | 27 |
| 2.2 | Institutional Measures..... | 28 |
| 3.0 | Deficiencies in the Existing Legislative and Institutional Administration for Protection of the Environment | |
| 3.1 | Legislative Management..... | 29 |
| 3.1.1 | Failure to use Regulatory Powers..... | 29 |
| 3.1.2 | Antiquated and Outdated Regulations..... | 29 |
| 3.1.3 | Failure to Assent to Laws..... | 29 |
| 3.1.4 | Legal Language: Vagueness or Absence of Specific Standards..... | 30 |
| 3.2 | Institutions..... | 30 |
| 3.2.1 | Regulatory Weakness..... | 30 |
| 3.2.2 | Absence of Environmental Policy..... | 30 |
| 3.2.3 | Inadequate Vision for Environmental Protection..... | 30 |
| | Limited Public Education Programmes..... | 32 |
| 3.2.4 | Inadequate Resources..... | 32 |
| 3.2.5 | Multiple Agencies, Overlapping | |
| 3.2.6 | Jurisdiction and Inadequate Co-ordination..... | 32 |
| | Lack of Punitive Sanctions..... | 33 |
| 3.2.7 | Delays in the Justice System..... | 33 |
| 3.2.8 | | |
| 4.0 | Current Measures to Strengthen the Legislative and Institutional Regime for Protection of the Environment with particular Focus on the EMA | |
| | New and Proposed Legislative Mechanisms..... | 34 |
| 4.1 | Institutional Measures..... | 35 |
| 4.2 | | |
| | Conclusion..... | 36 |
| 5.0 | Listing of Legislation..... | 37 |
| Appendix A | | |



List of Acronyms and Abbreviations

| Acronyms / Abbreviations | Meaning |
|-------------------------------------|--|
| CO | Carbon Monoxide |
| EEZ | Exclusive Economic Zone |
| EMA | Environmental Management Authority |
| MALMR | Ministry of Agriculture, Land and Marine Resources |
| PATT | Port Authority of Trinidad and Tobago |
| PLIPDECO | Point Lisas Industrial Development Company |
| SPM | Suspended Particulate Matter |
| TandT | The Republic of Trinidad and Tobago |
| VOC | Volatile Organic Compounds |
| WASA | Water and Sewerage Authority |
| WHO | World Health Organization |



Executive Summary

The EMA during 1998 and 1999 conducted an extensive survey into the legislative and institutional landscape to determine in the first instance the extent of existing laws relating to environmental protection, and secondly, how those laws impact on enforcement, effectiveness, behaviour and interaction among agencies. The core problems affecting implementation of existing laws were examined and new measures for the protection of the environment were developed.

This challenging exercise reviewed a cross section of the legal framework spanning some 50 agencies of government to determine the extent of the legislative authority they possess, the effectiveness of their laws, their interpretation and specific use with respect to environmental protection for Trinidad and Tobago.

What emerged was a picture of overlapping areas of responsibility, unclear roles and ambiguous terminology in the wording of certain legislation. However, what was discovered is that despite the general malaise attendant with

developing countries towards protection of the environment and the lack in most instances of proper safe guard: and regulations for that purpose, Trinidad and Tobago in this regard has on its statute books over 100 pieces of legislation.

Some of this legislation needs to be supported by newer more relevant and specific regulations or amendments to the respective acts to give more teeth to certain agencies with regards to the protection of the environment. In this report reference is made to these acts in Appendix A. The report also signals the need not only for legislative reform but also for the simultaneous implementation of public awareness programmes that will educate and instill a sense of national pride among the population in the continued fight against the destruction of our beautiful environment.



1.0 Introduction

One of the emerging dimensions to the environmental debate is the need to understand the magnitude of acts of environmental degradation and the impact of such degradation on human society, both in terms of economic welfare and human health.

With respect to the economic well-being of a country, the environment can have a profound impact on development. One has only to look at the economic impact of natural disasters. Indeed, the very definition of natural disasters or calamities associated with the forces of nature is under attack as too restrictive. Environmental degradation is increasing the vulnerability of human society to the forces of nature. Deforestation, over-cultivation and other forms of land abuse have created enhanced susceptibility to floods and landslides. This situation is readily seen in Trinidad and Tobago where the rainy season is now being greeted with greater incidence of flooding, primarily due to poor environmental practices. Economic losses are incurred due to damage to crops, livestock and property. The implications extend beyond damage to crops, livestock and property and can include work related lost time as people are forced to leave their jobs early to go home and deal with flood conditions or are unable to go to work because of flood conditions. The inevitable consequence is a decline in productivity. Further, there is the direct consequence of increased insurance cost as a result of the greater risks posed by flooding due to the enhanced environmental abuse.

Another economic consideration lies in the reality that abusing the environment can lead to the destroying or diminishing of the ability of the environment to generate wealth. The environment contains many valuable products some of which may be destroyed before we are aware of their true potential. This is important in the field of biological diversity and demonstrates the need to protect our biota.

The best measures for curbing environmental abuse and reversing decades of poor environmental practices also need to be determined. Many tools are required to achieve the objective of environmental restoration and environmental sustainability. These primarily include education and legislation. By using a holistic approach to environmental management, one can achieve some success in the battle to preserve and protect the environment. This State of the Environment Report will address one of the mechanisms that can be used in the fight to protect the environment, that is, the role of the law. It is important to develop an understanding of how the law operates both at the level of legislative norms and institutions. It is proposed therefore, to assess the existing legislative structure for protecting the environment in Trinidad and Tobago and to provide a glimpse into future developments. In addition, the role of institutions will be examined as this is a critical aspect of environmental management through the use of legislative norms. The overriding objective therefore of this Report is to give some critical understanding to the challenges faced by Trinidad and Tobago as it attempts to overhaul its approach to environmental management partly through legislative intervention.



2.0 Existing Institutional and Legislative Regime for Protection of the Environment

2.1 LEGISLATIVE REGIME

The current environmental protective structure of Trinidad and Tobago although buffered by over 100 pieces of legislation has been seriously undermined by the lack of enforcement, a general public disregard, ineffective penalties and ambiguity in the laws themselves. To reverse this state of affairs the EMA, charged with the responsibility of safeguarding the environment, has embarked upon a review of all the present laws, in a bid to make them more applicable and enforceable. At the same time the EMA has attempted to identify areas where the laws are either underdeveloped or do not exist at all so that the appropriate remedial measures can be pursued.

The following examination will attempt to take a snapshot of the different sectors of the environment. The snapshot will contain a definition of the problem, its sources and severity and local legislation that attempts to deal with the problem and potential health implications. Appendix A provides a listing of the laws relating to these specific environmental issues together with the enforcement agency and applicable fines.

2.1.1 Air Pollution

Definition:

Air pollution is caused by the release of substance into the atmosphere which, based on technical, scientific or medical evidence, is determined to cause or to be likely to cause harm to human health or the environment.





**TABLE 2-1
AIR POLLUTANTS**

| | TABLE 2-1 AIR POLLUTANTS |
|---|---|
| Air Pollutants | Definition, Incidence and Health implications |
| SPM's | <ul style="list-style-type: none"> • Suspended Particulate Matter - Finely divided solids or liquids of typically hydrocarbons and sulphur dispersed into the atmosphere from natural sources, industrial activities and combustion processes. • In 1993, 46,711 tonnes of SPM's were produced in TandT, 8% of which came from vehicular emissions. • Exposure has been linked to asthma, bronchitis and pulmonary emphysema. |
| Sulphur Dioxide | <ul style="list-style-type: none"> • Colourless gas emitted from similar sources as SPM's • In 1993, 23,718 tonnes of sulphur dioxide were produced in TandT, 23% of which came from vehicular emissions. • Produces strong eye and nasal passage irritation. Linked also to higher occurrences of asthma, bronchitis, pulmonary emphysema and general reduction of lung functions particularly in children. |
| Nitrogen Oxide | <ul style="list-style-type: none"> • Results from the combustion of fossil fuels in power plants and automobiles for example. • In 1993, 76,110 tonnes of oxides of nitrogen were produced in TandT, 71% of which came from vehicular emissions. • Nitrogen dioxide can have a stinging, suffocating odour as it affects the airway and bronchoconstrictors. At higher levels it may cause coughing, headaches and chest tightness which may lead to circulatory collapse. Excess blood nitrate may reduce blood pressure, which in turn could cause destruction of blood cells, liver and kidney defects. |
| VOCs Photochemical and Oxidants Ozone | <ul style="list-style-type: none"> • Coupling the evaporation of solvents and fuels with the incomplete combustion of fossil fuels causes these various hydrocarbons to be released into the atmosphere. Photochemical oxidants are secondary pollutants produced by the reaction between hydrocarbons and nitrogen oxides in the presence of sunlight. • In 1993, 24,196 tonnes of VOCs were produced in TandT, 44% of which were as a result of vehicular emissions. • Photochemical oxidants in smog form can cause eye and nose irritation. Ozone, a significant by-product of the above process, can cause choking and may lead to lung damage. |
| Lead | <ul style="list-style-type: none"> • Lead is a most dangerous toxic element. It is a by-product in the making of batteries, sheet and pipe, cable sheathing, and paint. It is also used as an anti-knock additive in fuel. • In 1993, 16 tonnes of lead were produced in TandT, 94% of which were produced through vehicular emissions. • Lead poisoning, abdominal pains, coma, heart failure, brain damage and diminished intelligence in children are the leading health complaints of lead contamination. |
| Carbon Monoxide | <ul style="list-style-type: none"> • An odourless gas produced by the incomplete combustion of carbon-containing fuels. CO is principally produced from vehicular exhausts but is also produced when forest and waste products burn, and through the activities at petroleum refineries, steel mills and power stations. • In 1993, 22,920 tonnes of CO were produced in TandT, 27% of which were from vehicular emissions. CO can lead to coma and possibly death if inhaled in large quantities. In lower dosages it can lead to flu-like symptoms particularly in children. |



2.1.1.1 Health Implications

The principal sources and health impacts of air pollution are detailed in Table 2-1 below.

2.1.1.2 Legal Mechanisms and Controls

Presently there is no legislation that refers pointedly to air pollutants and their control. There is, though, legislation that addresses non-specific air pollution. For instance, smoke, odours and fumes constitute an actionable nuisance when they interfere with the use and enjoyment of property. **The Public Health Ordinance (1950), Section 69** imposes a duty on the part of local authorities to initiate action to abate nuisances. There have been several amendments to the **Motor Vehicles and Road Traffic Regulations** including **Regulation 38(13)** which stipulates that a person in charge of a motor vehicle should not allow the emission of a visible vapour and **Section 100 of the Motor Vehicles and Road Traffic Act (1997)** which adds authority for the Minister to make regulations for "(q) health, safety or environmental matters... including the prescribed vehicle emissions, use of unleaded fuels...".

2.1.2 Biological Resources

To truly understand and appreciate the impact that man's activities have had on the various flora and fauna that surround us we must first review what biological diversity has meant to mankind. As a starting point biological resources include:

Genetic resources, organisms or parts thereof, populations, or any other biotic component of ecosystems with actual or potential use or value for humanity.

From penicillin to quinine it is well documented that many human ills have been resolved through some natural

remedy. Between 1959 to 1979 over 25 percent of a prescription drugs were plant based. The World Health Organisation (WHO) has claimed that worldwide, three quarters of primary health care needs are met by traditional medicines with the figure rising to a staggering 9 percent in the developing world. It is undeniable then that the extinction of many plant and animal species, any one of which may hold the key to a life saving remedy, could have very dire repercussions for mankind.

2.1.2.1 Fauna

Definition:

Fauna is a collective reference for the animals of an given geographical region or geographical epoch.



photo courtesy: images studio

Trinidad and Tobago has been blessed with a rich biological diversity very few other countries are able to mirror. The country can quite easily boast 400 species of birds, approximately 600 different species of butterflies, over 90 different mammals (58 bat species) and 85 different reptiles (55 snake species), 30 amphibians and 54 species of freshwater fishes. Indeed Trinidad's close proximity to the South American coastline has allowed the spawning of several unique and endangered species including the manatee, sightless fish, the oil birds, the golden frog, mata mata turtle, leatherback turtle, river otter, crab-eating raccoon and the pawi or bush turkey.



2.1.2.1.1 Legal Mechanisms and Controls

In a bid to preserve our rich heritage several laws have been enacted. The principal pillar of environmental legislation that provides the legislative authority for several activities aimed at protecting wild fauna is the **Conservation of Wildlife Act (rev. 1980)**. Additionally another piece of legislation as contained in **Section 26 of the Environmental Management Act (2000)** stipulates that the Minister may in accordance with **Section 27(e)** formulate guidelines on the designation and protection of "environmentally sensitive species". The EMA is thus duty bound in its bid to establish a system that will ensure the protection of the fauna for generations to come.

To maintain the survival of indigenous species, **Section 14(1) of the Animals Act (rev.1980)** was enacted so as to ensure that the importation of any alien species (bird, reptile or insect) would not occur without the prior approval of the Chief Technical Officer of the Ministry of Agriculture, Land and Marine Resources (MALMR). In so doing the delicate balance which may have otherwise been disturbed will be protected. **Section 2(1) of the Importation of Live Fish Act (rev.1980)** seeks to impose the same safeguards and permission requirements to protect our local fish stocks.

2.1.2.2 Flora

Definition:

Flora refers to the plants native to a certain geographical region or geographical period.

The Trinidad and Tobago landscape is dotted by an abundant array of dazzling flora. At last count there exists over 2,100 different flowering shrubs and plants, not to mention the 190 orchids that we find within our shores.



photo courtesy: images studio

2.1.2.2.1 Legal Mechanisms and Controls

Like the legislation that protects fauna, the **Plant Protection Act (1975)** attempts to ensure that no person imports any type of animal, plant or insect that would adversely impact the presence of indigenous plant species.

While the above Act is noteworthy, the law falls short in both preventing and protecting any of the indigenous species of flora from the activities of man. Slash and burn practices, squatting and unauthorised construction, all of which continue unabated, have led to the lessening of our indigenous plant stock. The **Forest Act (rev. 1980)** and **Environmental Management Act** only go as far as saying that rules may be made so as to ensure that only safe environmental methods are practised that will preserve sensitive species.



2.1.2.3 Ecosystems

Definition:

A dynamic complex of plant, animal and micro organism communities and their non-living environment interacting as a functional unit.

2.1.2.3.1 Forests

Although there has been rapid urbanization and industrialization half of Trinidad and Tobago is still under forest, three-quarters of which are controlled by the State. Thus the country is fortunate to still maintain a high percentage of its forested areas. In an attempt to preserve the pristine nature of our forests now and into the future appropriate measures must be taken as a matter of urgency to ensure that the problems of deforestation, flooding and squatting do not take root. With the necessary safeguards in place it is hoped that the growing threat to plant and animal extinction caused by shrinking forests will be alleviated.

2.1.2.3.1.1 Legal Mechanisms and Controls

Illegal logging, squatting and fire have been the main causes of deforestation. The dry season, which has been particularly severe in recent years, has seen a sharp rise in the number of reported fires. **The Agricultural Fires Act (rev. 1980)** seeks to define the fire season as the period from the 13th June to 1st December during which no fire can be set without the proper authorisation.

For State lands the laws are more stringent and afford the forested areas even more comprehensive protection. There are various sections of the **Forests Act (rev. 1980)** which prohibit the cutting or firing of forested areas without authority. The Act also prevents anyone from removing, transporting or subjecting any forest produce to any manufacturing process. There is also appro-

appropriate legislation affecting squatting as contained in the **State Lands Act (rev. 1980)** which clearly states that squatting is an illegal encroachment on to State lands and could cause spoil and injury to the woods and forests or such lands.

There exists a serious clash between the pursuit of economic exploits against the safeguard of the environment. This is particularly evident with respect to the petroleum sector where the search for oil has led to the degradation of the land itself where the oil industry is centered. Sadly in a country with a long standing history of oil exploration and production, this is one of the areas of legislative weakness in Trinidad and Tobago. **The Petroleum Act (rev. 1980)** by virtue of **Section 16** provides that all land subject to petroleum activities must be restored as near as possible to the original condition after the determination of an Exploration and Production (Public Petroleum Rights) Licence. The Act goes on to provide for the making of regulations that will prevent land pollution and offer compensation.

2.1.2.3.2 Wetlands

Definition:

"Wetlands," includes soils that are formed and conditioned by standing water or waterlogging and are adapted to anoxic biochemical processes including mangroves, peats, bog, fens, marshes and swamps.

Since wetlands offer a safe haven for many diverse flora and fauna it goes without question that these areas need to be afforded the maximum protection under the law to ensure their ecological sustainability. Trinidad and Tobago has a rich legacy in the area of wetlands. The Nariva Caroni and Oropuche are but three examples of dominant wetland areas that are extremely rich in biological diversity and important for the ecological sustainability of the country.



2.1.2.3.2.1 Legal Mechanisms and Controls

Unfortunately none of the current legislation specifically addresses the issue of wetlands. The major piece of legislation that may perhaps be used to protect wetlands, is the **Marine Areas (Preservation and Enhancement Act)** which authorises the Minister to designate any portion of the marine area of Trinidad and Tobago as a restricted area if he feels special steps are necessary for:

- a) *preserving and enhancing the natural beauty of such areas*
- b) *the protection of flora and fauna of such areas*
- c) *the promotion of the enjoyment by the public of such areas*
- d) *the promotion of scientific study and research in respect of such areas*

There are also several other general pieces of legislation that may provide some aid in the protection of our wetlands. **Section 26 of the Environmental Management Act** attempts to do just that by empowering the Authority to make rules to designate and protect environmentally sensitive areas. This is an important tool in the protection of wetlands. **The Forests Act** as well, makes it an offence for anyone to enter protected/prohibited areas. Under this Act, a prohibited area is defined as a specified area being part of a Forest Reserve or State lands declared by the Minister by Order to be a prohibited area.

Since the State controls the majority of the country's wetlands there are two other Acts which would provide some relief. These are the **State Lands Act** which demarcates certain areas as forest reserves and the **Conservation of Wild Life Act** which attempts to afford protection to certain areas that are home to important game species.

2.1.2.3.3 Marine Ecosystems and Fisheries

There are 354 known species of fish off the shores of Trinidad and Tobago and the fishing industry itself grosses

near TT\$100 million annually (1994 estimate) from 14,000 tonnes of catch or 13 percent of the agricultural contribution to GDP. With this backdrop in mind it is quite clear that our marine ecosystems must be afforded the appropriate environmental protection to ensure sustainable fish stocks into the future.

2.1.2.3.3.1 Legal Mechanisms and Controls

Several levels of legislation currently exist.

General ocean management is addressed through:

a) **The Archipelagic Waters and Exclusive Zone Act (1986)** holds that any ship passing within the EEZ of TandT must not engage in any act of willful and serious pollution or in any fishing activities without the consent of the Minister.

Section 21 of the above Act entrusts the Minister with the responsibility of ensuring that proper conservation and management are practised, that over exploitation within the EEZ is not allowed and that specific guidelines are made regarding the amount of catch able to be harvested by citizens of TandT.

Section 22 prohibits without consent, the exploration and exploitation, conservation and management of living and non-living natural resources.

b) **The Continental Shelf (Amendment) Act (1986)** which purports that the State controls the seabed, subsoil and all resources locked therein.

c) **The Territorial Sea (Amendment) Act No. 2 of 1986** is a general law which allows intervention when the health laws of the country are being infringed upon.

The management of marine resources is dealt with through:



a) **The Fisheries Act** which seeks to regulate the country's marine resources by prescribing jurisdiction over all rivers and to the Territorial Sea of TandT; setting the size and dimensions of nets or similar implements; determining the size of various catch caught; prohibiting the sale of undersized catch as outlined in the regulations; declaring any area to be prohibited; prohibiting the killing, harpooning, taking, removing, catching or any other forms of taking possession of fish or variety thereof either absolutely or at such times and within such areas as may be prescribed.

Some sectors have developed legislation that is specific to their industry.

a) **The Petroleum Regulations** is one such piece of legislation, as oil pollution is perceived as the greatest threat to marine areas. It places an obligation on a petroleum and exploration licensee to ensure that in the case of operation in submarine areas, pollution of the seas, beaches or tidal rivers does not occur and to ensure that navigation, agriculture, fishing, authorised scientific researches and conservation of living organisms of the sea are not unjustifiably hindered.



2.1.3 Water Pollution

Definition:

Water Pollution is caused by the discharge of substances into or which otherwise have an impact on the surface water, sea, groundwater, wetlands or marine areas within the environment and which, based on technical, scientific or medical evidence, is determined to cause or to be likely to cause harm to human health or the environment.

Water is one of the most precious resources known to man. It is the essence of life. It is used for such basic activities like washing, bathing, drinking, cooking and cleaning. Consequently it goes without saying that any disruption in the supply of water or reduction in its quality can have tremendous repercussions on human consumption, cleanliness and health. Since water plays such an integral part in our daily lives it is crucial to be aware of the different types of activities that can contaminate it. These activities include industrial, agricultural and domestic sources.

Industrial waste includes direct untreated effluent discharge by industries which may contain a wide variety of organic and inorganic chemicals. This variation depends on the type of industry and processing activity. Agricultural waste results from the excessive application of certain fertilisers and pesticides by our farmers and the release of high strength waste from intensive animal farm operations. Domestic waste is composed primarily of human excreta and washings. It does not generally contain chemical contaminants but may carry numerous pathogenic micro-organisms. The effects of such pollution can manifest itself in the eutrophication of surface water leading to fish kills and to contamination of ground water supplies. By fully appreciating the connectivity between man and the environment and the damage that these activities can cause one can understand that appropriate measures and mechanisms must be devised to ensure the long-term sustainability of this vital resource.



**TABLE 2-2
WATER POLLUTION – DISEASE PATHWAYS AND
HEALTH IMPLICATIONS**

| Disease Pathway | Method of Transmission | Diseases Caused |
|---------------------------|--|---|
| Water-borne | Contracted when drinking water is contaminated with human or animal faeces, urine affected by bacteria and pathogenic viruses | Poliomyelitis, Ascariasis, enteric fever and diarrhoea (cholera and typhoid) |
| Water-washed diseases | The unavailability of water causes an inability to keep things clean | Trachoma, Leishmaniasis |
| Water-based diseases | Occurs when water provides a home for host organisms in which certain parasites spend part of their life cycle. After this host organism is ingested by a fish or freshwater organism it can be passed up through the food chain on to humans. | Schistosomiasis, Dracunculiasis |
| Water-related diseases | Some disease carrying insects rely on water as a habitat. In this case disease contraction in humans occurs through indirect contact with these same insects. | African trypanosomiasis, elephantiasis, onchocerciasis, yellow fever, dengue fever, Japanese encephalitis and malaria |
| Water-dispersed infection | Infectious agents which thrive in water are inhaled into the respiratory tract with minute water droplets. | Legionella |

2.1.3.1 Health Implications

Besides the direct contaminant threat caused by water pollutants the greatest fear to man is the many water-related diseases that can occur. Highlighted in Table 2-2 above are five different pathways by which water-related diseases can be transmitted to humans.

The quality of many of our country's fresh water resources is deteriorating at an alarmingly rapid rate. The deterioration is due particularly to uncontrolled point source discharges both domestically and in our industrial sectors. With weak monitoring and poor pollution

enforcement mechanisms the quality of water worsens, there exists higher levels of suspended particles, organic matter, bacteria and chemical contaminants.

To add to the above mentioned factors, topsoil loss and flooding in the lower areas have been affected largely by indiscriminate vegetation removal on the hills. In turn this has led to high turbidity and a greater presence of suspended solids in certain watersheds. The increasing pressure on the water resources due to an increase in population and socio-economic activities will result in an even higher rate of pollution if no corrective measures are instituted.



2.1.3.2 Factors Affecting Water Quality.

- **Direct discharges of industrial effluent (including mining):**

Some of the industrial activities that adversely impact on the rivers that criss-cross the East-West Corridor are shown in Table 2-3 below.

- **Direct and indirect discharge of sewage effluent (including seepage from septic tanks and pit privates)**

Many of the sewerage treatment plants are outmoded, non-functional or in desperate need of redesign and repair. Their effluent discharges into water courses have created serious pollution problems. These problems are exacerbated by the increased volume of water that drains the urban centres of Trinidad and the southwestern part of Tobago putting additional strain on an already stressed system.



- **Oil Production**

The South of Trinidad is home to most of our land-based oil exploration and petroleum activities. The impact caused by these activities on our rivers and streams and the restoration requirements that will be necessary to return these rivers and their tributaries to their original state are enormous. Parts of the Erin, Moruga, Pilote, John and Silver Stream rivers have all suffered from oil pollution over the years .

**TABLE 2-3
INDUSTRIAL ACTIVITY IMPACTING RIVERS**

| ACTIVITY | RIVER IMPACTED |
|--|--|
| Agro-Processing | Arima, Caroni, Couva, Mausica, Santa Cruz/San Juan, Steele, Tacarigua |
| Oil refining | Guaracara |
| Paint manufacturing, other chemicals and metal fabrication | Caroni, Tacarigua |
| Petrochemicals | Couva |
| Quarrying | Arima, Caroni, El Marno, Gunapo, North Oropouche, Santa Cruz/San Juan |
| Rum distilling | Caroni, Guayamare |
| Service Stations | Arima, Caroni, Cipero, Couva, Guaracara, Guayamare, Mausica, Tacarigua |
| Sugar cane production and refining | Cipero, Couva |



- **Deforestation**

Vegetation in the upper catchment areas has been removed through forest fires and poor agricultural practices. This vegetation which would have otherwise slowed the deluge of water from the hills is no longer present in some areas. As a result many of the rivers—Diego Martin, Maraval, Maracas/St.Joseph, Tacarigua and Arima—that drain the Northern Range are affected by heavy sedimentation which blocks narrower passages downstream. This results in an exacerbated flood situation during the rainy season.

- **Leakage from service station underground storage tanks (UST)**

Presently over 1000 USTs exist in Trinidad and Tobago and 90 percent of them are of single wall steel construction. Unfortunately, if this wall is breached there will be leakage and possible groundwater contamination. To prevent this there are plans to have these USTs removed and replaced with a double wall design. Recent tests done on subsurface samples near USTs at three service stations in Trinidad have indicated significant hydrocarbon contamination at two sites. One of them is over a productive aquifer.



- **Farm practices**

There are several activities that currently occur within the agricultural sector that are not environmentally friendly. One such activity is the direct and indirect discharge of high concentrations of untreated farm waste into rivers like the Poole, Erin, Arima, Cunupia (Trinidad) and Hillsborough (Tobago). Normally this waste is bio-degradable but the excess volume of waste discharged prevents this from occurring. Another is the indiscriminate use of pesticides, fertilisers and domestic chemicals which have been cited as the cause of large fish kills in many rivers like Maraval, St. Ann's, Santa Cruz/San Juan (Trinidad) and Argyle (Tobago). Another problem also seen is leachate from landfills, which occurs when both chemicals and waste combine and percolate through the subsurface, contaminating ground water supplies.

- **Hydrological Changes**

Changes to the hydrological regimes of wetlands are the major cause of wetland destruction as evident in drying out and increased salinity of the water in these areas.

2.1.3.3 Legal Mechanisms and Controls

Because water is so much a part of our society at various levels, the laws pertaining to its pollution are similarly varied. Some laws like **Section 29(1)(l) of the Petroleum Act (rev.1980)** are specific on water pollution regulations and compensations for the petroleum industry, while the **Litter Act** will make general reference to any activity that leads to the depositing of litter in a public place, which would by extension include any waterway, or river.

Watercourse protection is afforded in **Section 18 (1) of the Waterworks and Water Conservation Act**, which prohibits the throwing or depositing of any tree,

log, branches, brushwood, stone, gravel, soil or other refuse in any watercourse or in any channel, drain or out-fall for water constructed or maintained by or on behalf of the State.

As part of its mandate WASA, as contained in **Section 42 of the WASA Act**, is charged with the responsibility for maintaining and developing waterworks, administering and providing a reliable supply, promoting conservation techniques and proper use of water resources. WASA's power, as seen in **Section 51(1)**, can extend to supporting the necessary regulations that will seek to protect water resources from pollutants.

Interestingly it is an offence, as explained in **Section 73(1) of the Summary Offences Act**, to bathe, wash clothes or deposit any filth or dirt into any stream or pond of water. This section allows room for liability to be rendered on owners of land who cause water pollution that affect other lands.

Additionally, one of the most important pieces of legislation pertaining to water pollution is the **Public Health Ordinance (1950)** which comprehensively addresses water pollution. **Section 54(1)(c)** vests power in local authorities by allowing them to make regulations for the keeping of clean drains and good repair. Specific references to water pollution may be found in **Section 57(1)** which broadly speaks of the disposal of different types of refuse in the city sewers and drains.

The other major body vested with responsibility for water pollution is the EMA. The Authority has been given the widest possible mandate to address water pollution and based on authority derived from the legislation, is perhaps the organisation with the greatest responsibility over water pollution. Not only shall the EMA, as spelled out in **Section 52(1) of the Environmental Management**



Act (2000), have the authority to search premises and vehicles as it thinks necessary to ascertain the extent of water pollution, the EMA must also establish a comprehensive register of water pollutants. This register will contain very specific information including the identification of each water pollutant, the conditions that will lead to its prevalence and the level of concentrations that exist. Through the development and regular updating of this register the EMA will be better able to manage, monitor and record any additional releases of water pollution into the environment.

2.1.4 Noise Pollution

Definition:

Noise pollution may be defined as any audible acoustic energy or vibration that will disturb, cause annoyance or discomfort to the physiological and/or psychological well being of living things.

Noise, although not as visible as many of the other types of pollution, is no less invasive or destructive.

2.1.4.1 Health Implications

Sustained exposure over long periods as in the case of many factory, farm and construction workers may lead to a gradual deterioration in hearing resulting in partial or permanent hearing loss. Temporary damage can just as easily occur when one is suddenly exposed to some form of abrasive noise exposure (as will typically occur after a party or loud explosion) and that person sustains a non-permanent disruption in their full hearing capability.

Apart from the effect on hearing, noise pollution can also affect man in quite a number of different, non-auditory ways. Noise can create different degrees of both neurological and psychological interference with the central

nervous system. Noise pollution often subtly upsets usual sleep patterns. The loss of sleep may in turn impair job performance and upset the usual consumption cycle. Noise can have a devastating effect on speech development in children and it can create stress, which can lead to the growth of feelings of annoyance, frustration, intolerance and moodiness. Additionally, it is a known fact that the elderly suffer changes in their blood pressure, heart rate, cardiac output and pulse speed from noise pollutant

2.1.4.2 Legal Mechanisms and Controls

Vehicles are one of the main sources of noise pollution. Various regulations of the **Motor Vehicles and Road Traffic Regulations (rev.1980)** address not only the level of noise and the control of that noise through silencers fitted onto vehicles (**Reg. 28**) but speak of the control in the use of horns and musical stereo systems (**Reg. 38 and 49**). Maxi Taxis were particularly targeted since it was commonplace to hear maxis referred to as moving discos or "boom boxes" on wheels. Consequently stringent rules were enacted to protect the travelling public. The **Maxi Taxi Act (as amended)** prohibits the use of televisions, videos, radios, tape decks, compact disc players, amplifiers, equalisers, speakers or other electrical or electronic equipment for the purpose of playing music or other electrically or electronically transmitted sounds in maxi-taxi.

In the case of noise pollution the EMA, under the **Environmental Management Act (2000) Section 26 and 49 (1)**, has been given full authority to investigate premises or vehicles that it thinks necessary for the purpose of ascertaining the extent of noise pollution that these may cause. Like water pollution, its mandate goes further by requiring the EMA to develop a register of noise polluting sources and to implement a programme to manage such pollution.



The specific offence of noise pollution is covered by **Section 51(2)** which states that no person shall emit or cause to be emitted any noise greater in volume or intensity than prescribed in rules made under **Section 26** or by any applicable standards, conditions or requirements under the Act. So far, the EMA has developed, through public consultation, a strategy for dealing with noise pollution.

2.1.5 Chemical Pollution

Definition:

"Chemical Pollution" is essentially pollution caused by a material whether by itself or in a mixture or in a finished product, whether manufactured or acquired from the natural environment, that contains substances used as industrial and domestic chemicals and pesticides which when released into the environment have proven to cause harm to human health sometimes resulting in fatality. The varying causes of harm to humans and the environment have been either medically and or scientifically proven over several decades of research.

From the beginning of time, mankind has been manufacturing and using chemicals. These chemicals are used in every aspect of our daily lives such as for personal hygiene on our bodies, in our homes for cleaning and sanitising, for transportation such as gasoline for our motor cars, medically for cleaning of wounds or sterilising of equipment, for the growing of food, rearing and treating of livestock, clearing of fields, in industry for cleaning and in the manufacture of domestic and other products. In fact, chemicals have become an integral part of our daily lives. Estimates indicate that approximately 70,000 chemicals are used on a daily basis worldwide. This constitutes cause for great concern, therefore their handling – meaning their proper and safe use and disposal – is crucial to the preservation of the environment and human health.

Between 1956 and 1982, approximately 4 million distinct chemical mixtures were created with an average of an additional 6000 new formulations being generated on a weekly basis. Approximately 300 chemicals are used in the production, preparation and preservation of food; approximately 700 of them can be found in fresh drinking water with another 400 identified in human tissue and an additional 500 lurking around the laundry room, beneath the kitchen sink or bathroom of the average household.

2.1.5.1 Pesticides

Definition:

1. A Petrochemical formulation or mixture of different chemical compounds created and used in the agro industry for the growing of food or the preparation of land for growing of crops.

2. Formulation or mixture of compounds used in the control of insects that affect our daily health.

Worldwide as our populations grow, more and more demands are made on science to provide alternatives to traditional and natural food production. This has given rise to a significant increase in the use of chemicals in the agro industry. Pesticides, the primary and most popular of them, have breached every single element of our eco system. Chemical contaminants can be found in the atmosphere, water, soil and food. Pesticides became popular at the turn of the 20th century when man was searching far and wide for solutions to what seemed to be a perennial problem with pests and crop production yields. It became one of the tools that man used in an attempt to assert control over the natural environment. Its popularity soared with the discovery in 1939 of DDT and its ability to control crop pests. From that period onward, pesticides have played and still continue to play a crucial role in human society. Apart from the control of pests and enhancement



of crop yields, pesticides are also used in the eradication and or control of dangerous household pests and disease-causing insects such as mosquitoes and roaches to name a few. Today it is an accepted fact that without its use it would be difficult to meet global food demands and to control insect populations.

2.1.5.2 Health Implications

The negative impact that pesticide and chemical products have had on human health over the years has been significant. Misuse results in contamination of one kind or another, either through direct contact, via the air we breathe, or in our food and drinking water. The adverse effect of chemicals on human health is by far the most important area of concern. In the United States, for example, it has been estimated that 3 out of every 10 persons can expect to contract some form of cancer with 98% of these cases directly attributed to the exposure to harmful chemical pollutants such as pesticides. Additionally, it has been observed that chemical exposure has been responsible for several other health problems ranging from neurological to reproductive dysfunction.

2.1.5.3 Legal Mechanisms and Controls

In Trinidad and Tobago the principal legislation for addressing the control, use, abuse and misuse of harmful chemicals is the **Pesticides and Toxic Chemicals (Amendment) Act of 1986** which supplements the **1979 Pesticides and Toxic Chemicals Act**. The primary purpose of strengthening the previous Act was to address the issue of the dangers posed to the society by improper regulatory controls over the use of harmful chemical pollutants such as pesticides.

Section 4A1 of the Act states inter alia:

- No person shall manufacture, import, sell, use, store in marketable quantities, or transport a controlled product unless the product is registered and that the person does so in the prescribed manner.
- **Section 2** of the Act defines a "controlled product" to mean any pesticide or toxic chemical.

The Pesticides and Toxic Chemicals (amendment) Act of 1986 is in essence framework legislation that empowers the Minister to make regulations from time to time for carrying into effect the provisions of the Act.

Notwithstanding the **Pesticides and Toxic Chemicals Act of 1986**, there exists other pieces of legislation that empower other agencies of Government to have further control and regulatory authority over the use and disposal of harmful and toxic chemicals. One such authority is the Environmental Management Authority.

Section 26 of the Environmental Management Act (2000) gives the Minister the power to make rules for procedures required for the registration of sources from which pollutants may be released into the environment; characterisation of such sources; and the quantity, condition and or concentration of pollutants or substances containing pollutants that may be released into the environment, either generally or by specific sources or categories of sources.

Section 59 of the Environmental Management Act (2000) also empowers the agency to develop a programme for the designation of specific hazardous substances and performance standards and procedures for

the safe handling of such hazardous substances. The Act is not specifically related to chemicals only, but to the wider issue of harmful pollutants. There exist, however, ample provisions for the EMA to intervene and take action where necessary.

2.1.6 Waste

Definition:

"Waste" is defined as garbage, refuse, sludge and any other discarded material including solid, liquid, gaseous or energy sources generated by industrial, commercial, agricultural, community or mining activities.



The continued expansion of our economy and the attendant expansion of our population have increased our output of hazardous and non-hazardous waste. It is a natural element of living and society. In 1999 for example, one would recall the heavy smoke and pungent odours emanating from the Beetham Landfill site while travelling along the Churchill Roosevelt Highway. This situation shows clearly the imperative for the proper and effective management of the waste situation in Trinidad and Tobago today.

2.1.6.1 Hazardous Waste

Definition:

Hazardous Waste means, "waste or combination of wastes, which because of its concentration, quantity

or physical, chemical or infectious distinctiveness may inter alia -

(a) cause, or significantly contribute to any increase in mortality or increase in serious irreversible or incapacitating illness; or

(b) pose a substantial present or potential threat to human health, or the environment when improperly treated, stored, transported, or disposed of, or otherwise managed.

Presently in Trinidad and Tobago no legal or regulatory framework exists for effectively dealing with hazardous waste. Bits and pieces of legislation exist within the various laws, nonetheless, the void in the legislation poses a serious threat to our environment and human health and a remedy to address this situation is required as a matter of urgent importance.

2.1.6.1.1 Legal Mechanisms and Controls

Some examples of these varying bits of legislation are:

- **Section 12(1) of the Pesticides and Toxic Chemicals Act 1979** gives the Minister responsible the authority to make regulations respecting the types of packages in which controlled products may be imported, transported or sold, and as to the disposal of such packages after use. The Minister may also make regulations pertaining to the disposal of unwanted stocks of controlled products and or chemical pollutants.

- Supplemental legislation in 1986 expanded and strengthened the definitions above to include standards for materials used in the storage of hazardous chemicals, such as containers, garbage bins etc, that they may be corrosion resistant to pesticide waste and be sufficiently secure enough to contain spillage of pesticides and discourage the removal of waste material by unauthorised persons.



By virtue of its mandate, the Environmental Management Authority has been charged with the responsibility for developing Hazardous Waste regulations as well as a regulatory body for Trinidad and Tobago. **The Environmental Management Act (2000)** states that the Minister may make rules subject to the negative resolution of Parliament for the designation of hazardous substances or categories of hazardous substances and the performance standards, procedures, safeguards and licensing or permitting requirements in accordance with which such hazardous substances shall be handled. The Act also calls for the definition of various categories of waste, the establishment of requirements with respect to the handling and disposal of such categories of waste, the licensing of facilities at which such wastes are handled or disposed; and the design, construction, operation, maintenance and monitoring facilities or processes for the control of pollution and the handling of wastes.

Under the **Environmental Management Act (2000)** the management of waste is provided for under the following Sections:

- **Section 55(1)** gives the EMA the authority to investigate the environment generally and such premises and vehicles as it deems necessary to ascertain the nature of waste, and the manner in which it is handled. Under **Section 55(2)**, the Authority is required to develop and implement a programme for the management of such waste which may include registration and further characterisation of significant sources of wastes being disposed into the environment.

- **Section 56** states that the EMA is required to submit to the Minister (as part of its management function) a programme to define those wastes and to establish appropriate standards and design criteria for hazardous waste handling and disposal facilities and to establish licensing and permitting requirements with respect to such wastes.

- **Section 57** empowers the EMA to grant permits authorising any person's waste disposal activities, or licences for the operation of any waste handling facility subject to such terms and conditions as it deems fit.

2.1.6.2 Non-Hazardous Waste

Definition:

Non Hazardous waste consists of waste that is not by nature or design toxic or not captured by the definition "Hazardous Waste", meaning that anything that is not considered to be a hazard as contained in the interpretation of hazardous waste but is considered waste is categorised as "Non-Hazardous Waste".

Non-Hazardous Waste consists of the following: household waste, plastics, paper, bulky consumer and municipal wastes and similar types of waste generated by industry. Municipal waste includes sewage, but its position is complicated by the fact that normal household waste contains toxic chemical pollutants and elements such as paints, solvents and household cleaners. When mixed with more benign waste, these materials can cause great damage to the environment. Industry at times has also been guilty of mixing hazardous waste with municipal waste thus leading to environmental problems.

Municipal waste has been growing at alarming levels concomitantly with the increase in world populations. In recent research conducted by the WHO it was recognised that uncollected refuse is a serious threat to developing countries and that it is a major contributor in the spread of gastro-intestinal and parasitic diseases, due primarily to the proliferation of rodents and insect populations which serve as carriers of disease.

The illegal dumping of municipal wastes close to squatter and urban settlements increases ten fold the risk of poisoning and other health hazards to nearby residents including persons who scavenge these dump sites.



2.1.6.2.1 Sewage

Definition:

Sewage sludge is defined as a slurry of organic rich particles.

Sewage has multiple uses if it is properly disposed or treated. Some of these uses range from fertilisers to plant compost. However, the problem with many developing countries is the improper treatment of sewage or the lack of attention placed on the proper and safe disposal of this waste. In some cases the sewage is improperly and inefficiently disposed and is often mixed with other forms of hazardous wastes thereby resulting in the contamination of lands where it is applied for fertilisation purposes or of groundwater supplies into which it is discharged. The contamination can also get into the food chain through crops and animals that feed off the land, which poses a serious threat to human health infecting man, woman and child alike.

2.1.6.2.2 Legal Mechanisms and Controls

There currently exist several pieces of legislation on the statute books dealing with non-hazardous waste as follows:

- **Litter Act, Ch. 30:52** as amended by the **Litter (Amendment) Act 1981**. This Act creates the principal offence of littering and defines littering as the act of depositing without reasonable excuse any litter in a public place other than in a receptacle placed for the purpose of collecting refuse.

Other sections of the Act define refuse as any solid or liquid materials or products including but not limited to bottles, tins, logs, sawdust, derelict vehicles, cartons, packages, packing materials, paper, glass, food, animal remains, garbage, debris, sand, gravel, stone, aggregate, rubble, dirt,

waste (including any human and animal waste) or any other refuse, or rubbish or waste material, and any other material or product that is designated as litter. Refuse is also further defined as industrial, domestic and commercial waste.

- Local Government Authorities are also vested with the power under **Sections 67 and 141** of the **Litter Act** to create regulations to deal with non-hazardous wastes. Under **Section 64(1)** these authorities are responsible for the removal of household refuse and other rubbish from premises within its respective jurisdiction(s). Under **Section 64(2)** local authorities are made responsible for the disposal of all the said collected refuse.

- By virtue of the **Environmental Management Act (2000)** the Environmental Management Authority under **Section 55(1)** has been charged with the authority to provide oversight and intervention when necessary to address concerns arising out of the improper disposal of non-hazardous waste.

- Other agencies charged with the management and maintenance of sewage are the Water and Sewerage Authority (WASA) which has responsibility under **Section 62 of its revised Act of 1980**, for maintaining and developing the existing sewerage system and for administering the sewerage services thereby established and providing such services in Trinidad and Tobago.

- Further management of sewage is also provided for under the **Public Health Ordinance Act (1950)** that gives local authorities the power to make regulations for the sanitary arrangements and convenience of any public or other building. The Water and Sewerage Authority (WASA) also has similar responsibility as indicated above.



2.2 INSTITUTIONAL MEASURES

With over 100 pieces of legislation existing on our statute books a chaotic situation exists for the management and protection of the environment of Trinidad and Tobago. Additionally, current and existing legislation give approximately 50 governmental agencies varying degrees of regulatory power to manage and protect our environment.

These agencies are categorised below:

1. Government Ministries - Ministries normally possess direct responsibility for initiating action as indicated by legislation. An example is the Ministry of Energy and Energy Industries which has become a key player in the protection of the environment in Trinidad and Tobago by virtue of the provisions of the Petroleum Act which places responsibility on the Minister to ensure that the objectives of the Act are maintained.

2. Departments or Divisions of Ministries - These agencies have varying environmental protection and management functions. One example can be found in the Ministry of Agriculture, Land and Marine Resources. This Ministry has a Wildlife Division responsible for wildlife management, while the Forestry Division is responsible for the forested areas of Trinidad and Tobago and the Fisheries Division is responsible for the nation's fishing resources.

3. Statutory Bodies \ Boards \ Tribunals \ Authorities \ Commissions \ State Enterprises - The EMA and the Trinidad and Tobago Bureau of Standards are examples of statutory bodies with substantial environmental responsibility. The Water and Sewerage Authority of Trinidad and Tobago (WASA) is a good example of a Government authority charged with the responsibility of managing sewage waste in Trinidad and Tobago. Then there are Boards such as the Pesticides and Toxic Chemicals Board that is responsible for managing the presence of pesticides

and toxic chemicals in the society. Government owned State Enterprises (privately incorporated companies majority government owned) also play pivotal roles in protecting the environment. For example the Point Lisa Industrial and Port Development Company (PLIPDECO) which is Government owned, in the early 1990's insisted on its tenants observing World Bank standards for liquefied effluents as part of their tenancy obligations even though this was not required by the laws of Trinidad and Tobago.

4. Municipal Corporations - These are local Government Authorities such as the Port of Spain City Corporation or the Chaguanas Borough Corporation which consist of elected officials. These Corporations are empowered under the **Municipal Corporations Act** and the **Public Ordinance Act** and the **Litter Act** to assume specific environmental responsibilities.

The emerging picture of environmental protection in Trinidad and Tobago is one of a multiplicity of laws and entities responsible for implementation of the law. What must be noted is that authority for each agency to act is derived strictly from the statute providing its power.



3.0

Deficiencies in the Legislative and Institutional Administration for the Protection of the Environment

3.1 LEGISLATIVE MANAGEMENT

3.1.1 Failure To Use Regulatory Powers

The varying pieces of legislation that were enacted to provide protection for the natural environment in Trinidad and Tobago are worded in a general manner with the clear intent that the passage of regulations would provide for specificity. This would also facilitate the effective enforcement of the laws by the various governmental agencies charged with their respective environmental responsibilities and provide for proper protection and management of the environment. This method of creating rules also can be used successfully to update laws and stipulate new standards in keeping with the constantly changing contemporary conditions that may adversely affect the environment of Trinidad and Tobago. Unfortunately it would appear that there has been a general reluctance to use such regulatory powers and this has resulted in some laws being largely unenforceable.

3.1.2 Antiquated and Outdated Regulations

Over the years the absence of regulations has proven to be frustrating and problematic in some instances, and in others, regulations that have become outdated and irrelevant to the time we live in have created a deleterious effect on the preservation and conservation of the natural environment.

One such example is contained in the **Fisheries Act (rev. 1980)** and the regulations made to deal specifically with fishing equipment as follows:

- The regulations made were originally promulgated in 1926 and approximately 75 years later, although the **Fisheries Act** was revised in 1980, some of these same regulations are still in existence today.
- A significant percentage of the fishing equipment identified under the regulations are no longer manufactured or used by the industry.
- There has been no real effort to repeal or remove these regulations from the law books and create and implement modern and more appropriate rules for fishing within the waters of Trinidad and Tobago.
- The fact that modern equipment is not governed by the outdated regulations poses a serious threat for fish stock reserves since recourse under the **Fisheries Act** and its regulations for damage or depletion caused to fish stocks by the use of certain modern equipment, is almost nil.

3.1.3 Failure To Assent to Laws

As indicated previously in this report, Trinidad and Tobago can boast of one of the richest and most diverse flora and fauna in the world today. This biological diversity and the significance of the range of species in sustaining a healthy



fauna community led to the creation of the **Plant Protection Ordinance of 1940**. This Act was passed for the prevention, eradication and control of diseases and pests affecting plant life in Trinidad and Tobago. While the act served an important function it was considered to be unsatisfactory in light of new biological developments. As a consequence the **Plant Protection Act of 1975** was passed in Parliament and for approximately 22 years was not put into effect until 1997 when it was proclaimed and placed on the statute books as effective legislation.

3.1.4 Legal Language: Vagueness or Absence of Specific Standards

The vagueness or unclear interpretations of language used in legislation in some instances have imposed constraints on enforcement agencies charged with maintaining the environment. Frustration in attempting to use the legislation with specific reference to protection of the environment has led to inactivity with regard to particular environmental issues. For example, the Factory Inspectorate in Trinidad and Tobago is the most influential enforcement agency with regard to the quality of air to which workers are exposed, yet the Inspectorate has not been successful in managing this important task. **Regulation 8 of the Factory Inspectorate Regulations of 1950** made pursuant to the **Factories Inspectorate Ordinance of (1950)** addresses the presence of fumes, dusts and impurities at the work place but does not provide exact specifications as to what standards are applicable and legal within its regulations for ensuring quality.

3.2 INSTITUTIONS

Throughout 1998 and the first half of 1999, the EMA dedicated a substantial amount of its legal resources to identifying existing legislation in Trinidad and Tobago that pertain to most aspects of the environment. Certain key legislation was examined with respect to actions taken to

enforce these specific rules. Table 3-1 sets out the enforcement proceedings over the period 1997–1999.

Of critical importance is the low level of enforcement of environmental laws. This can be attributed to several key factors as follows:

3.2.1 Regulatory Weakness

Major factors affecting enforcement have been the inability to move from general principles to more specific standards through the passing of additional and/or require subsidiary legislation, and the unclear and ambiguous wording in existing legislation.

3.2.2 Absence of Environmental Policy

Even though the Government has approved a National Environmental Policy that is a blue print for the protection of the environment of Trinidad and Tobago, most of the enforcement agencies in Trinidad and Tobago have not yet adopted environmental plans or policies relevant to the specific environmental responsibilities. This general absence of policy at the level of the agency accounts primarily for the general malaise towards environmental protection.

3.2.3 Inadequate Vision For Environmental Protection

Relative to the absence of environmental policy is the negative view of environmental protection shared by the agencies responsible for protecting the environment. Some agencies have not yet recognised the potential of their legislative authority for environmental protection.

For example, the **Harbours Act (rev. 1980)** provides authority to deal with pollution of port waters, yet this section is used primarily to deal with the protection of the



Table 3-1
Enforcement Proceedings

| Environmental Sector | Specific Legislation | No. of Enforcement Proceedings | | |
|-----------------------------------|--|--------------------------------|------|-------|
| | | 1997 | 1998 | 1999 |
| Air | Motor Vehicles and Road Traffic Regulations (Visible Vapour) | 38 | 214 | 1,199 |
| Air | Public Health Ordinance (Emissions of Black Smoke and Nuisances) | 0 | 0 | n.a. |
| Fauna | Conservation of Wildlife Act. | 187 | 651 | n.a. |
| | Animals (Diseases And Importation) Act | 1 | 1 | n.a. |
| Flora | Forest Act and Sawmills Act | 43 | 169 | n.a. |
| Ecosystems (Forest Wetlands etc.) | State Lands Act | 0 | 0 | n.a. |
| Water | Fisheries Act | 0 | 0 | n.a. |
| | Oil Pollution of Territorial Waters Act | 0 | 0 | n.a. |
| | Water and Sewerage Authority Act (1980) WASA | 0 | 0 | n.a. |
| Chemicals | Pesticides and Toxic Chemicals Act. | 0 | 0 | n.a. |
| Noise | Motor Vehicles and Road Traffic Act | 40 | 28 | n.a. |
| Waste | Litter Act | 0 | 0 | 250 |



depth of harbours and not pollution. Thus the **Harbours Act** has not been used at all for protecting the environmental integrity of marine waters.

3.2.4 Limited Public Education Programmes

The philosophical framework for environmental education contained in the National Environmental Policy must be adopted by relevant agencies with regard to public education and the importance it plays in the preservation of the environment. Enforcement agencies commonly complain of the lack of resources to implement an effective public education programme thus public awareness on the hazardous effects of avoidable human behaviour and its deleterious impact on the environment is almost nil. The Ministry of Education has recently taken steps to address this deficiency at the level of the school curriculum. A few other organisations such as the EMA and the Institute of Marine Affairs (IMA) have embarked on public education programmes that have begun to make a difference in environmental literacy levels. As a matter of priority however, aggressive and wide ranging public education programmes need to be initiated at all levels and age groups of society. This process will achieve heightened public awareness and assist enforcement agencies in protecting the environment.

3.2.5 Inadequate Resources

The common factor underlying the impotence of enforcement agencies in Trinidad and Tobago to address environmental issues is access to sufficient resources, the most important being financial resources. Indeed, the problem of inadequate financial resources can be correctly interpreted as the root of difficulties with human, mechanical, technical and research resources. The problem can be seen in many instances. A prime example is the situation with respect to private sewage treatment facilities as outlined below:

- During the period of the oil boom 1974-1985, the housing industry was largely driven by private housing developments. The normal practice was for these private developments to be undertaken by companies acting as a landlord and providing leases of up to 999 years, with the landlord assuming responsibility for providing sewage facilities.

- A rather dangerous and careless practice emerged where, once all the houses were leased, these landlord companies would go into receivership resulting in the abandonment of the sewage facilities.

- Most are now in disrepair and WASA, the national agency charged with the responsibility for sewage disposal in Trinidad and Tobago, is having tremendous difficulties in assuming responsibility for these private sewage plants.

- The disaster today is that raw sewage is being poured into drains leading to the major water courses of Trinidad and Tobago. Another example can be seen in the case of the Pesticides and Toxic Chemicals Board. This Board had government approval for the appointment of six inspectors since 1991, yet the first three inspectors were only appointed in 1999.

3.2.6 Multiple Agencies, Overlapping Jurisdiction and Inadequate Co-ordination

One of the striking idiosyncrasies of environmental law in Trinidad and Tobago is the sheer number of enforcement agencies. It is noted that the total number of agencies with environmental enforcement functions is approximately fifty (50). This state of affairs has created two major issues, that of overlapping jurisdiction and the question of co-ordination among them in achieving a harmonious approach towards enforcement of regulations with regard to preserving and protecting the environment.



3.2.7 Lack of Punitive Sanctions

In Trinidad and Tobago it is more cost effective or economically viable to break the law and pay a fine than take steps to desist from breaching laws applicable to environmental protection. The low financial penalties for breaches of the law which can range from \$60.00 to \$1,000.00 have contributed to the lack of enthusiasm on the part of agencies to initiate court actions in order to have laws enforced.

3.2.8 Delays in the Justice System

Because of the delays caused by adjournments in the justice system, court proceedings can at times be a tedious procedure and this serves as a disincentive to pursuing court based actions. Enforcement officers are not inclined to pay numerous visits to the courts, especially when the sanctions imposed are quite benign.



4.0 Current Measures to Strengthen the Legislative and Institutional Regime for Protection of the Environment with Particular Focus on the EMA

4.1 NEW AND PROPOSED LEGISLATIVE MECHANISM

Between 1997 and 1999, there have been several legislative developments touching on the environment. They are as follows:

- The **Motor Vehicles and Road Traffic (Amendment) Act, No. 25 of 1997** provides for de-registration of motor vehicles posing an environmental hazard and gives authority to the Minister to make regulations with respect to vehicle emissions.
- The new **Standards Act** goes further in granting authority to the Trinidad and Tobago Bureau of Standards over environmental standards. The **Standards Act No. 18 of 1997, Section 15(1)** states clearly that the Bureau shall promote and encourage the development and maintenance of standards and further shall establish standards for the protection of the environment. Further, the new Act provides for the standards to be deemed as compulsory standards and for the testing of imported goods that may threaten the environment.
- The **Plant Protection Act (1975)**, although an old piece of legislation, only attained the force of law when it was assented to in 1997. At the same time extensive regulations were passed prohibiting the importation into Trinidad and Tobago of any fruits, planting material, plant pests, pathogens, plant products, soil, vegetables or any other prescribed articles.
- The **Livestock and Livestock Products Board Act No. 40 of 1997** was passed to administer, on behalf of the government of Trinidad and Tobago, any programmes supportive of the livestock industry.
- Another important new piece of legislation that was passed was **Protection of New Plant Varieties Act No. 7 of 1997**. This Act was passed to create a right to be known as a plant breeder's rights.
- The **Petroleum (Pollution Compensation) Regulations made pursuant to Section 29 (1)(j) of the Petroleum Act**. These regulations provided an important legislative framework for dealing with pollution claim issues under the auspices of the **Petroleum Act**.
- An amendment act was passed known as the **Theatres and Dance Halls (Amendment Act) No. 15 of 1997**, which created a new power to suspend or cancel a licence, if the Authority is satisfied by proof on oath before it that the conduct of any trade or business on the premises to which this Act applies has caused annoyance to persons in the vicinity of that trade or business by virtue of excessive noise emanating from electronic or other devices.



It is important to also note the new legislative measures being proposed by the EMA based on the requirements of the **Environmental Management Act (2000)**. These are as follows:

- **Certificate of Environmental Clearance Rules**, which have been drafted and approved by Cabinet. These Rules will ensure that several critical business and development type activities be assessed as to the possibility of harm to the environment and approval granted prior to any such activities being pursued.
- **Water Pollution Rules (Liquid Effluents)** have been drafted and submitted for public comment. These rules will identify specific liquid effluents capable of harming human health and the environment and prescribe specific discharge limits.
- **Sensitive Species Rules** have been drafted and submitted for public comment. These rules provide for the identification of sensitive species of flora and fauna to be designated by the EMA as protected species.
- **Sensitive Areas Rules** have been drafted and submitted for public comment. These rules provide for areas of environmental significance to be afforded protection by the EMA due to their designation as environmentally sensitive areas.
- **Noise Pollution Legislation.** Public Consultations have been held on the format of a proposed strategy for dealing with noise pollution.

4.2 INSTITUTIONAL MEASURES

The year 1999 was an important year from the point of view of institutional measures for protection of the environment. Two important enforcement agencies experi-

enced positive changes. The important Pesticides and Toxic Chemicals Board which enjoys responsibility over the importation, transportation, use, handling and disposal of toxic chemicals and pesticides in Trinidad and Tobago had three inspectors appointed for the first time since approval was granted in 1991 for such appointments to be made.

The EMA also signalled a shift in the way it conducted its business by reaching out to assist in enforcement of laws not generated by the EMA itself.

On July 01, 1999, the EMA, drawing from the ranks of the Special Reserve Police Force, created an Environmental Police Squad. The Environmental Police Squad was mandated to enforce two existing pieces of legislation, namely the **Litter Act** and the **Motor Vehicles and Road Traffic Act** with respect to visible emissions. As a mark of its success as noted in Table 3-1, 214 tickets were issued to motorists for visible emissions in 1998, while for the period July 01, 1999 to December 31, 1999, 1,199 tickets were issued by the Environmental Police Squad for the same offence. This Environmental Police Squad was established as an experiment to aid enforcement of environmental legislation in Trinidad and Tobago and offers a preview of what can be expected of the EMA in the future.



5.0 Conclusion

This Report has discussed in great detail, the existing legal machinery for the protection of the environment and highlighted expected future action. In the discussions, the institutional framework for implementing the legislative order was also critically assessed from the point of view of identifying the factors that may be negatively affecting the ability of institutions to positively influence environmental conduct. The importance of creating an effective and efficient legal machinery for protecting the environment is underscored by the adverse implications for the health and economic well-being of the society.

There are several important conclusions to be drawn from the analysis of the making, implementing and enforcing of environmental laws in Trinidad and Tobago. On the question of the adequacy of laws to address particular environmental problems, there is sufficient legal basis to ensure some degree of protection of the environment. However, there are shortcomings in the law that make protection of the environment all the more difficult. One such deficiency is the failure to move from general principles to more specific principles that would make enforcement easier to pursue. What has been a feature of the existing laws is the reluctance to issue regulations that are required to make the laws more effective. We are faced with a situation where existing laws suffer from vagueness or an absence of specific standards rendering enforcement almost impossible in some instances. Another feature of the existing legislative order that contributes to the failure of legal norms to assist in the protection of the environment is the reluctance to assent to laws. Additionally, a feature of the existing legal environmental regime is the general absence of a private right to initiate action that

may be provided for in statutes for protection of the environment. The failure to provide such a right of action helps to minimise the potential role of environment activists and the NGO community in the struggle to cur environmental abuse in the country.

An analysis of the activities and problems faced by enforcement agencies in Trinidad and Tobago endowed with the responsibility for protection of different aspects of the environment, displays certain interesting trends. The most pressing problem has been that of resources financial, human, technical, mechanical and research resources. The second important hindrance to the effective enforcement of environmental laws is the presence of multiple agencies with overlapping jurisdiction and inadequate co-ordination.

It is clear that the passage of the Environment Management Act in 1995 calling as it did for establishment of both the Environmental Management Authority and the Environmental Commission, as well as for environmental legislative reform and institutional rationalisation, ushered in a new era for environmental management in Trinidad and Tobago. Under the Act, the EMA has been charged with specific responsibility for such legislative reform and institutional rationalisation and has already initiated work in this regard as evidenced by this report and the development of the Environmental Code. Further, in its legislative reform, the Authority has adopted an approach that will ensure the country's ability to effectively and efficiently respond to both current and future threats to the environment.



APPENDIX A

LAWS RELATING TO SPECIFIC ENVIRONMENTAL ISSUES



Air Pollution

| LAW | ENFORCEMENT AGENCY | PENALTY |
|--|--|-------------------------|
| Motor Vehicles and Road Traffic Regulations , made pursuant to the Motor Vehicles and Road Traffic Act (rev. 1980), Regulation 38, Rule 13 - Visible emissions | Licensing Authority, Police Service | \$60.00 |
| Motor Vehicles and Road Traffic (Amendment) Act, No. 25 of 1997, Section 14 - Deregistration for causing an environmental hazard. | Licensing Authority | Cancellation of Licence |
| Section 44 of the Customs Act, Ch. 78:01 (rev. 1980) , "The President...may prohibit importation of any goods whatsoever..." | Customs and Excise Division | -- |
| Petroleum Act (rev. 1980), Section 29 (1)(j) - Prevention of air pollution. | Ministry of Energy & Energy Industries | -- |
| Public Health Ordinance (1950), Sections 69 and 70 – Nuisance.. | Municipal Corp., Ministry of Health | \$500.00 |
| Municipal Corporations Act (1990), Section 221(1) Nuisance. | Municipal Corp. | \$500.00 |
| Standards Act No. 18 of 1997, Section 15(1) - Power to make environmental standards | T&T Bureau of Standards | \$15,000.00 |
| Consumer Protection and Safety Act (1985), Section 21(1) , - Conduct detrimental to the health of consumers | Ministry of Consumer Affairs | \$10,000.00 |
| Environmental Management Act (2000) Sections 49-51 – Authorises EMA to develop a legal regime for management of air pollution. | EMA | \$100,000.00 |
| Gas Cylinders (Use, Conveyance and Storage) Act (rev.1980), Section 2 – Control of gas cylinders. | Ministry of Energy & Energy Industries | \$750.00 |
| Drilling Regulations made pursuant to the Mines, Borings and Quarries Act (rev.1980), Regulation 18(1) – Prevention of uncontrolled flow of gas. | Ministry of Energy & Energy Industries | \$1,000.00 plus costs |
| Section 4 (2) of the Trade Ordinance No. 19 of 1958 – Prohibiting importation of environmentally harmful products. | Ministry of Trade | -- |



Biological Resources

| LAW | ENFORCEMENT AGENCY | PENALTY |
|--|--|-----------------------------------|
| Sections 41-46 of the Environmental Management Act (2000) –Designation of sensitive species and sensitive areas. | EMA | \$100,000.00 |
| Section 3(1) of the Dogs Act (rev. 1980) , - Keeping of Dogs. | Minister | \$40.00 |
| Conservation of Wildlife Act (rev. 1980) | Conservation Division | \$200.00 |
| Section 2(1) of the Mongoose Act (rev. 1980) , - Importation of mongoose. | Customs Division, Ministry and Police | \$1,000.00 |
| Section 14(1) of the Animals (Diseases and Importation) Act (rev. 1980) – Prohibiting the importation of birds, reptiles and insects. | Police Service, Technical Officers (Animal Health) | \$2,00.00-\$5,000.00 and 6 months |
| Section 9(b) of the Beekeeping and Bee Products Act (rev. 1980) – Regulating importation and exportation of bees. | Chief Technical Officer (Agriculture) | \$400.00 |
| Section 2(1) of the Control of Importation of Live Fish Act (rev. 1980) – Importation of live fish. | Customs Department | \$400.00 |
| Section 3(1) of the Plant Protection Act (1975) – Importation of plants. | Minister | \$1,000.00 |
| Cocoa (Import and Export) Act, Section 3 – Regulating import and export of cocoa. | Minister | -- |
| Exportation of Fruit Act (rev.1980), Section 8 – Exportation of fruits. | Customs Department. | \$1,000.00 |
| Protection of New Plant Varieties Act No. 7 of 1997, Section 3 - Rights to new species of plants. | | -- |
| Sections (16) and 19 of the Summary Offences Act (rev. 1980) – Wounding of animals and damage to plants. | Police Service | \$100.00-\$2,000.00 |
| Section 17 of the Malicious Damage Act (rev. 1980) – Setting fire to plants. Section 19 – Malicious damage to plants. | Police Service | Up to 10 years imprisonment |
| Section 3 of the Plant (Export) Prohibition) Act (rev. 1980) – Prohibiting export of plants. | Ministry of Agriculture | -- |
| Section 17 (1) of the Agricultural Fires Act (rev. 1980) - Control of fires. | County Fire Officer | \$1,500.00 |
| Sawmills Act (rev. 1980) – Control of sawmill operations. | Forestry Division | \$3,000.00 |



Biological Resources cont'd

| LAW | ENFORCEMENT AGENCY | PENALTY |
|---|---|-------------------------|
| Forests Act (rev. 1980) – Control of Forested areas and floral species. | Forestry Division | \$1,000.00 - 2,000.00 |
| Section 4(a) of the Slum Clearance and Housing Act (rev. 1980) – Land development for housing, gardens, factories etc. | National Housing Authority | -- |
| Housing Act (rev. 1980) , which provides the National Housing Authority with wide power for implementing programmes to alleviate housing problems for low income persons. | National Housing Authority | -- |
| Agricultural Small Holdings Tenure Act (rev. 1980) , was created to provide security for small farmers who comprise the majority of agricultural practitioners in Trinidad and Tobago. | Agricultural Tribunals | -- |
| Section 10 of the Asphalt Industry Regulation (rev. 1980) regulating digging of asphalt. | Minister | \$1,000.00 |
| Section 16 of the Petroleum Act (rev. 1980) – Restoration of area subject to petroleum operations. Section 29(1)(j) making of regulations to prevent pollution of land. Regulation 42(2)(c) of the Petroleum Regulations (rev. 1980) – Avoiding pollution of tidal areas. | Ministry of Energy & Energy Industries | -- |
| Section 4(1) of the Pipelines Act (rev. 1980) – Permit for laying of pipes. | Chief Technical Officer | -- |
| Section 6(1) of the State Lands Act (rev. 1980) , Prevention of squatting and encroachment on state lands. | Commissioner of State Lands | \$1,000.00 |
| Section 36(1) of the Public Health Ordinance (1950) –Permission for erection of buildings. | Ministry of Health and Municipal Corporations | -- |
| The Chaguaramas area has been developed pursuant to legislation and the rights vested in the Chaguaramas Development Authority under the Chaguaramas Development Authority Act (rev. 1980) , to do so. | CDA | -- |
| Disaster Measures Act (rev.1980) Section 2 (1) –Declaration of disaster areas | Police Service | -- |
| Drilling Regulations made pursuant to the Mines, Borings and Quarries Act (rev.1980) , Regulation 18(1) – Prevention of uncontrolled flow of oil or gas; Regulation 20(4) deals with repairing, plugging and abandoning of wells. | Ministry of Energy & Energy Industries | Cancellation of licence |
| Section 10(1) of the Malaria Abatement Act (rev. 1980) – Regulating conduct over swampy lands. | -- | -- |
| Marine Areas (Preservation and Enhancement) Act (rev. 1980) – Designation of marine areas for protection purposes. | Minister | -- |



Biological Resources cont'd

| LAW | ENFORCEMENT AGENCY | PENALTY |
|---|------------------------------------|--------------------|
| Litter Act, Ch. 30:52 (rev. 1980), as amended by the Litter (Amendment) Act (1981) , creates the principal offence of littering. As per Section 3(1) , this offence occurs when "a person who without reasonable excuse deposits any litter in or on any public place". | Public Authorities | \$1,000.00 |
| As per Section 232(1) of the Municipal Corporations Act (rev. 1980) , Municipal Corporations are responsible for the "maintenance, control and enhancement of the physical environment including monitoring water-courses, beaches and water-front areas, swamps, forests, game sanctuaries, savannas, parks and other open spaces." | Municipal Corporations | -- |
| Tourist Board Act (rev. TandT), as amended by the Tourist Board (Amendment) Act (1989) – Development of tourism facilities. | TIDCO | -- |
| Section 3(1) of the Oil Pollution of Territorial Waters Act (rev. 1980) – Prohibits the discharge of oil from vessels. | Harbour Master | \$10,000.00 |
| Territorial Sea (Amendment) Act No. 22 of 1986 Section 6A(1) – Right to deal with vessels that infringe health laws. | Coast Guard, Police Service | -- |
| Fisheries Act (rev. 1980) , - Protects the fisheries of Trinidad and Tobago. | Ministry, Police Service | \$2,000.00 |
| Section 3(1) of the Continental Shelf Act (rev. 1980) , as amended by the Continental Shelf (Amendment) Act (1986) – Rights over natural resources in the sea. | Coast Guard | \$6,000.00 |
| Archipelagic Waters and Exclusive Economic Zone Act (1986) –This Act vests control over the Exclusive Economic Zone. | Harbour Master | \$10,000-50,000.00 |
| Section 24 of the Harbours Act (rev. 1980) - Pollution of wharves. | Municipal Corporations | \$2,000.00 |
| Municipal Corporations Act (1990) Section 232(f) – Municipal Corporations are responsible for the maintenance of parks, beaches, water fronts, swamps, forests, game sanctuaries etc. | Police Service | -- |
| Queen's Park Act (rev.1980) – Control over the Queen's Park Savannah. | Police Service | \$100.00 |
| San Fernando Recreation Ground Act (rev. 1980) – Control over the San Fernando Recreation Ground. | San Fernando City Council | \$75.00 |
| Botanic Gardens Act (rev. 1980) – Establishment of the Botanic Gardens. | Superintendent of Public Gardens | \$400.00 |
| Section 2(1) of the Recreation Grounds and Pastures Act (rev. 1980) – Authorisation for the making of regulations to govern the use of any public recreation ground or pasture.. | Police Service | \$75.00 - 200.00 |
| Second Schedule, Part IV, Section 5 of the Town and Country Planning Act (rev. 1980) – Town and Country Planning may make provisions for preservation or protection of forests, woods, trees, shrubs, plants and flowers. | Town and Country Planning Division | -- |



Water Protection Legislation

| LAW | ENFORCEMENT AGENCY | PENALTY |
|---|--|--|
| Section 29(1)(j) of the Petroleum Act (rev. 1980) - The President may make any such regulations...for the prevention of pollution of...water...and for compensation thereof. | Minister | Compensation |
| Litter Act, Ch. 30:52 (rev. 1980), as amended by the Litter (Amendment) Act (1981) , creates the principal offence of littering. A public place is generally defined as every place where that the public has access or area owned by the state and includes "... (iii) any waters to which the public has access without payment of any fee for bathing or for other recreational purposes. | Public Authorities | Company \$2,000.00 and the individual \$1,000.00 |
| Section 36(3) of the Highways Act (rev. 1980) – Obstructing water ways close to highways. | Highway Authorities | Three times the cost of rectification |
| Second Schedule, Part IV, Clause 8 of the Town and Country Planning Act (rev. 1980) , provides that development plans can make provisions for prohibiting the pollution of rivers etc. | Town and Country Planning | -- |
| Section 9 of the Malaria Abatement Act (rev. 1980) – Obstructing flow of drainage channels. | Municipal Corporations | \$400.00 |
| Section 9 of the Dry River Act (rev. 1980) – Prohibits pollution of the Dry River. | Port of Spain City Corporation | \$400.00 |
| Section 18 (1) of the Waterworks and Water Conservation Act (rev. 1980) – Polluting water courses. | Minister | \$100.00 or 3 months imprisonment |
| Section 72 of the Summary Offence Act (rev. 1980) – Pollution of Maraval River. Section 73 – Pollution generally of rivers. | Police Service | \$100.00 or 3 months imprisonment |
| Section 145 of the Municipal Corporations Act (1990) – Prohibits impeding of water courses. | Municipal Corporations | \$1,000.00 |
| Drilling Regulations made pursuant to the Mines, Borings and Quarries Act (rev.1980), Regulation 20(4) – Plugging wells that could pollute water. | Minister | \$1,000.00 plus costs |
| Section 53 of the Water and Sewerage Authority Act (rev. 1980) – Prohibits pollution of waters. | WASA | \$750.00 |
| Sections 36(1), 37, 55-60, 68, 70 and 80 of the Public Health Ordinance (rev. 1980) – Sets our regime for dealing with water pollution. | Municipal Corporations, Ministry of Health | \$500.00 |
| Environmental Management Act (2000) Sections 52 – 54 – Authority to establish legal regime for management of water pollution.– Sets our regime for dealing with water pollution. | EMA | \$100,000.00 |
| Standards Act No. 18 of 1997, Section 15(1) – Power to make environmental standards. | TandT Bureau of Standards | \$15,000.00 |
| Consumer Protection and Safety Act (1985), Section 21(1) , - Conduct detrimental to the health of consumers. | Ministry of Consumer Affairs | \$10,000.00 |



Noise Pollution Legislation

| LAW | ENFORCEMENT AGENCY | PENALTY |
|---|------------------------------------|---------------------------------------|
| Public Health Ordinance (1950), Section 69 – Nuisance. | Minister | Compensation |
| Municipal Corporations Act (1990), Section 221(1) - Nuisance. | Public Authorities | \$500.00 |
| The Air Navigation and Aerodromes Ordinance (1950) , basically provides for English Air Navigation laws between 1920 and 1949 to be applicable to TandT. | Highway Authorities | Three times the cost of rectification |
| Section 43(1)(c) of the Airports Authority Act (rev. 1980) , states "The Minister may make regulations...for...regulating and controlling the use of airports by aircraft, whether civil or otherwise..." | Town and Country Planning Division | -- |
| Regulations 38, Rule 12(1), 43 and 49 of the Motor Vehicles and Road Traffic Regulations (rev. 1980) – Noise from vehicles. | Municipal Corporations | \$400.00 |
| Section 12A of the Maxi Taxi Act (1992) – Prohibits music in maxi taxis. | Port of Spain City Corporation | \$400.00 |
| Section 55 (1) of the Summary Offences Act (rev. 1980) –Prohibits noisy instruments. Section 63 - Noise from premises. Section 64 (1) – Noisy Instrument. Section 120 – Operating loud speakers. | Minister | \$100.00 or 3 months imprisonment |
| Section 51 of the Environmental Management Act (2000) – The EMA provided with the authority to address noise pollution. | Police Service | \$100.00 or 3 months imprisonment |
| Theatres and Dance Halls (Amendment Act) No. 15 of 1997, Section 4C(1) – Changes to licences from causing excessive noise. | Municipal Corporations | \$1,000.00 |



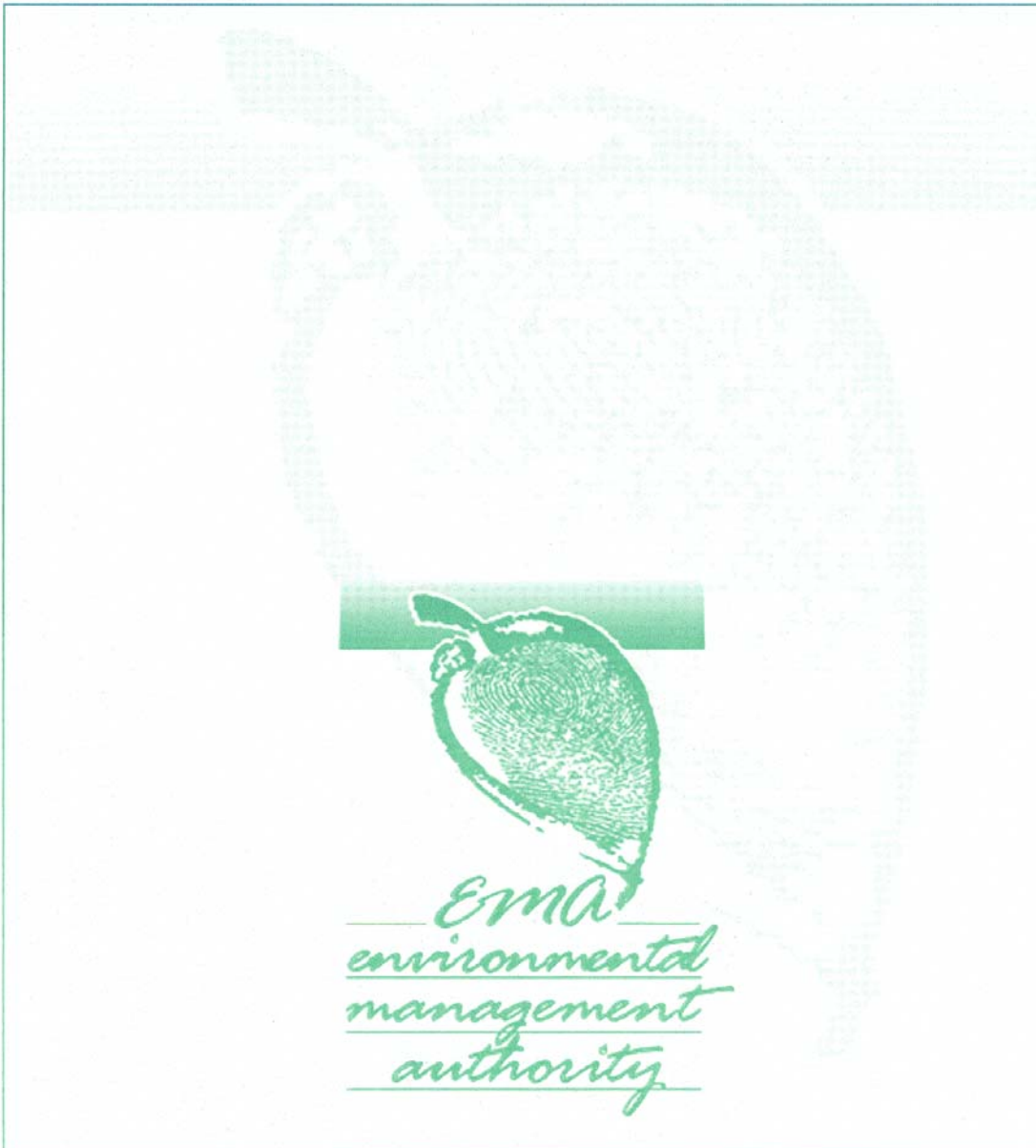
Chemicals

| LAW | ENFORCEMENT AGENCY | PENALTY |
|---|--|---------------------|
| Pesticides and Toxic Chemicals Act (1979) , as amended by the Pesticides and Toxic Chemicals (Amendment) Act (1986) – Establishes the legal regime for regulation of toxic chemicals and pesticides in Trinidad and Tobago. | Pesticides and Toxic Chemicals Board | \$500.00-5,000.00 |
| The sale and composition of fertilisers and feeding stuff are also controlled according to the Fertilisers and Feeding Stuffs Act (rev. 1980) . | Ministry of Agriculture, Land & Marine Resources | \$1,000.00 |
| Explosives Act (rev.1980) Section 4(1) prescribes the rules for the appointment of explosive magazines and the power to expand such rules. | Police Service | \$2,000.00 |
| Food and Drugs Act (rev.1980) – This Act governs the sale of food and drugs. | Chemistry, Food and Drugs Division | \$1,500.00-3,000.00 |
| Section 4 (2) of the Trade Ordinance No. 19 of 1958 – Creates the legal authority to ban importation of chemicals. | Ministry of Trade | -- |
| Section 44 of the Customs Act, Ch. 78:01 (rev. 1980) – Authorises the President to prohibit the importation of goods. | Customs and Excise Division | -- |
| Sections 59 and 60 of the Environmental Management Act (2000) – These sections authorise the EMA to establish a legal regime over hazardous substances. | EMA | \$100,000.00 |



Waste

| LAW | ENFORCEMENT AGENCY | PENALTY |
|---|---|-----------------------|
| Environmental Management Act (2000), Sections 55-57 – These sections vest responsibility in the EMA for developing a legal regime for waste management in Trinidad and Tobago. | EMA | \$100,000.00 |
| Regulation 4(1) of the Pesticides (Registration and Import Licensing) Regulations (1986) made pursuant to Section 12(1) of the Pesticides and Toxic Chemicals (1979) – This provides for safe disposal of pesticide waste. | Pesticides and Toxic Chemicals Board | -- |
| The Town and Country Planning Act (rev. 1980), Class IV (2) of the attached Schedule of the Town and Country Planning (General Development) Order – This provides permission for the developers of industrial undertakings to provide for the deposit of waste material. | Town and Country Planning Division | -- |
| Section 44 of the Customs Act, Ch. 78:01 (rev. 1980) – Authorises the President to prohibit the importation of goods including waste materials. | Customs | -- |
| Section 4 (2) of the Trade Ordinance No. 19 of 1958 – Creates the legal authority to ban importation of waste materials. | Ministry of Trade | -- |
| Drilling Regulations made pursuant to the Mines, Borings and Quarries Act (rev.1980), Regulation 18(1) – Prohibits waste of petroleum products. | Ministry of Energy & Energy Industries | \$1,000.00 |
| Litter Act, Ch. 30:52 (rev. 1980), as amended by the Litter (Amendment) Act (1981) – Deals with littering. | Public Authorities | \$1,000.00 - 2,000.00 |
| Sections 54(1)(o), 57(D), 57E(1), 58A, 59C, 59E, 64, 67 and 141 of the Public Health Ordinance (1950) – Places control over mainly domestic waste. | Local Authorities | -- |
| Sections 136 and 232(j) of the Municipal Corporations Act (1990) – Assigns responsibility for municipal wastes to corporations. | Municipal Corporations | -- |
| Section 4(1) (a) of Quarantine Act, Ch. 28:05 (rev. 1980) – Authorises regulations to protect danger to public health from ships etc. | Police Service and Quarantine Authority | \$6,000.00 |
| Regulation 43(s) of the Petroleum Regulations, made pursuant to the Petroleum Act (rev. 1980) , - Requires a licensee to take all reasonable precautions and safety measures to prevent waste. | Ministry of Energy & Energy Industries | -- |
| Section 62 of the Water and Sewerage Act (rev. 1980) –This vests in WASA responsibility for public sewerage systems. | WASA | -- |
| Section 5 of the Factories Ordinance (1950) – Requires the keeping of factories clear of waste | Factory Inspectorate | -- |
| Regulation 20 of the Airports Authority Regulations, made pursuant to the Airport Authority Act (rev. 1980) – Prohibits littering of airports. | Airports Authority, Police Service | \$2,000.00 |
| Regulation 33 made pursuant to Section 4(1) of the Country Markets Act (rev.1980) – Prevents littering of markets. | Municipal Corporations | \$40.00 |
| Demolition of Unsafe Structures Act (rev.1980) Section 3(1) – Demolition of unsafe structures. | Ministry of Works & Transport | -- |





ANNUAL REPORT 1999

REPORT ON MANAGEMENT OF THE AUTHORITY



EMA
environmental
management
authority



ANNUAL REPORT 1999

PART B

TABLE OF CONTENTS

| Foreword | Pg |
|---|-----------|
| Organisational Structure | 49 |
| 1999 Accomplishments | 50 |
| Report on Co-ordination with Participating Agencies | 51 |
| Plans for 2000 | 60 |
| Appendix 1 Board of Directors | 63 |
| Appendix 2 Organisation Chart | 66 |
| Financial Report 1999 | 67 |



ANNUAL REPORT 1999

PART B

FOREWORD

The Environmental Management Authority was established by an Act of Parliament – the Environmental Management Act No. 3 of 1995 now (repealed and replaced by Act No 3 of 2000) and became fully operational in January 1996.

Since then the Authority has continued to develop and implement national policies, programmes, standards and criteria, and legislative instruments, and to co-ordinate

environmental management functions performed by persons in Trinidad and Tobago in order to carry out its mandate to protect, conserve and enhance the environment in Trinidad and Tobago.

Part B of this Annual Report details the activities of the Authority over the period January – December 1999, including a Statement of the Audited Accounts for that period.



Organisation Structure

The Authority is governed by a Board of Directors comprising nine members and a Chairman, appointed by the President of the Republic of Trinidad and Tobago. The Managing Director/CEO, who is appointed by the Board, is an ex-officio member of the Board, while the Manager, Finance and Administration serves as the Corporate Secretary. The Board reports to the Minister of Planning and Development. The members of the Board and the Board Committees are detailed in Appendix 1.

The Authority itself is organised into six responsibility centres:

- **CEO's Office:** Oversees the implementation of the policies and priorities of the Board and work programmes of the Authority as well as the co-ordination with other governmental entities and regional and international organisations. Responsible for the preparation of the Annual Report.
- **Pollution Prevention and Control:** Responsible for the inventory, assessment, monitoring, auditing and permitting of air and water pollutants, hazardous and solid waste and noise; co-ordination of responses to environmental emergencies and incidents, investigation of environmental complaints and non-compliance; the establishment of discharge and emission standards and the implementation of multilateral environmental agreements dealing with pollution issues.
- **Planning and Conservation:** Responsible for developing and co-ordinating environmental and natural resources plans and policies; designation of environmentally sensitive species and areas; implementation of the National Environmental Policy (NEP); preparation of the State of the Environment Report; and for implementation of multilateral environmental agreements dealing with conservation issues.
- **Information and Communications:** Responsible for establishing a National Environmental Information System (NEIS) as well as Management Information Systems for the Authority; promoting environmental awareness and education; public involvement; and co-ordinating media relations;
- **Legal and Enforcement:** Responsible for developing subsidiary legislation (Codes, Orders and Rules); preparing the Environmental Code; enforcement of the Act and provision of legal services to the Authority. The Manager, Legal and Enforcement is Secretary to the Board.
- **Finance and Administration:** Responsible for the Environmental Trust Fund; financial management and reporting; procurement and administrative support.

Appendix 2 provides the organisation chart as at December 31, 1999.



1999 Accomplishments

POLLUTION PREVENTION AND CONTROL

• Air Pollution

Vehicle Emissions Programme

As part of the national vehicle emissions programme, the Trinidad and Tobago Bureau of Standards (TTBS) established a multi-stakeholder Committee chaired by the EMA to assist in the development of the National Standard for Exhaust Emissions from Motor Vehicles. The Committee was chaired by the EMA and included representatives from the Licensing Authority, Ministry of Works and Transport, Petrotrin, Automotive Dealers Association of T and T, T and T Used Car Dealers' Association, Association of Automobile Repairers and the TTBS.

The development of the national standard was supported by actual emissions testing of vehicles. As of December 1999, the draft standard was completed and sent to the TTBS Editorial Committee for finalisation and to be issued for public comment.

Diesel Fuel Standards

The Authority also chaired a multi-stakeholder Committee set up by the Trinidad and Tobago Bureau of

Standards to assist in the development of the National Standard for Diesel Fuel. Representatives were drawn from the Ministry of Energy and Energy Industries, Petrotrin, NP, PTSC, Association of Automobile Repairers, Academy of Automechanics, TandT Used Car Dealers' Association, Ministry of Works and Transport, Unified Maxi-taxi Association, and the TTBS.

Of critical significance to the nature of the exhaust emissions from diesel fuelled vehicles are the following parameters of diesel: cetane number, density, aromatics and sulphur content. Efforts were made to harmonise the national specifications with the guidelines developed in the UNDP/ World Bank Energy Sector Management Assistance Programme ESMAP (1998). Consideration was given to the local supply conditions, environmental conditions and application and use of diesel fuel.

As at 31 December 1999, the draft National Standard was completed and issued for public comment, in accordance with the Standards Act. The Committee has recommended that the National Standard be given compulsory status, with a suitable grace period before implementation.



Parrylands: Further to investigative work carried out in 1998 in the Parrylands area, in 1999, the EMA commissioned ambient air analysis for primarily Volatile Organic Compounds (VOCs) and semivolatile Organic Compounds (SVOCs) in the vicinity of the Parrylands Government Primary School. Also, a team of consultants from Pan American Health Organisation (PAHO) did an investigative study.

As part of a tripartite team comprising Ministry of Energy and Energy Industries (MOEEI) and Petrotrin, the EMA has been conducting monthly inspections of Petrotrin's steam flood operations at Parrylands, and attending quarterly meetings to discuss matters related to Petrotrin's operations in the area. Petrotrin is still complying with the MOEEI's instructions and the steam flood operations are still down, awaiting further sampling and analysis by the EMA to establish ambient air quality base line conditions.

• **Water Pollution**

Water pollution Management Programme

The Authority embarked on development of a comprehensive programme for the management of water pollution. This involved preparation of a background study as well as legislative drafting of water pollution rules. Technical assistance was requested from the Department of Natural Resources, Wisconsin, U.S.A. for further development of the programme.

Biological monitoring of freshwater

In July 1999 the Authority executed an agreement with the Department of Life Sciences of the University of the West Indies, St. Augustine Campus, for the biological monitoring of freshwater. This system will use biological indicators to assess the impact of pollution on the freshwater resources of the country. Data collection is underway.

• **Land Pollution**

Demerara Road Remediation

A Community Health Intervention Programme was implemented by the Authority at the Demerara Road Community, aimed at reducing the health risk of tonnes of lead slag deposited in that community prior to 1993. The Programme included the following elements:

- Education for adults and children of the area to inform them of the dangers of lead exposure and poisoning, as well as prevention strategies. A variety of education methods were used, including lectures, videos, interactive theatre, children's workshops and colouring books.
- Soil Survey: In conjunction with the Environmental Protection Agency of the United States of America (USEPA), a survey of the surface soil on the entire site was conducted to detect lead levels. Lead levels of concern were found in isolated areas of the community.
- Testing of fruits and vegetables: The Chemistry, Food and Drugs Division of the Ministry of Health assisted with the analysis of washed and unwashed fruit and vegetable grown in the community. Levels found were within the Trinidad and Tobago standard.
- Blood Testing: In conjunction with the Ministry of Health, the Pan American Health Organisation (PAHO) and the United States Centre for Disease Control, the Authority conducted a blood lead level testing exercise at the Arima Hospital on 200 residents of Demerara Road and other affected communities in the Arima area. The results revealed that some of the tested children showed blood lead levels of concern. Twelve (12) of the children required hospitalisation at the paediatric ward of the M Hope Hospital.

Planning for the remediation of lead from the soil in the Demerara Road community began following this intervention and is expected to be completed in 2000.



- **Noise Pollution**

In 1999 noise level surveys were conducted during Carnival, and public one-day national consultations were held in Tobago on July 06, 1999 and in Trinidad on July 08, 1999. The Authority has developed a strategy to deal with noise, based in part on the recommendations obtained from these consultations. The consultations raised a number of issues, key among them being the concept of noise pollution versus culture – that is, where does culture end and nuisance begin? It is anticipated that the strategy will address this concern in creative and innovative ways.

ENVIRONMENTAL INCIDENTS

- **Emergencies and Investigations**

Fifty-seven (57) environmental incidents were recorded for the year. These included:

- **Oil Spills**

Two major oil spill incidents to which the Authority responded were:

- The *Thick Village Oil Spill* which occurred on February 14 1999 during which an estimated volume of 7,173 barrels of oil were spilled. This was reportedly the largest land-based spill in the history of Trinidad and Tobago resulting in the contamination of over eight acres of land. Recovery and bio-remediation activities were monitored over a period of three months.
- The *CARIDOC Oil Spill* in which approximately eight to ten cubic metres of oil were spilled into the marine environment. Extensive shoreline contamination occurred, including areas at Tetron Bay, Scotland Bay and Monos Island. The Authority was instrumental in directing clean-up responses, and ensuring that appropriate methods were used. A response plan for the Chaguaramas area was one of the initiatives resulting from this incident.

Beetham Landfill fires

An aspect of our air quality came into focus in 1999 when tests were conducted on residents of the Beetham area to determine the effects of the inhalation of toxic gases and smoke from week-long fires raging at the Beetham Landfill in May. This effort was co-ordinated by the EMA and involved the University of the West Indies and the Community Police. The residents who volunteered to be screened came from a sample of those who visit the landfill site regularly and those who do not. Approximately fifty-eight (58) percent of the residents tested were discovered to have abnormal lung function.

In the investigation of the effect of the fires at the Beetham Landfill Site, the EMA commissioned the following tests of the ambient air in the Sealots housing area, in the vicinity of the landfill site in May 1999:

- (a) measurement of particulate matter and toxic substances - conducted by CARIRI
- (b) measurement of volatile organic compounds (VOCs)
- (c) measurement of other gases, carbon monoxide, sulphur dioxide and dinitrogen oxide.

Follow-up sampling and analyses were conducted in October 1999, primarily for Volatile Organic Compounds and Formaldehyde. Results indicated that the levels of the various substances in the samples of ambient air did not pose significant adverse risk to human health.

It was difficult to discern whether the abnormalities in lung function were due to inhalation of sulphur dioxide during the May fires or because of repeated exposure from random burning at the landfill site. Final tests will be conducted next year.



Sewage and Asbestos problems in schools

Problems being experienced by our schools, from noxious fumes to sewage to asbestos, engaged the attention of the EMA in 1999. The Authority conducted investigations into a large number of complaints and worked with school and Ministry of Education officials in an effort to resolve outstanding issues and educate those affected. The Authority is also part of a national effort to analyse the complex asbestos dilemma and educate citizens about possible actions.

Beached Whales

The beaching of whales three times on our shores at Brickfield and Manzanilla in 1999 provided big-hearted citizens with the opportunity to demonstrate their leadership skills in protecting these gentle, mystical creatures of the sea. The Authority participated in and co-ordinated the effort to save the 26 whales that beached themselves in Manzanilla. Fourteen (14) of the whales survived because of the combined dedicated efforts of ordinary citizens, members of the Defence Force, the Coast Guard, government agencies and the private sector.

Mangrove Die-Back in Point Lisas

Investigations were conducted into reports of mangrove die-back in the Point Lisas area. An interim proposal for remediation of the problem was requested and reviewed by the EMA and implemented by the three companies involved in late 1999. The proposal from the three companies included:

- Repairs to the discharge line to allow the discharge to flow into the Couva River rather than the mangrove.
- Restriction of the flow to two channels through the mangrove.

The EMA accepted these conditions subject to a commitment that the three companies would make submissions to the EMA on their plans to comply with the discharge standard TTS 547.

Implementation of the interim recommendations has resulted in initial re-growth of the mangrove.

Disposal of Radioactive Waste at Caribbean Ispat Ltd

In response to a complaint received, the Authority investigated the disposal practices with respect to a canister containing a small amount of radioactive waste from probes used in the steel melting process. The area was monitored and no dangerous levels of radioactivity were found.

• Complaints

Over the period January 1, 1999 to December 31, 1999 two hundred and eighty seven (287) complaints were received. One hundred and sixty five (165) site visits were conducted. An analysis of these complaints by environmental category follows:

| CATEGORIES OF COMPLAINTS | | |
|--|--------------|------------------|
| CATEGORIES OF COMPLAINTS | NO. RECEIVED | RESOLVED/ CLOSED |
| Air issues | 98 | 41 |
| Environmental degradation (e.g. deforestation, sand mining, etc.) | 29 | 14 |
| Noise | 52 | 14 |
| Odour | 20 | 5 |
| Wastes | 44 | 18 |
| Water issues | 44 | 16 |

The resolution of complaints requires in most instances the co-operation of other government agencies, particularly with respect to application of relevant laws.



CONSERVATION

• **Certificates Of Environmental Clearance**

The system for issue of Certificates of Environmental Clearance (CECs) was further developed in 1999 with drafting of a Desktop Manual and Public Guide. The rules governing the CECs were also finalised and are ready for laying in Parliament for negative resolution.

• **Environmental Impact Assessments (EIAs)**

The Authority continued to collaborate with the Town and Country Planning Division with respect to the review of Environmental Impact Assessments (EIAs) submitted to the Minister. The Authority reviewed fifteen (15) Environmental Impact Assessments during the year.

LEGISLATION

• **Environmental Management Act No 3 1995**

It was determined late in 1999 that a special two thirds majority of the House of Representatives was required to give effect to the Environmental Management Act 1995, given that certain provisions contained therein impinged on the Constitution of Trinidad and Tobago. The Act was passed in the Senate with a special two third's majority in December 1999. It will go to the Lower House in January 2000.

(Note: The Act was passed in the House of Representatives by special majority, and assented to by the President on 8th March 2000.)

• **Specifications and Rules drafted under the Environmental Management Act**

Water Pollution Rules

The Authority drafted and submitted for public comment the Water Pollution Rules, 1999 during the period 4th of October, 1999 to 12th of November, 1999 at fifteen (15) locations throughout Trinidad and Tobago.

Several studies were conducted of environmental issues brought to the attention of the EMA. These included:

- Study of environmental impact of a pig farm in San Francique
- Environmental Assessment of Industries at the O'Meara Industrial Estate in conjunction with the Institute of Marine Affairs.

These Rules were accompanied by a detailed administrative record setting out the rationale behind the Rules.

Revision of draft rules for Environmentally Sensitive Areas and Species

The Environmentally Sensitive Species Rules, 1999 were re-drafted and submitted for public comment during the period of the 4th of October, 1999 to the 12th of November, 1999 at fifteen (15) locations throughout Trinidad and Tobago. These Rules were accompanied by a detailed administrative record setting out the rationale behind the Rules.

The Authority also drafted and submitted for public comment the Environmentally Sensitive Areas Rules, 1999 during the period of the 4th of October, 1999 to the 12th of November, 1999 at fifteen (15) locations throughout Trinidad and Tobago. These Rules were accompanied by a detailed administrative record setting out the rationale behind the Rules.

• **Pilot programme for Vehicle Emissions and Litter Act Prosecutions**

A Special Reserve Police (S.R.P.) Unit for the enforcement of the Litter, Motor Vehicles and Road Traffic, Forests and Sawmills Acts of Trinidad and Tobago was established in July 1999 with the co-operation and assistance of the Commissioner of Police. The S.R.P. Officers received special training from the legal staff of the EMA and were deployed to handle complaints that come to the EMA as well as the enforcement of the aforementioned Acts. This special unit has proved to be highly effective and successful, issuing some 1,500 tickets for vehicle emissions



violations, and making more than 30 arrests during the first six months of operation. Fines amounting to \$50,000.00 were issued.

• **Development of the Environmental Code**

The Authority commenced work on the Environmental Code of Trinidad and Tobago and conducted consultations with other government entities on rationalisation of proposed subsidiary legislation of the EMA with existing pieces of legislation. As a result, the Authority drafted supplemental Memoranda of Understanding pertaining to the Certificates of Environmental Clearance (CEC) Rules, 1999 and the Environmentally Sensitive Areas Rules, 1999. These were submitted to the governmental entities concerned for review and comment. Agreement was reached and drafts are to be submitted to the Board of the EMA.

ENVIRONMENTAL EDUCATION AND AWARENESS

• **School Competitions**

Sixth Form students from all over the country participated earlier in the year in the first annual EMA/Forestry Division National Environmental Public Speaking Competition, and the depth of thought and research displayed over the days of competition showed a level of passion and commitment that is heartening. Dana James, the overall winner from St. Joseph's Convent in San Fernando, thrilled everyone with her analysis of 'The Ecological Importance of Wetlands'. The Waterloo Hindu School established itself as a leader in environmental awareness among primary schools' when it won the 'Hands-On' primary schools environmental competition, organised by the EMA in collaboration with the Ministry of Education.

• **Infant Activity Book**

In 1998 the Authority, in collaboration with the Ministry of Education, developed an "Enviro Kids Infant Environmental Activity Booklet" for the age group 4 – 6. This booklet was successfully tested in a number of pre-schools and

primary schools during the course of 1999 and finally published at the end of the year for distribution to schools.

• **Media Activities**

1999 marked the introduction of a regular EMA weekly column in the print media as well as a regular radio feature on a number of frequencies. A number of television infomercials were aired throughout the year in support of a public awareness campaign to sensitise the public on the harmful effects of vehicle emissions. This particular campaign was a joint effort of the Ministry of Consumer Affairs and the Authority and was supported with leaflets and other print materials.

The Authority held a number of media conferences during the year and continued to provide up-to-date information on topical environmental issues and the work of the Authority through regular press releases and interviews.

• **World Environment Day**

June 5, 1999 – World Environment Day was celebrated with a week of educational and awareness activities for schools and communities. Wide participation was achieved from both the public and private sectors. The Authority once more rewarded excellence and commitment on the part of our citizens to the conservation and protection of the environment through its Green Leaf Award. These awards were presented on World Environment Day in a special commemorative ceremony.

• **Other Awareness and Education Activities**

The Authority increased its outreach programme to schools, communities, the public and private sectors through provision of lectures, speeches, displays, audio/visual and print materials. It successfully facilitated a community outreach programme in conjunction with YTEPP in the Leasehold Lands area of



Laventille and initiated contact with community groups in the Rio Claro area with a view to encouraging community environmental projects. This activity will be developed in greater detail in 2000.

• **Environmental Literacy Survey**

In order to evaluate the effectiveness of its awareness and education programmes over the first four years of its existence, the Authority commissioned a repeat of the Environmental Literacy Survey for children and adults which it conducted in 1996 when it first became operational. The results of the 1999 survey were indeed heartening. In both sectors environmental literacy levels have increased significantly, with the added benefit of a widening scope in the recognition of environmental issues and concerns by members of the public. No longer is "garbage" alone identified as the most pressing concern. Air pollution has supplanted this as the environmental issue of greatest import to the population, spurred no doubt by the increasing numbers of vehicles on the roads spewing black smoke into the atmosphere coupled with the awareness campaigns of the Authority and its participating agencies.

• **Climate Change Project**

Public awareness and education efforts with respect to Climate Change included launching of Website pages on the Authority's website, publication of a Climate Change brochure entitled "From Global Warming to Climate Change"; an article entitled "Climate Change and the Vulnerability of Small Island States," prepared and published in the daily newspapers, as well as a series of Climate Change lectures carried out by the Project Coordinator to various Secondary Schools. Poster and Essay competitions were also held.

• **National Biodiversity Strategy and Action Plan (NBSAP)**

Public awareness of the NBSAP was enhanced through Poster, Letter Writing and Essay competitions for young people.

NATIONAL ENVIRONMENTAL INFORMATION SYSTEM

• **NEIS and Web Site**

Five web-based database modules were developed for the National Environmental Information System (NEIS) to deal with Environmental Complaints and Incidents, Legislation Monitoring, Certificates of Environmental Clearance, Environmentally Sensitive Areas and Environmentally Sensitive Species. The Authority's Web Site on the Internet was developed and launched in March 1999. Additional pages for the UNFCCC and CPACC projects as well as the NBSAP project were developed and added to the website. Special security/firewall software was acquired to facilitate secure operation of the NEIS.

• **Information Centre**

The Information Centre continued to provide a much sought after reference service to the staff of the EMA as well as the public. 1,597 external users were accommodated during the year and 1,712 requests for information were researched and fulfilled. External users included students and teachers from primary and secondary schools, university students from the region as well as from universities in North America, the United Kingdom and Holland.

INFORMATION TECHNOLOGY SYSTEMS

• **Y2K**

The Authority successfully completed a Y2K audit of its computer systems and acquired replacements for a few items of equipment that proved to be non-Y2K compliant. Software fixes and upgrades were also acquired to bring the system into full compliancy.



MULTI-LATERAL ENVIRONMENTAL TREATIES AND CONVENTIONS (MEAs)

• Montreal Protocol for the Phase out of Ozone Depleting Substances (ODS)

This country paid serious attention to another health issue, that of the effects of ozone depletion on human health. Skin cancer, cataracts and the suppression of the immune system are some of the possible effects of increased exposure to the ultraviolet-B (UV-B) radiation that results from ozone depletion. In keeping with our international commitment to the Montreal Protocol, the Ministry of Trade of the Government of Trinidad and Tobago began limiting imports of Chlorofluorocarbons (CFCs) from the first of July 1999. In addition, Trinidad and Tobago is one of the first countries in the developing world to recover and recycle CFCs used in the air-conditioning and refrigeration systems in the yachting industry. In fact, the entire refrigeration and air-conditioning industry is presently investing in new ozone friendly technologies and in the upgrading of their technicians' skills in the handling and management of ozone depleting substances.

The Authority continued implementation of the Country Programme, liaising with several Ministries in its delivery. Some of the more noteworthy elements included:

i) Mobile Air Conditioning (MAC) Sector Project. This project included training for recovery/recycling shops throughout Trinidad and Tobago and distribution of equipment for recycling refrigerants.

ii) Refrigerant Management Plan (RMP). Like the MAC Sector Project, the RMP was a training and equipment distribution project focused on service providers.

iii) Train-the-Trainer programme in good Refrigeration Management Practices. Several trainers were trained to enable sustained delivery of good management practices to the industry.

• Framework Convention on Climate Change (UNFCCC) and Caribbean Planning for Adaptation to Climate Change (CPACC) UNFCCC Project

Trinidad and Tobago has played a lead role regionally and internationally in preparing for the challenges that any changes in climate will present. As island nations, we will be particularly vulnerable to the effects of global increases in temperature and sea level rise. These include:

- i.** Coastal erosion and its implications for tourism and coastal resource management
- ii.** Salt water intrusion into water tables and its impact on potable water reserves and quality
- iii.** Impacts on agriculture and food production

In 1999 the country initiated the process of preparing its first national communication under the United Nations Framework Convention on Climate Change. This involves a greenhouse gas inventory, vulnerability and adaptation assessment, as well as analysing options to mitigate climate change impacts. These studies, which will be completed by February 2000, will inform national environmental policy on issues such as the use of cleaner fuels and renewable energy technology e.g. Natural Gas and Solar Energy. The Authority entered into contractual arrangements with the University of the West Indies to complete Trinidad and Tobago's First National Communication. The Greenhouse Gas Inventory, the Vulnerability and Adaptation and Mitigation Options exercises were completed and the corresponding workshops convened.

CPACC Project

The EMA, as National Implementation Co-ordinating Unit, coordinated and managed the distribution, response to and return of questionnaires to launch Module 1: Data Assessment of Component 3 - Inventory of Coastal Resources and Uses under the CPACC Project. Pilot Component 7: Evaluation of Economic Regulatory



Methodologies was also launched. A Country Team has been formed and a site selected in Trinidad for the pilot project.

A four-day workshop was hosted by CPACC Regional Project Implementation Unit to discuss the proposed methodology and deliver training in valuation methodologies and techniques. Members of Country Teams from all over the Caribbean region, including the EMA as Trinidad and Tobago's focal point, actively participated.

• **Convention on Biological Diversity – National Biodiversity Strategy and Action Plan (NBSAP)**

Preparation for the drafting of the National Biodiversity Strategy and Action Plan involved the holding of one national consultation and thirteen regional consultations throughout Trinidad and Tobago. Input from these consultations proved invaluable in formulation of the Plan.

ANNUAL REPORT INCLUDING THE STATE OF THE ENVIRONMENT REPORT

The Annual Report including the State of the Environment Report for 1998 was prepared and submitted to the Minister for laying in Parliament. The State of the Environment Report surveyed and reported on the country's Freshwater resources.

FINANCE AND ADMINISTRATION

• **Procurement Manual**

A revised Procurement Manual was prepared and approved by the Board of Directors.

• **Audited Accounts**

The Accounts of the Environmental Trust Fund as at 1998-12-31 were audited by the Auditor General in accordance with Section 80 (2) of the EM Act 1995 and the Audit Report was submitted to Parliament.

The Accounts of the Authority as at 1998-12-31 were audited by an independent audit firm in accordance with the conditionalities of the Loan Agreement with the World Bank and a copy of the Audit Report was sent to the Bank within the specified period.

• **Construction of Head Office**

The EMA acquired a property on Elizabeth Street, Port of Spain, on which it proposes to construct its Head Office building.



Report On Co-ordination With Participating Agencies in 1999

The Authority has, through memoranda of understanding, established a mechanism for coordination with twenty nine (29) governmental entities and institutions that perform environmental functions in Trinidad and Tobago.

Memorandum of Understanding

The memorandum of understanding between the EMA and the thirty (30) Participating Agencies makes provisions for:

- the EMA to assist in the co-ordination of Participating Agencies during environmental emergencies;
- the EMA to provide support for strengthening the environmental management capacity of Participating Agencies;
- the Participating Agencies to provide advice and access to data and information in support of its activities relating to complaints, environmental emergencies, assessment of the state of the environment, monitoring compliance, enforcement and audits;
- the Participating Agencies to disseminate information and co-ordinate activities to promote and enhance environmental awareness among members of the public;
- The Participating Agencies to advise the EMA immediately on becoming aware of any activity or proposed activity which may adversely affect the environment or human health.

Environmental Officers

The Authority, to further the cause of co-ordination, has requested Participating Agencies to nominate suitable officers to be designated Environmental Officers. These Environmental Officers will have the responsibility to

assist in maintaining intra-governmental co-ordination, communication and institutional linkages for the development, integration and effective implementation of the various policies, laws, regulations, rules, guidelines, programmes and other activities designated to protect and conserve the environment. To date twenty nine (29) Environmental Officers have been authorised by instrument in writing signed by the Managing Director (a list of these appears at the end of this report).

Environmental Officers at the Participating Agencies serve on many of the Committees of the EMA and also act as the EMA's point of contact for information regarding the environmental policies and programmes of the various governmental agencies. Furthermore, Environmental Officers participate in an annual workshop, the goal of which is to assist the EMA in fine-tuning its workplans for the coming year. Aspects of the EMA's workplans that may require collaboration and co-ordination are highlighted at the workshop and the Environmental Officers from the relevant Ministries are requested to provide feedback and advice. In 1999 the Environmental Officers also attended a workshop to devise a strategy for formulation of a Sustainable Development Council for the country.

Collaboration

In 1999 the Authority collaborated with Participating Agencies in addressing the following environmental matters:

- Investigation of five complaints in Tobago with the assistance of the Tobago House of Assembly.
- Implementation of Trinidad and Tobago Country Programme for the Phase-Out of Ozone Depleting Substances



- Implementation of Vehicle Emissions Programme for enforcement of the Motor Vehicle and Road Traffic Act as well as establishing vehicle emissions standards
- Determination of the implications of Global Warming and Climate Change and Sea Level Rise
- Review of Environmental Impact Assessments (EIAs) for the Town and Country Planning Division
- Planning and execution of environmental education and awareness programmes for primary and secondary schools
- Development and implementation of World Environment Day Programme
- Development of plan for Asbestos Management in Schools
- Preparation of the National Biodiversity Strategy and Action Plan
- Technical input into data collection programme for Chaguaramas, South West Tobago and Pt. Lisas under the BEIRL project
- Testing of blood lead levels in 200 residents from a lead contaminated site at Demerara Road, Wallerfield

In fostering sustainable environmental management in the country, the Authority pays special attention to its efforts in the area of public awareness and education. In pursuing its programme in this area the EMA collaborates and coordinates with many of the Participating Agencies, including Ministry of Works and Transport, Tourism and Industrial Development Company Ltd (TIDCO), Tobago House of Assembly (THA), Solid Waste Management Company Ltd (SWMCOL), Ministry of Education, Ministry of Consumer Affairs, Ministry of Energy and Energy Industries, Ministry of Public Administration and Information, Ministry of Agriculture, Land and Marine Resources, Ministry of National Security, and Non-Governmental Organisations such as Asa Wright Nature

Centre, Nature Seekers Inc., the Toco Foundation, the Pointe-a-Pierre Wildfowl Trust and Environment Tobago.

Representation on Committees

In addition, the Authority was represented on Committees that dealt with issues relating to:

National Physical Planning, standards for pesticide residue limits in food, organic farming, recycling, the Toco port, Fisheries, Caroni Watershed, coastal erosion in Point Fortin, disaster preparedness, contamination of the Poole River, air quality problems at Parrylands, hazardous and oily waste, vehicle emissions, Pt.Lisas Industrial Estate, dengue prevention and control, San Fernando Waterfront Development, determination of granting of licences for land reclamation, construction of piers, jetties, etc. through a Land Reclamation/West Coast Master Plan Committee, national parks and watershed management, land-based sources of marine pollution in the wider Caribbean region and sustainable tourism development, investment sector reform, and national wetlands.

Assessment of Effectiveness of Collaboration

The input and contribution of the Participating Agencies proved invaluable in 1999. There continues to be numerous areas of collaboration and viable mechanisms for co-ordination across jurisdictional lines. This is so because of the Participating Agencies' commitment to the provisions of the Memoranda of Understanding and the Environmental Officers' efforts. The Special Reserve Police Environmental Unit enforcement project is an admirable demonstration of the effectiveness and successful collaboration between the EMA and one of its Partner Agencies, in this case the Police Service. With respect to Tobago, the Authority is still to devise a strategic mechanism for formal collaboration with the Tobago House of Assembly. Even in the absence of a formal agreement, however, co-operation between the Assembly and the Authority remains high.



**List Of Agencies Signing The Memorandum Of Understanding As At December 31, 1999
And Environmental Officers Appointed**

| NAME OF ENVIRONMENTAL OFFICER | DESIGNATION | TELEPHONE | FAX | MINISTRY/AGENCY |
|--|---|--------------------------|----------------------|---|
| 1. Mr. Antony Ramnarine | Director FRIM, Forestry Division | 622-5658 | 628-5503 | Ministry of Agriculture |
| 2. Mrs. Ann Marie Medina | Director, Environmental Unit | 625-1310 | 625-0367 | Ministry of Works and Transport |
| 3. Mr. Anthony Bartholomew Ms. Vidiah Ramkhalawan (Act) | PS - Min. of the Environment Senior Planning Officer | 623-4853 | 625-1585 | Ministry of Planning and Development |
| 4. Mr. Everard Llewellyn | Head, Standardization Division | 662-8827 (Ext. 118) | 663-4335 | TandT Bureau of Standards |
| 5. Mr. Evans King | Chief Protocol Officer | 623-4116-9 (Ext. 279) | 627-0571 | Ministry of Foreign Affairs |
| 6. Mr. Randolph Alvarez | Industrial Safety Officer | 623-1462 | 624-4091 | Ministry of Labour and Co-operatives |
| 7. Mrs. Susan Shurland-Maharaj | Information Officer | 634-4291-4 | 634-4433 | Institute of Marine Affairs |
| 8. Mr. Henry Saunders | Curriculum Officer (Science) | 679-2574 | 636-1057 | Ministry of Education |
| 9. Ms. Sandra Indar | Senior Economist | 627-4424 | 625-7003 | Ministry of Public Utilities |
| 10. Mr. Christopher Mendez | Project Manager | 625-4639 627-3431 | 623-5685 | Port Authority of TandT |
| 11. Ms. Jocelyn Lee Young | Assistant Registrar | 625-2110 | 625-4161 | NIHERST |
| 12. Mr. Reeyaz Rajab | Environmental Officer | 662-7161 | 662-7177 | CARIRI |
| 13. Mr. Oswald Adams | Chemical Engineer | 623-6708 | 625-0306 | Ministry of Energy and Energy Industries |
| 14. Ms. Gina Wharwood | Manager, Collection Services | 625-6678 | 623-6534 | Trinidad and Tobago Solid Waste |
| 15. Ms. Donna DeFour | Economist II | 627-1913 | 627-8488 | Ministry of Trade and Industry |
| 16. Ms. Carol Smart | Ag. Director, TCPD | 627-8387 | 625-8445 | Ministry of Housing and Settlements |
| 17. Mr. Kenneth Norriega | Technical Officer | 628-1323 | 624-7727 | Ministry of Local Government |
| 18. Mrs. Sarah Briggs | Operational Research Officer II | 623-6621 | 625-3278 | Ministry of Community Development, Culture and Women's Affairs |
| 19. Mr. Rawle Harvey | Consumer Liaison Officer | 623-3821 | 625-4737 | Ministry of Consumer Affairs |
| 20. Ms. Joyce Ramoutar Mr. Eon Abner (Alt) | Ag. Asst. Director, Senior Economist | 625-0365 625-0373 | 627-6108 623-5193 | Ministry of Finance |
| 21. Ms. Jill St. John | Temporary Coordinator, NEMA | 623-2078 | 625-8926 | Ministry of National Security |
| 22. Mr. Ramchand Ramcharan | Principal Medical Officer | 662-1629 | 662-3584 | WASA |
| 23. Dr. Rohit Doon | Forest Officer | 625-0110 | 623-9528 | Ministry of Health |
| 24. Mr. Michael Forde | Ag. Director, Social Planning and Research | 634-4364 | | Chaguanas Development Authority |
| 25. Ms. Antonia Poppellwell (Alt) | Ag. Sr. Planning Officer | 625-5171 | 624-7727 | Ministry of Social Development |
| 26. Ms. Jacinta Bailey | Operations Superintendent | 623-3480 | 625-3963 | National Housing Authority |
| 27. Mr. Ishwar Jadoonanan | Industrial Relations/Health and Safety Officer | 669-8047 | 669-2319 | Airports Authority of TandT |
| 28. Professor Peter Bacon | Life Sciences, Natural Sciences Building | 662-2002 | 645-7132 | University of the West Indies |
| 29. Ms. Gayatri Badri-Maharaj | State Counsel III, Civil Law Dept. | 623-4282 | | |
| Ms. Joanne Dasent (Alt) | Legal Officer, Criminal Law Dept. | 625-6530 | 625-0470 | Ministry of the Attorney General |



Plans For 2000

AIR POLLUTION

- A system to control point source gaseous emissions to the environment will be designed and implemented.

WATER POLLUTION

- **Water permitting system:** Design and implementation of a system to control point source liquid discharges into the environment will be undertaken.
- **Fresh Water Monitoring:** The Authority will continue collaboration with the University of the West Indies (UWI) St. Augustine, on assessment of impact of pollution on rivers using biological indicators.

NOISE POLLUTION

- A national strategy and programme to manage noise pollution will be developed.

LAND POLLUTION

- Remediation of soil and ground water at the lead contaminated site in Demerara Road, Wallerfield, will be undertaken.

ENVIRONMENTAL INCIDENTS

- The Authority will conduct the necessary investigations and take the required action to alleviate environmental problems brought to its attention through complaints and emergencies.

CONSERVATION

- A mapping unit will be set up to support the work of the Authority.
- Review of Environmental Impact Assessments (EIAs) from the Town and Country Planning Division will continue.
- The Authority will design and implement a system for determination of the environmental impact of various developmental activities under the

Certificates of Environmental Clearance programme.

ANNUAL REPORT INCLUDING STATE OF THE ENVIRONMENT REPORT

- The 1999 Annual Report including the State of the Environment Report will be prepared in accordance with the Environmental Management Act.

MULTILATERAL ENVIRONMENTAL AGREEMENTS

- Implementation of the country programme for the phase out of Ozone Depleting Substances under the Montreal Protocol and the Vienna Convention will continue in 2000.
- Work initiated in 1999 on the Framework Convention on Climate Change (UNFCCC) and the Caribbean Planning for Adaptation to Climate Change (CPACC) programmes will continue.
- The National Biodiversity Strategy and Action Plan (NBSAP) under the Convention on Biological Diversity will be prepared.

NATIONAL ENVIRONMENTAL INFORMATION SYSTEM (NEIS)

- A water pollution module for the NEIS will be designed and developed.
- Design of a greenhouse gas emissions inventory module for reporting under the UNFCCC programme will be undertaken.
- The Information Centre's collection of environmental literature will be strengthened together with the services offered.
- The Authority will continue to develop and upgrade its website.
- A Geographic Information System (GIS) will be developed to support the NEIS and the work of the EMA.



ENVIRONMENTAL AWARENESS AND EDUCATION

- A 13-part television series on the environment will be produced.
- Radio programming will continue.
- The second annual Primary Schools Hands-on Environmental Competition will be held.
- The second annual Secondary Schools Public Speaking Competition will be mounted.
- The EMA's quarterly newsletter will be published.
- World Environment Day will be celebrated with a week of activities and the conferring of the EMA's Green Leaf Award on outstanding individuals and organisations in the environmental field.

LEGISLATION AND ENFORCEMENT

- Development of a draft Environmental Code – the Authority will complete an evaluation of written laws and programmes which address environmental issues and draft an Environmental Code.
- Several major pieces of subsidiary legislation will be developed during the year. These include:

Environmentally Sensitive Areas Rules and Environmentally Sensitive Species Rules

- *formulation of the rules relating to the designation of environmentally sensitive areas and species.*

Sources of Water Pollutants Register and Permissible Limits Rules

- *formulation of the rules relating to the management of water pollutants.*

Environmental Management (Air Pollutants Register Permissible Limits and Permit Rules)

- *formulation of the rules for the management of air pollution.*

Environmental Management (Air Pollution Permit Fees Regulations 1999)

- *Formulation of fees for Permit*

Environmental Management (Vehicle Emissions) Standard Regulation 1999

- *Formulation of Standards and Regulations relating to the establishment of Standards/permissible limits in respect of Vehicle Emissions*

Environmental Management (Noise Pollution Permissible Limits and Permit Rules 2000)

- *Formulation of the Rules for the management of Noise Pollution.*

Environmental Management (Waste Handling, Permits and Licences 2000)

- *Formulating of the Rules for the management of waste.*

Beverage Container Deposit Bill

- *Develop a deposit return system for beverage containers with a view to curbing littering.*

Cooperative Inter-Agency Programme for the Enforcement of Environmental Laws

The Authority will continue to implement the pilot programme for identifying, investigating and prosecuting offences under the Litter Act and the Motor Vehicle and Road Traffic Act.

ADMINISTRATION

- The EMA Head Office building at No. 8 Elizabeth Street, Port of Spain, will be designed and constructed.

CAPACITY BUILDING

- The Authority will provide specific resources for Participating Agencies to strengthen their environmental management capability.



APPENDIX I

BOARD OF DIRECTORS

As at December 31, 1999

| | | |
|---------------------|---|--|
| Dr. John Agard | - | Chairman |
| Mr. Randolph Kong | - | Deputy Chairman |
| Dr. Rohit Doon | - | Director |
| Mr. Larry Howai | - | Director |
| Dr. Carol James | - | Director |
| Mr. Selwyn John | - | Director |
| Dr. Jesma McFarlane | - | Director |
| Mr. Winston Nanan | - | Director |
| Mr. Prem Nandlal | - | Director |
| Dr. Ranjit Singh | - | Director |
| Dr. Dave McIntosh | - | Managing Director/CEO (ex-officio member) |

Trustees for the Environmental Trust Fund

Mr. Randolph Kong - Chairman

| | | | | | |
|------------------|---|---------|------------------|---|---------|
| Dr. Carol James | - | Trustee | Mr. Larry Howai | - | Trustee |
| Mr. Prem Nandlal | - | Trustee | Dr. Ranjit Singh | - | Trustee |

Human Resources Committee

Mr. Randolph Kong - Chairman

| | | | | | |
|---------------------|---|--------|-------------------|---|--------|
| Dr. Rohit Doon | - | Member | Mr. Larry Howai | - | Member |
| Dr. Jesma McFarlane | - | Member | Dr. Dave McIntosh | - | Member |

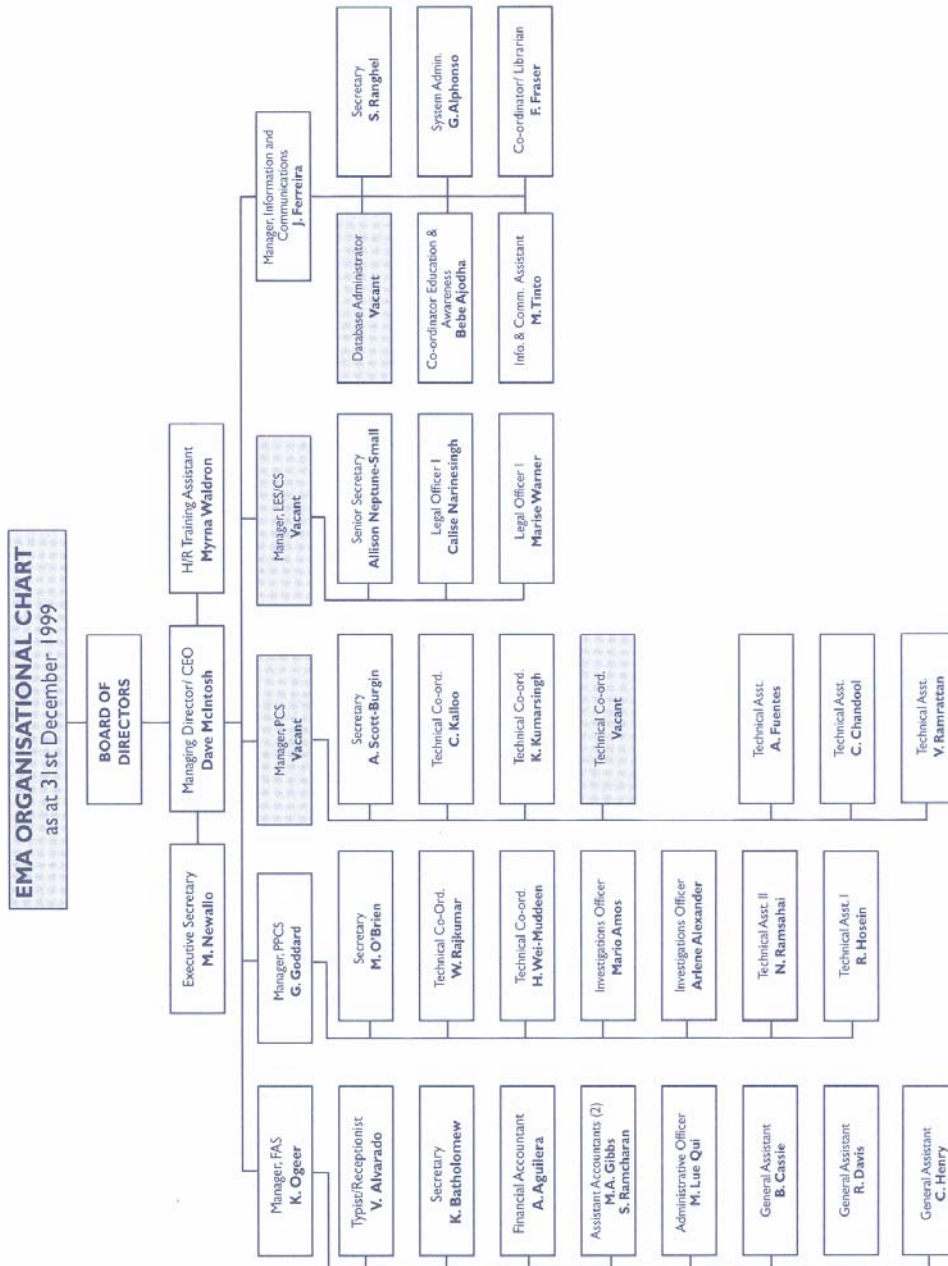
Public Awareness and Education Committee

Dr. Jesma McFarlane - Chairman

| | | | | | |
|---------------------|---|--------|-------------------|---|--------|
| Senator Selwyn John | - | Member | Mr. Winston Nanan | - | Member |
| Mr. Prem Nandlal | - | Member | | | |



Appendix 2





ENVIRONMENTAL TRUST FUND

FINANCIAL STATEMENTS
FOR THE PERIOD
JANUARY 1 TO DECEMBER 31, 1999



Environmental Management Authority

ENVIRONMENTAL TRUST FUND

FINANCIAL STATEMENTS

FOR THE PERIOD

JANUARY 1 TO DECEMBER 31, 1999.

| CONTENTS | PAGE |
|--------------------------------------|-------------|
| AUDITOR'S REPORT | 68 |
| STATEMENT OF INCOME & EXPENDITURE | 69 |
| BALANCE SHEET | 71 |
| CASH FLOW STATEMENT | 73 |
| NOTES TO THE FINANCIAL STATEMENTS | 74 |



To: The Trustees, Environment Trust Fund

Report of the Auditor general of the Republic of Trinidad and Tobago on the Financial Statements of the Environmental Trust Fund for the Year Ended 1999 December 31

1. The accompanying Financial Statements of the Environment Trust Fund for the year ended 1999 December 31 have been audited. The statements as set out on pages one (1) to nine (9) comprise a Balance Sheet as at 1999 December 31, a Statement of Income and Expenditure and a Cash Flow Statement for the year ended 1999 December 31 and Notes to the Financial Statements numbered one (1) to nine (9).
2. These financial Statements are the responsibility of the management of the Environmental Management Authority. The Auditor General's responsibility is to audit these Financial Statements and to report thereon in accordance with section 116(2) and (4) of the Constitution of the Republic of Trinidad and Tobago and section 80(2) of the Environmental Management Act, 1995.
3. The examination was conducted in accordance with generally accepted Auditing Standards. These Standards require that the audit be planned and performed in order to obtain reasonable assurance about whether the Financial Statements are free of material misstatement.
4. An audit includes examining, on a test basis, evidence supporting the amounts and disclosures in the Financial Statements. An audit also includes assessing the accounting principles used and significant estimates made by management, as well as evaluating the overall presentation of information in the Financial Statements. The Auditor General is of the view that the audit which was conducted provides a reasonable basis for the comments made in this Report at paragraph 5 below.
5. The Environmental Commission proposed at section 81(1) of the Environmental Management Act, 1995 has not been established to date. It was reported that the matter is receiving the attention of the relevant authorities.
6. The Financial Statements and Notes to the Financial Statements, as outlined at paragraph one (1) above, are in agreement with the books of the Environmental Management Authority and present fairly, in all material respects, the state of affairs of the Environmental Management Authority as at 1999 December 31 and the results of its operations and its cash flows for the year ended 1999 December 31 in accordance with generally accepted accounting principles.
7. This report is being submitted to the Speaker of the House of Representatives, the President of the Senate and the Minister of Finance in accordance with the requirements of sections 116 and 119 of the Constitution of the Republic of Trinidad and Tobago.

2000 April 20



Jocelyn Thompson
JOCELYN THOMPSON
AUDITOR GENERAL



ENVIRONMENTAL MANAGEMENT AUTHORITY

ENVIRONMENTAL TRUST FUND
STATEMENT OF INCOME AND EXPENDITURE
 FOR THE PERIOD 1 JANUARY 1999 TO 31 DECEMBER 1999

| | Year ended 31/12/99 | Year ended 31/12/98 |
|---|------------------------|------------------------|
| Fund Income | | |
| World Bank Fund | 4,218,542 | 3,813,496 |
| UNDP Fund | 865,810 | 906,425 |
| Government Fund | 9,988,000 | 3,955,000 |
| Other Income | | |
| Activities Income | 9,630 | - |
| Interest Income | 181,466 | 81,177 |
| Miscellaneous Income | 115,352 | 159,444 |
| Total Income | \$ 15,378,800 | \$ 8,915,542 |
| Project Expenses | 4,552,740 | 2,481,527 |
| Income after Project Expenditure | \$10,826,060 | \$ 6,434,015 |
| Directors Fees | 140,600 | 142,800 |
| Directors Expenses | 4,183 | 2,891 |
| Equipment rental | - | - |
| Insurance | 43,212 | 29,925 |
| Depreciation | 518,404 | 382,642 |
| Stationery & Office Supplies | 100,683 | 69,970 |
| Maintenance | 29,579 | 24,013 |
| Salaries & Staff Benefits | 3,088,194 | 3,134,521 |
| Employer NIS Contribution | 91,052 | 18,086 |
| Staff Training | 23,816 | 8,827 |
| Contract Services | 37,287 | 11,450 |
| Office Accommodation | 613,649 | 487,294 |
| Reference & Research costs | 1,843 | 1,660 |
| Telephone | 150,660 | 141,747 |
| Foreign Travel | 264 | 14,208 |
| Local Travel | - | 66,625 |
| Electricity | 47,688 | 46,813 |
| Motor Vehicle | 91,397 | 71,175 |
| Auto Leases | - | 12,133 |
| Subscriptions | 3,041 | 206 |
| Other General & Administrative | 67,357 | 65,326 |



ENVIRONMENTAL MANAGEMENT AUTHORITY
ENVIRONMENTAL TRUST FUND
STATEMENT OF INCOME AND EXPENDITURE
FOR THE PERIOD 1 JANUARY 1999 TO 31 DECEMBER 1999

| | Year ended 31/12/99 | Year ended 31/12/98 |
|---|------------------------|------------------------|
| Postage & Shipping | 11,901 | 11,265 |
| Entertainment | 972 | 3,771 |
| Security | 90 | 100 |
| Selection & Recruitment | 18,759 | 19,692 |
| Accounting Services | - | - |
| Legal Fees | 9,932 | - |
| Audit Fees | 43,752 | 48,985 |
| Bank Charges | 1,171 | 1,198 |
| Interest Expense | - | - |
| Total Operating Expenditure | \$ 5,139,486 | \$ 4,817,323 |
| Surplus/(Deficit) before Translation Differences and Loss on Disposal of Fixed Asset | 5,686,574 | 1,616,692 |
| Gain (Loss) on Disposal of Fixed Asset | (2,388) | (588) |
| Gain (Loss) on Foreign Exchange | - | 3,944 |
| Net Surplus/(Deficit) | 5,684,186 | 1,620,048 |

The notes set out on pages 75 to 78 form an integral part of these financial statements.



ENVIRONMENTAL MANAGEMENT AUTHORITY
ENVIRONMENTAL TRUST FUND
BALANCE SHEET
 AS AT 31 DECEMBER 1999

| | Note | As at 31/12/99 | As at 31/12/98 |
|------------------------------------|------|---------------------|---------------------|
| FIXED ASSETS: | | | |
| | 3 | | |
| Furniture & Fittings | | 404,678 | 382,130 |
| Office Equipment | | 752,831 | 390,243 |
| Motor Vehicle | | 798,833 | 309,665 |
| Computer Equipment | | 965,354 | 634,001 |
| Library/ Information | | 265,011 | 288,922 |
| Land | | 3,229,868 | - |
| | | \$ 6,416,575 | \$ 2,004,961 |
| CURRENT ASSETS: | | | |
| Cash and Bank | | | |
| Operating Account | | 1,146,843 | 331,450 |
| Petty Cash | | 2,428 | 909 |
| Investment Account | | 1,041,781 | 727,442 |
| IBRD Special Account | | 943,619 | 1,386,376 |
| Savings Account | | 668 | 56,043 |
| Savings Account - Project Income | | 13,023 | 108,407 |
| ODS Sub unit Operating Account | | 32,178 | 34,551 |
| ODS/UNEP Operating Account | | 106,477 | 36,709 |
| MAC Sector Project Savings Account | | 31,267 | 25,861 |
| NBSAP Operating A/c | | 98,926 | 188,020 |
| UNFCCC Operating Account | | 253,272 | 168,033 |
| Halon Management Operating Account | | 420 | - |
| Fixed Deposits | | 200,000 | 202,771 |
| | | \$ 3,870,902 | \$ 3,266,572 |
| Other | | | |
| VAT Receivable | | 422,808 | 160,590 |
| Prepayments | | 28,792 | 21,351 |
| Other Assets | | - | 4,626 |
| Other Receivables | 7 | 666,494 | 433,258 |
| | | \$ 4,988,996 | \$ 3,886,397 |



ENVIRONMENTAL MANAGEMENT AUTHORITY
ENVIRONMENTAL TRUST FUND
BALANCE SHEET
 AS AT 31 DECEMBER 1999
 continued

| | Note | As at 31/12/99 | As at 31/12/98 |
|-----------------------------|------|----------------------|---------------------|
| CURRENT LIABILITIES: | | | |
| Accounts Payable | | 369,330 | 200,601 |
| Payroll Accruals | | 77,995 | 61,945 |
| Accruals | | 237,254 | 787,503 |
| | | <u>\$ 684,579</u> | <u>\$ 1,050,049</u> |
| NET CURRENT ASSETS | | 4,304,417 | 2,836,348 |
| NET TOTAL ASSETS | | <u>\$ 10,720,992</u> | <u>\$ 4,841,309</u> |
| FUNDED BY | | | |
| | 4 | | |
| UNDP Fund | | 735,222 | 771,122 |
| GORTT Fund | | 7,936,404 | 1,859,175 |
| World Bank Fund | | 1,760,344 | 2,019,595 |
| Other Fund | | 289,022 | 191,417 |
| TOTAL FUNDING | | <u>\$ 10,720,992</u> | <u>\$ 4,841,309</u> |





TRUSTEE
TRUSTEE

The notes set out on pages 75 to 78 form an integral part of these financial statements.



ENVIRONMENTAL MANAGEMENT AUTHORITY
ENVIRONMENTAL TRUST FUND
CASH FLOW STATEMENT
FOR THE YEAR ENDED 31ST DECEMBER 1999

| | Year ended 31/12/99 | Year ended 31/12/98 |
|--|------------------------|------------------------|
| | \$ | \$ |
| <u>Cash flows from Operating Activities</u> | | |
| Adjustments for non cash items: | | |
| Depreciation | 518,404 | 382,642 |
| Loss on disposal of Fixed Assets | 2,388 | 589 |
| Changes in Working Capital | | |
| (Increase)/Decrease in receivables | (498,269) | 814,970 |
| Increase/(Decrease) in accounts payable and accruals | (365,470) | (444,394) |
| Cash used in Operating Activities | (342,947) | 753,807 |
| <u>Cash flows from Investing Activities</u> | | |
| Purchase of Fixed Assets | (4,935,383) | (981,837) |
| Proceeds from disposal of Fixed Assets | 2,977 | 1,542 |
| Net cash used in Investing and Operating Activities | (5,275,353) | (226,488) |
| <u>Cash flows from Financing activities</u> | | |
| Increase/(Decrease) in UNDP Fund | (35,900) | 286,749 |
| Increase/(Decrease) in GORTT Fund | 6,077,229 | 153,717 |
| Increase/(Decrease) in IBRD Funds | (259,251) | 1,047,598 |
| Increase/(Decrease) in Other Funds | 97,605 | 131,986 |
| Net cash flows generated from Financing Activities | 5,879,683 | 1,620,050 |
| Net increase in Cash and Cash Equivalents | 604,330 | 1,393,562 |
| Cash and Cash Equivalents at start of year | 3,266,572 | 1,873,010 |
| Cash and Cash Equivalents at end of year | 3,870,902 | 3,266,572 |



ENVIRONMENTAL MANAGEMENT AUTHORITY
ENVIRONMENTAL TRUST FUND
NOTES TO THE FINANCIAL STATEMENTS
DECEMBER 31, 1999

1) INCORPORATION AND ACTIVITIES

The Environmental Management Authority is a Statutory Authority established when Parliament assented to the Environmental Management Act on March 7, 1995. The Authority was established to develop and implement institutional arrangements for the regulation and management of the environment in Trinidad & Tobago. The Environmental Trust Fund was established by the Act to fund the operations of the Authority and is administered by five members of the Board of Directors, designated by the President to act as Trustees.

During the twelve month period ended December 31, 1999, the Authority undertook to acquire a permanent home. To this end, property was purchased and an extension of the World Bank Loan, which was to have ended on December 31, 1999 was gained for an additional year to partially fund the construction of the building as well as expenses related to project activities.

Despite the change in the Government fiscal year end to 30 September, the Authority's year end will remain unchanged until the Environmental Management Act is revised to that effect.

2) SIGNIFICANT ACCOUNTING POLICIES

Basis of Preparation

The financial statements are prepared in Trinidad & Tobago dollars under the historical cost convention. As of the financial year ended 31 December 1999, the Financial Statements were prepared in accordance with fund accounting principles.

Foreign Currency Translation

Transactions denominated in foreign currencies are recorded at the rates of exchange ruling at the transaction date. Assets and liabilities denominated in foreign currencies are expressed in Trinidad & Tobago dollars at rates of exchange ruling at the balance sheet date.

Gains or losses arising are dealt with in the results of current year operations in accordance with International Accounting Standard No. 21 as applicable from January 1, 1995.

Fixed Assets

All assets are stated at cost. Depreciation is computed on a reducing balance basis at rates expected to write off fixed assets over their estimated useful lives. In 1997, rates of depreciation and the basis (previously straight line) were changed as it was felt that the revisions would provide a more reasonable estimate of the useful lives of the assets.



| Current rates of Depreciation | 1999 | 1998 |
|-------------------------------|------|------|
| Furniture & Fittings | 10% | 10% |
| Office Equipment | 20% | 20% |
| Motor Vehicle | 25% | 25% |
| Computer Equipment | 25% | 25% |
| Library/Information | 10% | 10% |

Taxation

The Authority is exempt from taxation under the Environmental Management Act of 1995, part VII (76)

3) FIXED ASSETS

| | ----As at 31 December 1999----- | | | As at |
|----------------------|---------------------------------|------------------|------------------|------------------|
| | Cost | Dep'n | WDV | 31/12/98 WDV |
| Furniture & Fittings | 652,147 | 247,469 | 404,678 | 382,130 |
| Office Equipment | 988,628 | 235,797 | 752,831 | 390,243 |
| Motor Vehicle | 1,100,354 | 301,521 | 798,833 | 309,665 |
| Computer Equipment | 1,575,322 | 609,968 | 965,354 | 634,001 |
| Library/Information | 312,401 | 47,390 | 265,011 | 288,922 |
| Land | 3,229,868 | - | 3,229,868 | - |
| | 7,858,720 | 1,442,145 | 6,416,575 | 2,004,961 |

The Fixed Assets disclosed above are under the administration and control of the Authority.

iii) Grant funds of US\$ 950,000 from the UNDP under the Capacity 21 and IPF Projects; US\$66,000 to fund the Ozone Depleting Substances (ODS) Unit; US\$127,000 under the National Biodiversity Project and US\$218,870 in respect of the Framework on Climate Change (UNFCCC) Project.

4 FUNDING

4a) Sources of Funds

- i) Proceeds of a loan of US\$ 6.25 million from the IBRD to the Government of Trinidad and Tobago (GORTT)
- ii) Counterpart funding of US\$ 3.3 million from GORTT.



Funds received during 1999 are as follows:

| | | 12 months to 31/12/99 | 12 months to 31/12/98 |
|----------------------|------|--------------------------|--------------------------|
| Foreign | | | |
| IBRD | TT\$ | 4,218,542 | 3,813,496 |
| UNDP | TT\$ | 865,810 | 906,425 |
| Other | TT\$ | 124,982 | 159,444 |
| Other Funding | | | |
| GORTT | TT\$ | 9,988,000 | 3,955,000 |

No funding was received this year under the Capacity 21 and IPF Projects. UNDP income related to the ODS (TT\$91,424), NBSAP (TT\$270,047) and UNFCCC (TT\$504,339) Projects. These funds were paid directly to and administered by the EMA.

GORTT Funding includes \$2,880,000 which was released to the EMA for the purpose of acquiring the site for its proposed new office.

Other income includes income of TT\$9,630 from the sale of EM Acts and Annual Reports which were sold where possible to recover costs.

4b) Statement of Movement in Funds

| | UNDP | GORTT | IBRD | Other | 31/12/99 Total | 31/12/98 Total |
|-----------------------------|-----------|-------------|-------------|---------|-------------------|-------------------|
| Income: | | | | | | |
| Funds Received | 865,810 | 9,988,000 | 4,218,542 | 124,982 | 15,197,334 | 8,834,365 |
| Interest Income | | 181,466 | | | 181,466 | 81,177 |
| Funding Received | 865,810 | 10,169,466 | 4,218,542 | 124,982 | 15,378,800 | 8,915,542 |
| Expenditure | 901,710 | 4,121,562 | 4,643,966 | 27,377 | 9,694,615 | 7,295,492 |
| Equity Adjustment | - | 29,325 | 166,173 | - | 195,498 | |
| Movement during period | (35,900) | 6,077,229 | (259,251) | 97,605 | 5,879,683 | (251,252) |
| Balance at start of period | 771,122 | 1,859,175 | 2,019,595 | 191,417 | 4,841,309 | 3,472,511 |
| Balance at end of period | 735,222 | 7,936,404 | 1,760,344 | 289,022 | 10,720,992 | 3,221,259 |
| Assets acquired to 31/12/99 | (767,790) | (3,775,528) | (3,315,404) | - | (7,858,722) | (2,932,283) |
| Accum. Dep'n to 31/12/99 | 477,989 | 144,080 | 820,076 | - | 1,442,145 | 927,323 |
| Cash balance at 31/12/99 | 445,421 | 4,304,956 | (734,984) | 289,022 | 4,304,415 | 1,216,299 |



5) EQUITY ADJUSTMENT

An outstanding balance of \$235,195 on a contract with EMPAL was accrued in the 1997 Financial Statements. During 1999 an agreed final payment of \$39,698 was made to the contractor and the balance of the contract written off against the equity accounts.

6) ACCOUNTING FOR FIXED ASSETS

In accordance with established accounting practice, the Authority credits all funds received for the purchase of fixed assets to the income and expenditure account in the period in which received. The assets, when purchased, are capitalised and shown in the Balance Sheet. Depreciation is charged to the Income and Expenditure Account on a systematic and rational basis.

7) OTHER RECEIVABLES

Other Receivables of \$666,494 includes an amount due from the IBRD of \$628,231, this being a request for replenishment made in 1999 but the funds were not received until 2000.

8) OTHER FINANCIAL ASSISTANCE OR SUPPORT

No amounts as described under sections 78(2) and 79(3) of the Act were received or utilized by the Authority otherwise than through the Fund.

9) POST BALANCE SHEET COMMITMENTS

The Authority is currently overseeing several projects for which there are outstanding contract balances at year end.

Of particular significance is the construction of EMA's proposed new office which is scheduled to begin early in the year 2000. Payments are to be made in response to the submission of deliverables specified in the relevant service contracts.



For Further Information, Please Contact
ENVIRONMENTAL MANAGEMENT AUTHORITY
2nd floor, The Mutual Centre, 16 Queen's Park West,
P.O. Bag 150, Newtown, P.O.S., Trinidad and Tobago
Telephone: (868) 628-8042/44/45
Facsimile: (868) 628-9122
E-mail Address: ema@ema.co.tt