



UNEP/UNDP/DUTCH
Joint Project on Environmental Law
and Institutions in Africa



THE EAST AFRICAN SUB-REGIONAL PROJECT

DEVELOPMENT AND HARMONISATION OF
ENVIRONMENTAL LAWS

VOLUME 4

REPORT ON THE
DEVELOPMENT AND HARMONISATION OF LAWS
ON HAZARDOUS AND NON-HAZARDOUS WASTES

DECEMBER 1999





**UNEP/UNDP/DUTCH Joint Project on
Environmental Law and Institutions in Africa**



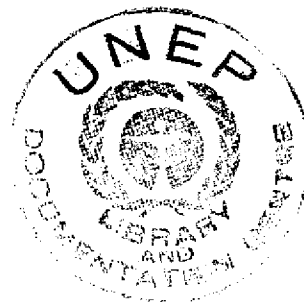
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PREFACE

Environmental law is an essential tool for the governance and management of the environment and natural resources. It is the foundation of national and regional policies and actions to ensure that the use of natural resources is done equitably and sustainably.

In the East African sub-regional countries of Kenya, Tanzania and Uganda have, since 1995, been developing and harmonizing various environmental laws in selected sectors within their region. The process of developing and harmonizing environmental laws is intended to lead to the enactment or amendment of the internal legislative, regulatory and administrative framework of each country. Such change has been harmonized at a sub-regional level where the three countries have agreed on legal principles, definitions and substantive legal provisions to govern a segment or matter of the environment or natural resource sector.

The volumes produced by the UNEP/UNDP Joint Project on Environmental Law and Institutions in Africa, East African Sub-regional Project, are intended to build capacity in Kenya, Tanzania and Uganda in environmental law. The East African Sub-Regional Project is a component of the UNEP/UNDP Joint Project on Environmental Law and Institutions in Africa funded by the Dutch Government. The underlying presupposition is that the three countries share similar historical and legal heritage and that the physical and historical situation in East Africa offered an opportunity to initiate and encourage dealing with environmental issues according to problem-sheds. The historical facts are that (a) there is a history of regional cooperation among the countries from colonial times; and (b) there is shared legal tradition which derives from common law origins. These two historical facts were relied upon to support development and harmonization of legislation on selected themes in the commonly shared environment.

The UNEP/UNDP Joint Project on Environmental Law and Institutions in Africa is funded by The Royal Dutch Government, as a pilot project, to work with selected countries towards development of environmental law and institutions in Africa. The purpose is to enhance the capacity of the countries to develop and enforce laws relating to environment and natural resources. Phase I of the Project which commenced at the end of 1994, and is scheduled to end in December, 1999, involves seven countries, namely: Burkina Faso, Malawi, Mozambique, Sao Tome and Principe, Kenya, Tanzania and Uganda. While activities in the first four countries focus on entirely national activities, the work in the three

East African countries are focused on issues which are essentially of sub-regional character. The management of the Joint Project is based at UNEP within its environmental law activities and is directed by a Task Manager, who works under guidance of a Steering Committee. Members of the Steering Committee are UNEP, UNDP, FAO, The World Bank, IUCN Environmental Law Centre and The Dutch Government.

THE PROCESS FOR DEVELOPMENT AND HARMONIZATION OF THE LAWS

Representatives of the three governments met in February 1995 to work out general principles and modalities for their cooperation.

A second meeting was held in May, 1995, to discuss the general terrain of topics amenable to development and harmonization of laws. The final decision on six priority topics was taken at their third meeting in February 1996.

The six topics which were selected for the Project's activities are:

- (i) Development and harmonization of EIA Regulations;
- (ii) Development and harmonization of laws relating to transboundary movement of hazardous wastes;
- (iii) Development and harmonization of the methodologies for the development of environmental standards;
- (iv) Development and harmonization of forestry laws;
- (v) Development and harmonization of wildlife laws; and
- (vi) Recommendation for legal and institutional framework for the protection of the environment of Lake Victoria.
- (vii) The seventh topic, development and harmonization of laws relating to toxic and hazardous chemicals was taken up in 1998 when the work on the first six was virtually complete. The three countries considered this as one of the critical issues in environmental protection in the sub-region.

For each of the topics, the governments jointly worked out generic terms of reference. However, each national team subsequently worked out country-specific terms of reference to reflect national legal and institutional situations, existing initiatives on the same task as well as existing priorities. The respective national consultants were also selected by the National Coordinating Committees (NCC), working in consultation with an officer at the UNDP country office.

The national consultants have now completed their work. In each case, the reports have enjoyed reviews by the national

panels constituted under the aegis of the respective NCCs. Draft reports, as they evolved, were circulated to the consultants in the three countries. In many cases, the consultants were able to take the reports of their counterparts into account in finalizing their reports. Therefore, very high degree of harmonization of reports had been achieved before the consultants could meet together.

At the end, a workshop to finally harmonize the reports was held in 1998 in Kisumu, Kenya and was attended by the consultants for each topic for substantive discussions of their reports and to agree on recommendations to their governments. The objectives of the workshop were to; (a) ensure that recommendations for policies and law for the respective topics as far as possible, are in harmony; (b) promote the development of legal and institutional machineries which are comparable in all the three East African countries in the absence of an over-arching sub-regional framework; (c) harmonize the normative prescriptions and institutional machineries and therefore create an opportunity for harmonized enforcement procedures; and (d) create an opportunity for dealing with the respective environmental problems according to the problem-sheds, which are essentially sub-regional. The workshop was facilitated by Professor David Freestone, Legal Advisor, International and Environmental Law Unit of The World Bank and Mr. Jonathan Lindsay, a Legal Officer in Development Law Service at the United Nations Food and Agricultural Organization.

Thereafter, a meeting for Permanent Secretaries responsible for environment from the three countries was held and attended by the national coordinators. The Permanent Secretaries as accounting officers and policy leaders in their ministries were fully briefed on the aspirations and activities of the project; how the project had developed and the process of harmonization. They assumed ownership of the outcome of the reports. They also resolved that the stage was well-set for development of a sub-regional binding instrument on environmental management. Their debate recognized that a legally binding instrument in the form of a protocol within the framework of the Treaty of East African Cooperation would take time to evolve and could involve a broad cross-section of ministries. For these reasons, they resolved that as an interim measure, they would sign a memorandum of understanding.

Subsequently, a Memorandum of Understanding on Cooperation in Environmental Management was entered into

by the three governments on 22 October 1998 covering all the themes of the project and also covering other aspects which had not been envisaged in the project. One of the main features of the Memorandum of Understanding is a commitment to develop a protocol on environment management under the auspices of the proposed East African Treaty.

The governments of Kenya, Tanzania and Uganda are expected to take up the recommendations and the Memorandum of Understanding and implement the recommendations. In fact, the Permanent Secretaries specifically requested UNEP and its cooperating agencies in the Joint Project to assist in the development of the Memorandum of Understanding.

Meanwhile, the Joint Project has undertaken to produce the reports on the seven topics as stand-alone publications and as bases for national legislation. In addition, a report on the review of national projects related to environmental law and institutions has been prepared as part of the publications. The national reports were prepared by the National Coordinators in the three countries. This report is intended to assist in avoiding duplication of efforts and create a coherent synergy in reviewing and developing environmental laws.

This Volume comprises three reports prepared by the national consultants, harmonized at the joint workshop and finally accepted by the Permanent Secretaries. Its theme is the development and harmonisation of laws related to the management of hazardous and non-hazardous wastes in the East African sub-region. The report identifies priority areas requiring harmonisation of management of hazardous and non-hazardous wastes and proposes that regulations be made under framework legislation. Uganda has already made the regulations into law.

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OVERVIEW

Throughout the world, wastes are invariably produced where economic activities are carried out by human beings and different materials are used. Such wastes can be hazardous or non-hazardous and when not properly handled, they can threaten the atmosphere, the waters, soils and the living organisms. While waste disposal has been practiced in various forms for centuries, environmentally sound waste management is a much more recent activity. With the adoption of the Basel Convention on the Transboundary Movement of Hazardous Wastes and the corresponding Bamako Convention, a new era on sound management of wastes began and a new legal regime capable for national implementation is established.

In East Africa, the rapid growth in population and industry has led to an increase in the use of materials capable of producing hazardous wastes especially in the mining, industry, agriculture, education, trade and health sectors. This increase has in turn led to the degradation of the environment and threats to human health and well being. Wastes which may be non-hazardous, but still dangerous to the environment and human health, are being increasingly generated in homesteads and other locations. The urban centres in all the three countries are increasingly generating wastes whose management is difficult to control.

In order to manage the wastes in an environmentally sound manner, there is need to provide clear guidance in the control and transboundary movement of such wastes. It is essential that they be subjected to the Bamako and Basel Conventions which require the establishment of a firm legal regime upon which to be able to regulate any operations concerned with wastes. The absence of clear and adequate polices and legislation for the importation, transportation, storage and disposal of hazardous and non-hazardous wastes in the three countries makes such a situation subject to abuse by unscrupulous people who trade, generate or dispose wastes. To contain the situation, a harmonized approach to dealing with the situation in East Africa has been proposed in this volume. This report therefore presents a proposal for a harmonized approach in the management of hazardous and non-hazardous wastes in east Africa. The report contains three country reports of Kenya, Tanzania and Uganda.

KENYA COUNTRY REPORT

The Kenya Country Report approaches the subject of management of hazardous and non-hazardous wastes from the point of view of various policies, initiatives and the

legislation available. A historical background on the development of polices related to wastes management is presented. In 1994, Kenya inaugurated a National Environment Action Plan (NEAP) where a report on pollution and waste management was included. The report identified that increased population was the principal cause of the high generation of wastes. The NEAP culminated to the preparation of a bill on the coordination and management of the environment, later to be enacted as a framework environmental law.

The Kenyan report like those of Uganda and Tanzania, categorizes hazardous wastes and identifies the sources of such wastes. It also identifies sources of non-hazardous wastes mainly from gaseous emissions and liquid discharges. The report identifies that currently, there is no comprehensive policy or legislation on the management of hazardous and non-hazardous wastes. The report therefore carries out a review of the legislation related to waste management in Kenya. Other policy instruments such as the Recovery and Sustainable Development to the year 2000 and the East African Cooperation Meeting in 1997 are reviewed. The Draft Environment Management and Co-ordination Bill is also reviewed on aspects related to waste management.

Like the Ugandan and Tanzanian reports, draft regulations are presented. The draft regulations, harmonized at the sub-regional level, contain a classification and criteria for measurement. Transboundary movement of hazardous wastes production and transportation are also provided for. The draft regulations could, therefore, be promulgated into law as subsidiary legislation once the framework environmental law is enacted.

TANZANIA COUNTRY REPORT

The Tanzania Country Report proceeds on the analysis of waste management from the point of view of mainly from the urban centers and the problems associated with poor urban planning. There is a clear corrolation between issues of land use planning, rural-urban migration and waste management. An analysis of the major urban centers and wastes generated are provided, where it is shown that final disposal is by a crude dumping method. Urban waste is mainly from households, commercial activities, institutions, street, hospitals and industrial establishments.

The report reviews, in an extensive manner, the laws governing waste management. The review of the legislation includes the

implementing institutions both at the local level and in the urban areas. The analysis in the legal review shows a number of weaknesses which include, *inter alia*, sector specificity, outdated scientific base, and having weak enforcement provisions.

The report presents proposals on capacity building, basing its arguments on Agenda 21, especially on matters of increasing capacity at the local levels. The report contains a draft regulations on non-hazardous wastes management, guidelines for management of solid and liquid wastes through establishment of waste management plans. Like the Ugandan and Kenyan reports, a classification of wastes considered hazardous, methods of testing and analyzing wastes, are presented. Tanzania may either adopt the regulations as a principal statute or as implementing regulations under an existing statute.

UGANDA COUNTRY REPORT

The report recognizes the work of the National Environment Action Plan (NEAP) process, conducted in 1991 - 1994 where a report on Mining, Industry Hazardous Materials and Toxic Chemicals was made. The report recognizes that the previous work carried out on the management of wastes is still relevant as not much has changed in Uganda. Therefore, the main issues are that waste management in Uganda remain a problem and it is not well coordinated. In Uganda, the main sources of waste generation are from municipal, industry, domestic sources, hospitals and clinics related activities.

The report re-states the position of the NEAP, a review of the legislation showed that there was comprehensive approach to waste management. A brief review of the main legislation is made in the report. Since the enactment of the National Statute and the Water Statute, in 1995, the legal position on the management of wastes in Uganda has greatly changed, as far as legislation is concerned. The two laws make it possible to coordinate the management of solid and liquid wastes in comprehensive manner.

Given the above position, the report directly makes a recommendation to the Government to promulgate implementing regulations under the National Environment Statute. The wastes regulation have a heavy international presence for transboundary movement of hazardous wastes. The regulations also make provisions for internal movements, storage, pre-treatment and disposal of wastes. Like the Kenyan and Tanzania reports, a harmonized definition and classification of wastes, their analysis and testing is provided. The Ugandan regulations developed in the present volume have been reviewed by the Basel Convention Secretariat and found satisfactory. They have now been enacted into law.

The preparation of these reports have been done by national consultants from the respective countries. The Kenyan report was prepared by Shem Wandiga and Caroli Omondi; the Tanzanian report was prepared by C.A. Tenga; while Uganda report was prepared by John Ntambirweki. Their contribution to this important work is gratefully acknowledged.

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KENYA COUNTRY REPORT

EXECUTIVE SUMMARY

This report outlines the following:

- (i) review of existing national policy and institutions for the management of hazardous and non-hazardous wastes in Kenya;
- (ii) preparation of draft regulations for the management of hazardous and non-hazardous wastes in Kenya;
- (iii) preparation of draft prescribed application forms, licences and permits for the regulation of hazardous and non-hazardous wastes in Kenya;
- (iv) formal establishment and statutory recognition of a classification methodology and criteria for distinguishing hazardous wastes from non-hazardous wastes in Kenya; and
- (v) formal statutory establishment of a national mechanism for the regulation of transboundary movement of hazardous and non-hazardous wastes.

The present report is divided into four chapters as follows:

Chapter One deals with the review of the existing policy framework for the management of hazardous and non-hazardous wastes in Kenya. The Kenya National Environment Action Plan (NEAP) Report of June, 1994, the Draft Sessional Paper on Environment and Development of 1996, Sessional Paper No.1 of 1994 on Recovery and Sustainable Development to the Year 2010, and the Report of the East African Co-operation Meeting of National Environment Institutions of November, 1997, have been reviewed in the course of policy analysis. These documents provide a national as well as a Sub-regional policy outlook for the management of hazardous and non-hazardous wastes in Kenya.

The outcome of the policy review is the conclusion that in spite of various short-comings and gaps that do exist within the current policy framework, there are sufficient policy guidelines and directions for the management of hazardous and non-hazardous wastes in Kenya. The various policy initiatives capture all the essential elements of hazardous and non-hazardous wastes management. Such elements include the categorisation of wastes on the basis of the hazards they present, their sources, existing and proposed institutional arrangements for wastes management, policy deficiencies and recommended remedial action, the short-comings of existing statutes relating to wastes management, proposals for change, among others.

A review of the selected statutes and institutions for the management of wastes in Kenya has also been conducted under Chapter One.

The conclusions reached after the policy, legislative and institutional review are as follows:

- (i) that the existing policy framework constitutes an adequate basis for the enactment of statutory provisions and regulations for the management of hazardous and non-hazardous wastes in Kenya;
- (ii) that there are policy gaps, legislative and institutional deficiencies that must be addressed in order to strengthen the national capacity to manage hazardous and non-hazardous wastes; and,
- (iii) that effective management of hazardous and non-hazardous wastes in Kenya will invariably require a concerted Sub-regional effort involving Uganda and Tanzania.

Chapter Two contains the draft Hazardous and Non-hazardous Wastes Management Regulations, 1999, to be issued under the proposed Environment Management and Co-ordination Bill. The Regulations have seventeen clauses covering:

- Citation and commencement;
- Interpretation of various terms;
- Classification of wastes;
- Separation of wastes;
- Handling of domestic wastes;
- Duty to minimize wastes;
- Issuance of Compliance Orders;
- Contents of Compliance Orders;
- Packaging of wastes;
- Prohibition of sale of wastes containers for other uses;
- Labelling of hazardous wastes;
- Licence to transport wastes and conditions therefor;
- Licence to store wastes, or operate a waste disposal site or plant and conditions therefor;
- Authority for the disposal or treatment of hazardous wastes;
- Licence to import or export non-hazardous wastes and conditions therefor;
- Licence to export hazardous wastes and conditions therefor;
- Reporting requirements;
- Duty to keep records; and,
- Prescribed penalties.

Chapter Three contains the prescribed application forms for the various licences required by virtue of the Regulations. Draft proforma licences and permits are also contained in this Chapter. The application forms, proforma licences and permits require detailed information, impose conditions and provide for the regulation of licenced activities, as the case may be.

Chapter Four contains three schedules for purposes of Regulation 3 as follows:

First Schedule: which provides for the wastes that are considered to be hazardous;

Second Schedule: which provides a list of hazardous characteristics on the basis of the United Nations Characteristics Class; and,

Third Schedule: which outlines the guidelines for the determination of hazardous characteristics.

In conclusion, the present Report: (i) provides a review of existing policy, legislative and institutional framework for the management of hazardous and non-hazardous wastes in Kenya; (ii) appreciates the policy, legislative and institutional short-comings of the existing national framework together with recommended remedial action for wastes management in Kenya (iii) contains the draft Hazardous and Non-hazardous Wastes Management Regulations, 1999; (iv) contains prescribed application forms, proforma licences and permits; and (v) recommends a statutory criteria and methodology for classification of wastes in Kenya.

CHAPTER ONE

REVIEW OF THE EXISTING POLICY FRAMEWORK FOR THE MANAGEMENT OF HAZARDOUS AND NON-HAZARDOUS WASTES IN KENYA

1.1 INTRODUCTION

Various policy initiatives exist in Kenya dealing with the management of hazardous and non-hazardous wastes. These policy initiatives are both national and Sub-regional in character and are contained in several official documents. The objectives for reviewing the existing policy framework for the management of hazardous and non-hazardous wastes in Kenya may be summarized as follows:

- Highlight the scope of existing policies;
- Determine whether or not the existing policies constitute adequate basis for the enactment of statutory provisions and regulations for the management of hazardous and non-hazardous wastes;
- Determine the Sub-regional character and significance of the existing policies on hazardous and non-hazardous wastes management;
- Set the stage for determining the matters to be provided for by the provisions of proposed regulations on the management of hazardous and non-hazardous wastes; and,
- Identify any gaps that may exist within the current existing policy framework so as to provide an appropriate basis for recommending policy reforms.

1.2 POLICY FRAMEWORK

Kenya's policy on the management of hazardous and non-hazardous wastes may be found in the official documents mentioned below.

1.2.1 THE KENYA NATIONAL ENVIRONMENT ACTION PLAN (NEAP) REPORT (JUNE 1994)

Chapter Seven (7) of the NEAP Report is entitled "Environmental Pollution and Waste Management". This chapter outlines a broad policy framework for the coordination

of environmental activities related to pollution control and waste management. The Report identifies increased population as the principal cause of high wastes generation and poor management thereof. It is observed that there is increased demand for expansion of urban, agricultural and industrial activities due to high population growth. This has led to vast amounts of wastes being generated and dumped untreated into the environment, due to poorly operated treatment works. The continued indiscriminate disposal of effluents is likely to have serious pollution effects on the environment.

Hazardous Wastes

The NEAP Report defines hazardous wastes as "wastes that have hazardous properties which include being radioactive, toxic, explosive, corrosive, flammable, infectious or (having) other characteristics causing or likely to cause danger to human health or the environment, whether alone or together with other wastes" (p.107). The Report categorises hazardous wastes into three groups as follows (p.107):

- | | |
|---------------|--|
| Category I: | Include wastes that are known to contain significant concentrations of highly toxic, mobile, persistent or bio-accumulate constituents; |
| Category II: | Include wastes from common industrial processes like metal hydroxide sludge, organic and inorganic solvents, toxic gases such as chlorine, sulphur and their compound, arsenic, asbestos and nitrogen compounds. |
| Category III: | Include large volumes of low hazard wastes which easily decompose, and other wastes such as aluminium metal, glass, wood, paper, plastics and ceramics. |

The sources of hazardous wastes in Kenya are:

- clinical wastes from medical activities within hospitals, clinics and dispensaries;

- pharmaceutical wastes (expired drugs, medicines and other pharmaceutical products, and wastes from their production process);
 - wastes from the production, formulations and use of biocides, cyanides and organic solvents, resins, latex, plasticisers, glues, adhesive and photographic chemicals;
 - energy related wastes (hydrocarbons-related activities such as refining, distillation and pyrolytic treatment of petroleum products, electric transformer PCBs, among others);
 - mining wastes (quarrying and stone dressing processes, gold mining, and other by-products); and,
 - agricultural wastes (coffee processing by-products, pesticides, fertilizers, etc.).
- training be conducted to create a cadre of personnel capable of handling the storage, transportation and disposal of hazardous wastes;
 - inventories on the sources, types, volumes and composition of hazardous wastes be created;
 - private sector involvement in handling hazardous wastes be encouraged and facilitated; and,
 - international efforts (through co-operation under relevant international legal instruments) be strengthened for the management of hazardous wastes.

The NEAP Report draws a dichotomy between liquid wastes, solid wastes and gaseous wastes whether they are hazardous or non-hazardous in nature.

Liquid wastes are classified in the NEAP Report (PP 97-103) according to their sources and characteristics as follows:

- Industrial effluents: which are discharged from industrial establishment and may either be biodegradable or toxic depending on the nature of the industrial activity and raw materials used.
- Municipal (urban) effluents: which originate from domestic activities, public and institutional places and contain a variety of organic and inorganic substances from domestic and industrial sources.
- Agricultural effluents: which originate from agricultural activities, including farm inputs.

Hazardous wastes may take the form of liquids, dusts, sludges, vapours and solids. These wastes are known to be discharged or dumped into rivers, lakes, oceans and land within the jurisdiction of Kenya. Depending on the waste materials involved, their concentration, route of entry and the length of human exposure to them, the health disorders associated with them include cancer, birth defects, sterility in humans, genetic mutations, immuno-deficiency, organ failure and poisoning. The environmental effects of hazardous wastes in Kenya include contamination of air, water sources, and soil degradation.

The NEAP Report (p.109) identifies five factors that contribute to environmental contamination by hazardous wastes:

- insufficient policy and legislation;
- lack of inventories of types, compositions and volumes of hazardous wastes;
- lack of adequate trained man-power to enhance hazardous wastes management;
- lack of facilities which can be used in the management of hazardous wastes; and,
- poor public awareness and information on hazardous wastes.

Solid wastes include trade wastes, agricultural waste, institutional wastes, domestic wastes, construction debris and waste from mining operations. The collection, transportation and disposal of solid wastes within Kenya have been deteriorating over the years. The NEAP Report notes that, the percentage of generated solid waste collected and the amount of equipment committed to solid waste management has been declining significantly over the years (pp.100 B 105).

The NEAP Report (p.109) recommends, inter alia, that:

- a comprehensive policy, supported by appropriate legislation governing the management of hazardous wastes be put in place;
- hazardous wastes disposal facilities and/or sites be created;

Human activities have greatly increased the release of gases into the atmosphere. Gaseous emissions are primarily generated by the industrial and transportation sectors, through the burning of fossil fuels. Certain industrial processes produce noxious gases which when combined with emissions from burning fossil fuel cause heavy pollution of the atmosphere (The NEAP Report at pp. 93-97).

Non-Hazardous Wastes

The NEAP Report outlines various policy options to be pursued by the Government in the management of non-hazardous wastes. It further recognizes that those policy options should be translated into legislative actions. The recommendations made by the Report may be summarized as follows:

For Gaseous Emissions:

- There is need to formulate a comprehensive and well articulated policy on the control and management of gaseous emissions.
- A comprehensive legislation and regulations on the control and management of gaseous emissions should be enacted

For Liquid Wastes (industrial wastes, urban (municipal) wastes and agricultural wastes:

- A national policy based on the principle that no one has uncontrolled right to pollute the natural waters, should be formulated.
- There is need to prepare strategies to control pollution by effluents, for example, requiring that all polluting industries have liquid waste treatment facilities, and there should be incentives to encourage waste treatment and recycling.
- Review and/or issue regulations under Ministries in charge of local authorities, health and water to improve their effectiveness in controlling and alleviating water pollution.
- Establish water standards regulations.
- Put in place deterrent penalties.
- Require that an environmental impact assessment be carried out before any industrial or other project is approved for implementation.
- Shift the focus from disposal options (that is, end of the pipe solutions) to those that conserve resources, such as waste reduction, avoidance and recycling.
- Adopt appropriate measures to enhance human resource development, research and awareness on waste management techniques.

(c) For Solid Wastes (trade wastes, agricultural wastes, institutional wastes, domestic wastes, construction debris, and waste from mining operations)

- There is need to conduct studies to establish rates of generation and characteristics of solid wastes in Kenya to help plan the size of storage sites, frequency of collection, type of collection vehicles, types of disposal sites and the potential for recycling.
- Adequate storage facilities, collection frequencies, disposal sites and acceptable procedures for their management should be provided.
- Privatisation of the collection, transportation and disposal of solid wastes should be pursued.
- For all new solid waste disposal sites a mandatory environmental impact assessment is required.
- Review sections of the Public Health Act (Cap 242) and Local Government Act (Cap. 265) which relate to the management and disposal of solid wastes and develop necessary amendments to the said laws or issue regulations to enhance solid waste management.

1.2.2 THE GOVERNMENT'S DRAFT PAPER ON ENVIRONMENT AND DEVELOPMENT (1996)

A Policy Sessional Paper on Environment and Development was prepared in 1996 by the then Ministry of Environment and Natural Resources. This Paper was intended to translate the NEAP Report into official policy by obtaining Parliamentary approval of the same. The Paper reflects the recommendations of the NEAP Report in a more synthesized manner by capturing the key themes. Its contents are a reflection of the NEAP Report. The Government's Draft Sessional Paper on Environment and Development of 1996 (at pp73-77 all inclusive) reflects the issues addressed by the NEAP Report in respect of hazardous and non-hazardous wastes management as outlined below.

Institutional and Legal Arrangements

Currently there is no comprehensive policy and legislation on hazardous and non-hazardous wastes management. Sectoral statutes implemented by various ministries deal with the management of hazardous and non-hazardous wastes. Their implementation is, however not effectively harmonised, and they do not provide efficient legislative and institutional mechanisms for the management of these wastes. The statutes

include the Water Act, the Penal Code, Public Health Act, Local Government Act, Radiation Protection Act, and Factories Act.

The Water Act Chapter 372 of The Laws of Kenya

The Water Act is concerned with water conservation and the control of water apportionment and use in Kenya. The Act establishes an institutional structure designed to implement its stated objectives.

Section 158(I) of the Water Act provides that:

Any person who, by any act or omission, causes any source of water supply, the water from which is used or is likely to be used for human consumption or domestic purposes, or for manufacturing food or drink for human consumption, to become polluted, or to be likely to be polluted, shall be guilty of an offence.

and shall be liable to a fine not exceeding five thousand shillings, or in default of payment, to imprisonment for a term not exceeding three months.

Section 158(I) is limited to pollution affecting sources of water supply and may not apply to situations of water pollution caused by hazardous and non-hazardous wastes where the water body in question is not a source for water supply. For example, it is doubtful that pollution of ground-water resources resulting from dumping of hazardous or non-hazardous wastes would be covered by Section 158(I). Similar doubts would exist in relation to atmospheric water resources. These doubts arise from the definition of "supply of water" imposed by the Act under Section 2. Supply of water under the Act is treated to involve supply of water in bulk and distribution thereof by authorised water suppliers.

It may then be argued that Section 158(I) covers only situations where water supply schemes have been established, and that the provisions of that Section will not apply to ground and surface water sources, and situations where water abstraction is outside established schemes.

The Penal Code, Chapter 63 of The Laws of Kenya

Section 175 of the Penal Code outlines the misdemeanour of common nuisance which may cover situations involving the handling of hazardous and non-hazardous wastes. The Section provides that:

Any person who does an act not authorized by law or omits to discharge a legal duty and thereby causes any common injury, or danger or annoyance, or obstructs or causes inconvenience to the public in the exercise

of common rights, commits the misdemeanour termed a common nuisance and is liable to imprisonment for one year.

Other provisions of the Penal Code that may be used to address situations involving the handling of hazardous and non-hazardous wastes are as follows:

Section 191 which provides that:

Any person who voluntarily corrupts or fouls the water of any public spring or reservoir, so as to render it less fit for the purpose for which it is ordinarily used, is guilty of a misdemeanour.

Section 192 which provides that:

Any person who voluntarily vitiates the atmosphere in any place, so as to make it noxious to the health of persons in general dwelling or carrying on business in the neighbourhood or passing along a public way, is guilty of a misdemeanour.

Section 193 which provides that:

Any person who, for the purposes of trade, makes, offensive or unwholesome smells in such places and circumstances as to annoy any considerable number of persons in the exercise of their common rights commits an offence and is liable to be punished as for a common nuisance.

Section 243(f) which provides that:

Any person who, in a manner so rash or negligent as to endanger human life, or to be likely to cause harm to any other person dispenses, supplies, sells, administers or gives away any medicine or poisonous or dangerous matter is guilty of a misdemeanour.

The Public Health Act, Chapter 242 of The Laws of Kenya

The primary purpose of this Act is to secure and maintain public health. Some of its provisions relevant to the management of hazardous and non-hazardous wastes are as follows:

Section 115 which provides that:

No person shall cause a nuisance or shall suffer to exist on any land or premises owned or occupied by him or of which he is in charge any nuisance or other condition to be injurious or dangerous to health.

Section 116 which provides that:

It shall be the duty of every local authority to take all lawful, necessary and reasonably practicable measures for maintaining its district at all times in clean and sanitary condition, and for preventing the occurrence therein of, or for remedying or causing to be remedied, any nuisance or condition liable to be injurious or dangerous to health, and to take proceedings at law against any person causing or responsible for the continuance of any such nuisance or condition.

Section 117 which provides, *inter alia*, as follows:

It shall be the duty of every health authority to take all lawful, necessary and reasonably practicable measures for preventing or causing to be prevented or remedied all conditions liable to be injurious or dangerous to health arising from the erection of dwellings or premises on unhealthy sites or on sites of insufficient extent, or from the construction condition or manner of use of any factory or trade premises, and to take proceedings against any person causing or responsible for the continuance of any such condition.

Section 118 (1) which provides, *inter alia*, that:

The following shall be deemed to be nuisances liable to be dealt with in the manner provided in this Part :

(e) any noxious matter or waste water, flowing or discharged from any premises wherever situated, into any public street, or into the gutter or side channel of any street or into any nullah or water course, irrigation channel or bed thereof not approved for the reception of such discharge.

(b) any accumulation or deposit of refuse, offal manure or other matter whatsoever which is offensive or which is injurious or dangerous to health;

(o) any factory or trade premises causing or giving rise to smells or effluvia which are offensive or which are injurious or dangerous to health ; and

(s) any act, omission or thing which is, or may be dangerous to life or injurious to health.

Section 126A which provides that:

Every municipal council and every urban and area council may make by-laws as to buildings and sanitation.

The Local Government Act, Chapter 265 of The Laws of Kenya

This Act is primarily concerned with the establishment and functions of authorities for Local Government.

The sections of the Local Government Act that are relevant to the management of hazardous and non-hazardous wastes include:

Section 201 which provides that:

A local authority (municipal, county, town or urban council) may from time to time make by-laws in respect of all such matters as are necessary or desirable for the maintenance of the inhabitants of its area or any part thereof and for the prevention and suppression of nuisances.

Section 143 which provides that :

A local authority may enter into contracts (with third parties) necessary for the discharge of any of its functions (including the management of hazardous and non-hazardous wastes)

Section 148 which provides, *inter alia* that :

A local authority may:

- (a) charge fees for any licence or permit issued in respect of any person or matter, premises or trade, whom or which the local authority is empowered to control or licence (e.g. private persons or companies engaged in the business of wastes management)
- (b) impose fees or charges for any service or facility provided or goods or documents supplied by the local authority.

Section 162 which provides, *inter alia*, that:

Every municipal council, every town or urban council shall have power:

(a) to compel occupiers or, in the case of vacant premises, owners, to keep their premises free from offensive or unwholesome matter

Section 163 (e) which provides that every local authority shall have the power:

To control or prohibit all businesses, factories and workshops which, by reason of smoke, fumes, chemicals, gases, dust, smell, noise, vibration or other cause, may be or become a source of danger, discomfort or annoyance to the neighbourhood, and to prescribe the conditions subject to which such businesses, factories and workshops shall be carried on.

The Radiation Protection Act, Chapter 243 of the Laws of Kenya

The Act is concerned with the protection of the public and persons potentially exposed to ionizing radiation as a result of their occupation, from the dangers arising from the use of devices or material capable of producing ionizing radiation.

The Act regulates the use, possession and transfer of irradiating devices or radioactive materials through licensing requirements (Sections 8,9,14,11,12 and 16.)

The Factories Act, Chapter 514 of the Laws of Kenya

The Act is intended to make provision for the health, safety, and welfare of persons employed in factories and other places.

The provisions of the Act relevant to the management of hazardous and non-hazardous wastes include:

- Section 51 which requires that all practicable measures be taken to protect persons employed in a factory from dust, fumes or impurities originating from any process carried on in the factory; and,
- Section 55, which empowers the Minister to make rules necessary and reasonably practicable to reduce the offensiveness of any process within a factory.

Legislative Deficiencies:

The Statutes outlined above do not provide an adequate legislative and enforcement machinery for the management of hazardous and non-hazardous wastes. Their short-comings are that, the Acts:

- have no efficient deterrent penalties for breaches of their provisions;
- deal with the management of hazardous and non-hazardous wastes as part of the general rubric of a "nuisance." They make no specific treatment of hazardous and non-hazardous wastes;

- do not establish a legislative mechanism by which wastes may be categorised or identified as either hazardous or non-hazardous;
- are concerned with the protection of workers, state and condition of working environment, sanitation and suppression of nuisances; and do not address the specific requirements of hazardous and non-hazardous wastes management. For example, matters such as the packaging, labeling, use and disposal of hazardous and non-hazardous wastes are not addressed;
- do not provide for registration of wastes; and,
- do not have enabling provisions for the enactment of standards for wastes.

Waste Management Institutions

The Institutions involved in the Management of Hazardous and Non-hazardous Wastes in Kenya include:

- Ministry of Health;
- Ministry of Water;
- Ministry of Local Authorities;
- Local Authorities (City, Municipal, County, Town or Urban Councils);
- Ministry of Environmental Conservation;
- Kenya Wildlife Service;
- NGOs.

Environmental Challenges

These include:

- Absence of harmonisation and coordination in the management of solid and liquid wastes.
- Weak enforcement of existing laws and regulations.
- Inadequate discharge standards and methods for measuring the quality and quantity of effluents.
- Inadequate incentives to encourage adoption of efficient waste management technologies.
- Negative public attitude towards waste management.
- Inadequate disposal equipment, sites and infrastructure.

Proposed Policy and Legislative Agenda.

The Government should endeavour to:

- develop a comprehensive waste management policy, guidelines and standards;
- review and harmonise existing laws on wastes management;

- formulate and implement appropriate remedial measures;
- strengthen institutional capacities including research and technologies for waste minimisation;
- review penalties under the law with a view to making them more deterrent;
- encourage re-use and recycling of residues including use of low and non-waste technologies;
- provide incentives including tax policies to encourage adoption of environmentally friendly technologies;
- enhance regional and international cooperation with a view to increasing bilateral information exchange on the control and management of wastes ; and,
- plan and implement a national awareness program on the management of wastes to inculcate appropriate public attitudes and values and capacities necessary for positive environmental action.

1.2.3 THE GOVERNMENT'S SESSIONAL PAPER NO. 1 OF 1994 ON RECOVERY AND SUSTAINABLE DEVELOPMENT TO THE YEAR 2010

This Sessional Paper recommends financial initiatives that should be pursued so as to enhance the capacity of Local Authorities to manage wastes. The Sessional Paper (p.17) recognises that increased urbanisation will create a set of problems such as lack of adequate decent shelter and housing, safe drinking water, waste disposal and physical infrastructure, among others. The Sessional Paper (pp80-81) provides *inter alia* that:

Increasing the level of financing for urban infrastructure presents a challenge that can only be matched by a range of initiatives. Most importantly, steps will be taken to increase the revenues of Local Authorities, which lack the resources required to provide and maintain services and infrastructure. To generate such resources, reforms will be introduced that expand and strengthen the fiscal base of Local Authorities. Among the options to investigate are: updating the schedule of activities, fees and licenses to reflect newer commercial and professional activities transferring responsibility for the operation and maintenance of services and facilities provided by Local Authorities. Local Authorities will also be required to revise the pricing of utilities and services to ensure that they reflect the real cost of operation and maintenance and long term capital stock replacement.

It is envisaged that the financial initiatives proposed in the Sessional Paper will complement the policy options outlined in the NEAP Report for the management of wastes. The policy

and financial reforms would, if implemented, establish a legal and administrative framework within Local Authorities that would improve their ability to manage wastes.

1.2.4 REPORT OF THE EAST AFRICAN CO-OPERATION MEETING OF NATIONAL ENVIRONMENT INSTITUTIONS (REF EAC/SR/30/97)

This Report was prepared by the Secretariat of the Commission for East African Cooperation following the meeting of National Environment Institutions held in Arusha between 3-7 November, 1997. The meeting prepared a Sub-regional programme of work for environmental management and conservation. The agreed programme of work outlines the following aspect in respect of waste management:

- (a) Industrial, domestic and agricultural waste management is a concern especially in urban areas. The main issues of concern include waste-related pollution of water, air and soil, inadequate technical capacity in waste management, inadequate financial resources, increasing urban population pressure, disease transmission, among others (pp. 13-14 and 25-26 of the Report).
- (b) The Report recommends, *inter alia*, that the three countries should:
 - undertake privatization of waste management services;
 - review and update statutes and regulations regarding waste management;
 - share information and technology on waste management;
 - develop common standards for waste discharges into the shared resources;
 - co-operate in monitoring and assessment of waste discharges into shared resources; and,
 - co-operate in developing and promoting the use of cleaner production technologies within the region.

The Report provides insight on what may be described as a Sub-regional policy on waste management. It outlines in broad terms the matters of common concern and the recommended remedial policy; legislative and institutional changes or actions required.

1.2.5 THE DRAFT ENVIRONMENT MANAGEMENT AND CO-ORDINATION BILL, 1999

The draft Environment Management and Co-ordination Bill 1999 ("the Bill" has two broad objectives:

- (i) To provide for the establishment of an appropriate legal and institutional framework for the management of the environment; and
- (ii) To improve the legal and administrative co-ordination of the diverse sectoral initiatives necessary for the improvement of the national capacity for the management of the environment.

The Bill proposes to establish a legislative framework for the management of the environment in Kenya. The proposed framework law allows future legislative action by way of specific regulations. The Bill contains several provisions relevant to waste management in Kenya as outlined below

- Duty of owners or operators of sewerage systems and industrial undertakings likely to discharge effluents or other pollutants or are discharging effluents or other pollutants into the environment to submit on demand, to the National Environment Management Authority (NEMA), accurate information about the quantity and quality of such effluents or pollutants (Section 58).
- Duty of owners or operators of a trade or industrial undertaking to discharge any effluents or other pollutants originating from the trade or industrial undertaking into sewerage systems (Section 59 (1)).
- Duty of a proponent or owner of an industrial undertaking to install an appropriate plant for the treatment of effluents before being discharged into the environment (Section 59(2)).
- Duty to obtain a licence to discharge effluents (Section 60) and the creation of a Register of effluent discharge licences (Section 62).
- Duty to obtain a pollution licence in respect of emissions from establishments (Section 65).
- NEMA is empowered to prescribe standards for wastes, their classification and analysis, and formulate and advise on standards of disposal methods and means for such wastes (Section 69(3)).
- NEMA is empowered to issue regulations for the handling, storage, transportation, segregation and destruction of any wastes (Section 69(4)).
- General duty not to discharge or dispose of any wastes in such a manner as to cause pollution to the environment or ill health to any person (Section 72(1)).
- General duty not to transport wastes without a valid licence issued by NEMA (Section 72(2) (a)).
- General duty to transport wastes only to disposal sites licensed by NEMA (Section 72(2) (b)).
- General duty to employ measures essential to minimise wastes through treatment, reclamation and recycling (Section 72(4)).
- Duty to obtain a licence before transporting wastes, operating a wastes disposal site or plant or generating hazardous wastes (Section 73(1)).
- Classification of hazardous wastes through the establishment of a standard criteria (Section 76(1)).
- Prohibition of importation of hazardous wastes into Kenya (Section 76(3)).
- Exportation of hazardous wastes from Kenya to be undertaken only with a valid permit issued by NEMA (Section 76(4)).
- Transportation of hazardous wastes within or through Kenya to be undertaken only with a valid permit issued by NEMA (Section 76(5)).
- The Minister responsible for the environment is empowered to make regulations prescribing for matters that are required or permitted by the Bill, to be prescribed or are necessary or convenient to be prescribed for giving full effect to the provisions of the Bill (Section 157).

The Bill therefore, provides a "home" for the proposed Hazardous and Non-hazardous Wastes Management Regulations, 1999. The said Regulations are to be issued pursuant to and in furtherance of the provisions of the Bill.

CHAPTER TWO

THE PROPOSED DRAFT HAZARDOUS AND NON-HAZARDOUS WASTES MANAGEMENT REGULATIONS 1999

THE REPUBLIC OF KENYA

LEGAL NOTICE NO.

*The Hazardous and Non-Hazardous Wastes Management Regulations, 1999
(Under S.69, S.77, and S. 157 of the Environment Management and Co-ordination Act 19...)*

IN EXERCISE of the powers conferred by Sections 69(4), 77 and 157 (1)(2)(3) and (4) of the Environment Management and Co-ordination Act 1999, the Minister for Environmental Conservation makes the following Regulations:

THE HAZARDOUS AND NON-HAZARDOUS WASTES MANAGEMENT REGULATIONS, 1999

Citation and Commencement	1. These Regulations may be cited as the Commencement Hazardous and Non-hazardous Wastes Management Regulations, 1999 and shall come into operation on the day of 1999.
Interpretation	2. In these Regulations, unless the context otherwise requires, the several terms defined in the Environment Management and Co-ordination Act have the respective meanings therein set forth, and the following additional terms have the following meanings:- "carrier" means any person who is engaged in the transportation of hazardous or non-hazardous wastes and includes his agents and assignees. "commercial user" means any person who is engaged in the commercial use of any part of hazardous or non-hazardous wastes. "competent Local Authority" means a local Cap.265 authority established under the Local Government Act : "disposal site" means the land or water area on which wastes disposal facilities are physically located. "Disposer" means the person licensed to dispose of wastes under these regulations. "domestic waste" means waste generated from residences. "environmentally sound management of wastes" means taking all practical steps to ensure that wastes are managed in a manner which will protect human health and the environment against the adverse effects which may result from such wastes. "Exporter" means any person under the jurisdiction of the state of export who arranges for wastes to be exported. "generator of wastes" means any person whose activity produces wastes or, if that person is not known, the person who is in possession and/or control of those wastes.

“handle or handling” includes the production, processing, formulation, packaging, labelling, importation, exportation, trade in, distribution, advertisement, use and disposal of wastes.

“hazard” means the inherent ability of any waste to cause harm under certain conditions.

“hazardous wastes” means any waste which has been identified in the First Schedule or any waste having the characteristics defined in the Second Schedule or as determined in accordance with the guidelines set out in the Third Schedule.

“importer” means any person under the jurisdiction of the state of import who arranges for wastes or other wastes to be imported.

“inspector” means an inspector designated as such under Section 103 of the Act.

“internal movement of wastes” means the movement of wastes from one district to another within the Republic of Kenya.

“manufacturer” means any person engaged in the manufacturing of any goods.

“non-biodegradable” means any matter that cannot break down naturally into harmless elements.

“person” includes any natural or legal person.

“responsible person” means any person having the primary or secondary responsibility in law over any matter.

“risk” means the likelihood that any substance will cause harm after exposure.

“seller” means any person engaged in the sale of goods.

“toxic” means the capability to cause serious injury to health.

“trans-boundary movement of wastes” means any movement of waste into, from or through Kenya from, to or through any area under the jurisdiction of any other state.

“transit” means the passage from one border to another through the national territory of Kenya including storage in transit bonds.

Act No. 2 of 1995

“Kenya Revenue Authority” means the Kenya Revenue Authority of 1995 established under the Kenya Revenue Authority Act;

“Wastes” include hazardous and non-hazardous wastes and shall have the meaning assigned to them in the Act.

Classification of Wastes

3. (1) Any wastes which fit the criteria identified in the First Schedule or having the characteristics defined in the Second Schedule or determined to be having hazardous characteristics in accordance with the guidelines set out in the Third Schedule shall be treated as hazardous wastes within the meaning of Section 76(1) of the Act, and any wastes which do not fit the said categories of classification will be treated as non-hazardous wastes.

(2) The Director General of the Authority shall publish in the Kenya Gazette a list of hazardous wastes identified under sub-regulation (1). The list of hazardous wastes may be amended from time to time by the Director General of the Authority.

Separation and handling of Wastes

4. (1) Any person whose undertaking or activity generates wastes shall separate hazardous wastes from non-hazardous wastes.

(2) All hazardous wastes shall be handled in strict compliance with the provisions of the Act and these Regulations.

Handling of Domestic wastes

(3) Any person whose activity generates non-hazardous domestic wastes may handle such wastes without a licence issued under the Act or these Regulations, and may dispose of such wastes in an environmentally friendly manner and in accordance with good environmental practices.

Duty to Minimise Wastes

5. Every owner or operator of a trade or industrial undertaking shall employ measures essential to minimize wastes through treatment, reclamation and recycling before discharging any such wastes into the environment.

Issue of Compliance Orders

6. (1) The Authority may issue and impose on any person in respect of any trade or industrial undertaking which generates wastes an order in these Regulations referred to as a compliance order.

(2) Prior to issuing and imposing a compliance order under Sub-regulation (2), the Authority shall write to require the owner or operator of the concerned trade or industrial undertaking to prepare and submit to the Authority a written proposal specifying the action that the owner or operator will undertake, the time-schedule for such action, in order to comply with the requirements of the Act or these Regulations. The Authority shall give the operator of the trade or industrial undertaking an opportunity of being heard or making representations before the compliance order is issued and served.

Contents of a Compliance Order

(3) A compliance order shall specify clearly and in a manner which may be easily understood:

- (a) the trade or industrial undertaking to which it relates;
- (b) the person or persons to whom it is addressed;
- (c) the time at which it comes into effect and the duration of compliance;
- (d) the action that must be taken in order to obtain compliance with the Act and these Regulations, and the period within which such compliance will be obtained;
- (e) the powers of an environmental inspector to enter the premises where the trade or industrial undertaking in question are located to monitor observance of the compliance order;
- (f) the penalties which may be imposed if the action specified in paragraph (d) is not undertaken within the specified period; and
- (g) the right of the person served with a compliance order to appeal to the Environment Tribunal against that order.

(4) The Authority may seek and take into account any technical, professional and scientific advice which it considers to be desirable for a satisfactory decision to be made on a compliance order.

(5) Any person served with a compliance order shall, subject to the provisions of the Act and these Regulations, comply with all the terms and conditions of the order that has been served on him.

Packing of Wastes

7. (1) The container or packaging material in which any wastes are to be contained, packed or stored shall be made of such materials as are capable of containing or storing the wastes in an environmentally sound manner without posing any risks to human health and the environment.

(2) The container or packaging material in which any wastes are to be contained, packed or stored shall; not be reactive to the wastes therein contained, packed or stored; be free from the possibility of leakage be capable of protecting the health of persons involved in the handling of the wastes therein contained, packed or stored, public health or the surrounding environment; and be labelled in accordance with the provisions of these Regulations.

**Sale of Wastes
Containers for other
uses prohibited**

8. Any person who sells or offers for sale a container or packaging material which has been used for the storage of wastes to be used for other purpose other than the storage of wastes commits an offence.

**Labelling of
hazardous Wastes**

9. (1) Each container or package of hazardous wastes shall have a label imposed on its outer cover written in Kiswahili and English providing the following: -

- (a) identity of the hazardous waste;
- (b) name and address of the generator of the hazardous waste;
- (c) net contents of the hazardous wastes; nominal storage stability and methods for safe storage of the hazardous wastes;
- (e) name and percentage by weight of active ingredients and names and percentages by weight of other ingredients or half-life of radio-active material;
- (f) warning or caution statements which may include all, some or either of the following, as appropriate:
 - (1) the words "warning" or "caution"
 - (2) the words "danger! Keep away from unauthorized persons"
 - (3) the word "poison" (marked in red on contrasting background).
 - (4) a pictogram of a human skull and crossbones.
- (g) a statement of first aid measures including the antidote when the wastes are inhaled or ingested and a direction that a physician must be contacted immediately.
- (h) adequate directions of handling the container or package of hazardous wastes.
- (I) complete and adequate directions for the disposal of the container or package and the hazardous wastes in accordance with the provisions of the Act and these Regulations; and,
- (j) any other information that the Authority may require from time to time.

**No Warranties,
Exclusion Clauses etc.
on the label**

10. The label referred to in Regulation 9 shall not contain any warranties, guarantees or liability exclusion clauses that are inconsistent with the provisions of the Act or these Regulations. In the event that such warranties, guarantees or liability exclusion clauses appear on the label, they shall be void to the extent of their inconsistency with the Act or these Regulations.

Application for licence to transport wastes

11. (1) Notwithstanding any approval, permit or licence granted under the Act or these Regulations or any other law in force in Kenya, any person intending to, or being desirous of transporting wastes shall, before engaging in the transportation of such wastes apply to the Authority under Section 73 of the Act for the grant of a licence to transport wastes.

(2) The application under sub-regulation (1) shall be in the form prescribed by these Regulations and shall be accompanied by the appropriate fees.

(3) Any person who at the commencement of the Act or these Regulations was already engaged in the transportation of wastes, shall apply to the Authority for a licence to transport such wastes under these Regulations, within six months after the commencement of these Regulations.

Conditions of a licence to transport wastes

12. (1) The Authority may, being satisfied that an applicant for a licence to transport wastes is in possession of adequate and appropriate facilities and equipment to transport such wastes without causing damage to human health or the environment, and the applicant has fulfilled any other conditions that the Authority may in its judgement deem necessary, issue to an applicant a licence to transport wastes.

(2) The licence to transport wastes shall contain the following conditions;

(a) that the collection and transportation of the wastes shall be conducted in a manner that does not cause scattering or flowing out of the wastes;

(b) that at all times in the course of the collection and transportation of the wastes, the vehicles and equipment in use shall be in such a state as not to cause the scattering of, or the flowing out of the wastes, or the emitting of bad smells from the wastes;

(c) that at all material times, only the vehicles mentioned in the licence shall be used in the transportation of wastes and that such vehicles, or any other means employed for the conveyance of the wastes shall strictly follow the approved scheduled routes from the points of collection to the disposal site or plant;

(d) that the personnel involved in the collection and transportation of wastes shall, at all material times, be provided with-

- (i) adequate and appropriate protective and safety clothing and gear;
- (ii) adequate and appropriate equipment and facilities for the collection and loading of the wastes;
- (iii) safe and secure sitting facilities in the vehicles transporting the wastes or other means of conveying the wastes; and,
- (iv) proper and effective training and adequate information relevant to their work.

(e) that the licensee shall, at his own expense, cause his personnel involved in the collection and transportation of wastes to under-go medical examination at least once a year, or as frequently as may be commensurate to the risks faced by such personnel in the course of their duties. A copy of the report of such medical examination shall be submitted by the licensee to the Authority within twenty one days after it is issued;

(f) that all the vehicles mentioned in the licence or other mechanical means used to convey the wastes shall be labelled in such manner as the Authority may direct from time to time;

(g) that an Inspector of the Authority may, at any reasonable time inspect the operations of the licensee, and may subject the personnel of the licensee to medical examination and the costs thereof shall be borne by the licensee; and

(h) any other conditions which the Authority may deem appropriate or necessary.

Licence to store wastes, or operate a waste disposal site or plant

13. (1) Notwithstanding any approval, or operate a waste permit or licence granted under the Act or these Regulations or any other law in force in Kenya, any person intending to, or being desirous of storing wastes or owning or operating a wastes disposal site or plant shall apply to the Authority under Section 73 of the Act for the grant of a licence to store wastes or own or operate a wastes disposal site or plant.

(2) The application under sub-regulation (1) shall be in the form prescribed by these Regulations and shall be accompanied by the appropriate fees.

(3) Any person who at the commencement of the Act or these Regulations owned or operated premises for storing wastes, or owned or operated a wastes disposal site or plant shall, within six months after the commencement of the Act or these Regulations, apply to the Authority under Section 74 of the Act for a licence to store wastes, or own or operate a waste disposal site or plant.

Conditions of a licence to store wastes, own or operate a waste disposal site or plant

14. (1) The Authority may, upon being satisfied that an applicant for a licence to store wastes, own or operate a wastes disposal site or plant:

(a) has obtained the written approval of the local authority within whose jurisdiction the premises for storing the wastes, or the wastes disposal site or plant is to be located or is located;

(b) has complied with the requirements of the Act dealing with environmental impact assessment;

(c) has demonstrated sufficient qualifications and experience to store wastes, own or operate a wastes disposal site or plant;

(d) has put in place appropriate premises, facilities and equipment for storing wastes or disposing of wastes without endangering human health or causing damage to the environment;

(e) has obtained the written approval of the relevant District Environment Committee established under Section 14 of the Act;

(f) has fulfilled any other requirements that the Authority may deem necessary and appropriate; issue to the applicant a licence to store wastes, own or operate a wastes disposal site or plant, as the case may be.

(2) The licence to store wastes, own or operate a wastes disposal site or plant shall contain the following conditions:

(a) that the wastes shall be stored in such a manner there is no scattering or flowing out of the wastes from the premises;

(b) that the storage of wastes or the operation of the wastes disposal plant or activities within the wastes disposal site shall not cause contamination or pollution of underground water resources;

- (c) that the premises for storing the wastes or the wastes disposal site or plant shall be located outside a radius of five kilometres from residential or commercial areas and water supply schemes, including sources of freshwater;
- (d) that the premises for storing the wastes or the wastes disposal site or plant shall be enclosed with appropriate perimeter fence and other safeguards and shall be secure from scavenging by animals or birds or from intrusion by persons not employed by the licensee;
- (e) that the premises of storing the wastes or the wastes disposal site or plant has hazards and safety signs displayed at appropriate places indicating that the enclosed area is a store for wastes or a wastes disposal site or plant;
- (f) that the premises of storing the wastes or the wastes disposal site or plant shall be operated in such manner as to prevent;
 - (i) the pollution of surface and underground water resources;
 - (ii) the emission of noxious smells contrary to Section 92 of the Act; and
 - (iii) the breeding of rats, mosquitoes and/or other vermin.
- (g) that the premises of storing the wastes or the wastes disposal site or plant shall have adequate and appropriate means of ventilation to remove biogas generated therein;
- (h) that the persons employed within the premises for storing the wastes or the wastes disposal site or plant shall-
 - (i) be provided with adequate and appropriate protective and safety clothing and gear;
 - (ii) be provided with all the health, safety and sanitation facilities required under the Factories Act;
 - (iii) be provided with appropriate equipment and facilities for their work;
 - (iv) receive adequate training and appropriate information for their work; and
 - (v) undergo annual medical examination at the expense of the licensee. The licensee shall forward to the Authority a copy of the report of such medical examination within twenty one days of its issue.
- (i) that an Inspector of the Authority may, at any reasonable time inspect the operations of the licensee, and may subject the personnel of the licensee to medical examination and the costs thereof shall be borne by the licensee;
- (j) that the licensee shall carry out annual audits of the environmental performance of the wastes storage facilities and disposal site or plant, and he shall submit the audit reports to the Authority within twenty one days of their finalization; and
- (k) any other conditions which the Authority may deem appropriate or necessary.

Cap. 514

Authority for the Disposal or treatment of hazardous wastes

15.(1) Notwithstanding any approval, permit or licence granted under the Act, or these Regulations or any other law in force in Kenya, any person intending to dispose of or treat any hazardous wastes shall, before disposing of, or treating, the hazardous wastes in question, prepare and submit to the Authority a report-

- (i) giving the identity of the hazardous wastes;

- (ii) naming the generator of the hazardous wastes and his address;
- (iii) indicating the net weight or content of the hazardous wastes;
- (iv) indicating the names and percentage by weight of active ingredients and names and percentages by weight of other ingredients or half-life of radioactive materials;
- (v) giving a detailed description of the process to be employed in the disposal or treatment of the hazardous wastes and its possible environmental and health effects;
- (vi) explaining in adequate detail a plan for managing the leachate and other by-products from the hazardous wastes after their disposal or treatment;
- (vii) describing the soil structure and geology of the area designated for the disposal or treatment of the hazardous wastes;
- (viii) containing a detailed drawing indicating the structure, construction and surrounding of the disposal or treatment site or plants; and
- (ix) providing any other information or material that the Authority may require.

(2) The Authority may, after studying the report referred to in sub-regulation (1), issue or decline to issue a letter authorizing the disposal or treatment of the hazardous wastes.

(3) The letter of authorization issued under sub-regulation (2) shall clearly indicate the disposal or treatment methods permitted and the special conditions attached thereto.

Licence to Export Hazardous wastes

16. (1) Notwithstanding any approval, permit or licence granted under the Act or these Regulations or any law in force in Kenya, any person intending to import non-hazardous wastes into Kenya or to export non-hazardous wastes from Kenya shall, before importing or exporting such non-hazardous wastes apply to the Authority, in the prescribed form and giving the prescribed information, for the grant of a licence to import into Kenya non-hazardous wastes or a licence to export from Kenya non-hazardous wastes.

(2) The application made under sub-regulation (1) shall be accompanied by the appropriate fees.

(3) The Authority may grant a licence to import into Kenya or export from Kenya non-hazardous wastes subject to such conditions as it may deem appropriate or necessary.

17. (1) Notwithstanding any approval, permit or licence granted under the Act or these Regulations or any law in force in Kenya, any person intending to export from Kenya any hazardous wastes shall, before exporting such hazardous wastes, apply to the Authority for the grant of a licence to export the hazardous wastes.

(2) The application made under sub-regulation (1) shall be in the prescribed form and shall be accompanied by the prescribed fees.

(3) The Authority may grant a licence to export hazardous wastes from Kenya subject to such conditions as it deems appropriate or necessary.

(4) The term "export" shall, for purposes of sub-regulation (1), be deemed to include transit through Kenya.

Reporting Requirements

18. (1) Any person who is the holder of a licence, permit or letter of authorization issued pursuant to these Regulations shall, either at the completion of the activity in question or after every twelve calendar months during the subsistence of the activity, as the case may be, prepare and submit to the Authority a report on the conduct of the activity.

(2) The report referred to in sub-regulation (1) shall have the format and the contents as the Authority may direct in writing.

(3) Where special reporting procedures are made the condition of a licence, permit or letter of authorisation issued pursuant to these Regulations, then such procedures shall take precedence over the provisions of sub-regulation (1).

Duty to keep records

19. (1) The holder of a licence, permit or letter of authorisation issued under these Regulations shall keep full and accurate records of all transactions related to the concerned activity.

(2) An Inspector of the Authority may, at any reasonable time, inspect the records referred to under sub-regulation (1) for purposes of determining compliance with the Act or these Regulations.

(3) The holder of a licence, permit or letter of authorisation issued under these Regulations shall, if directed by the Authority, submit copies of the records referred to under sub-regulation (1) to the Authority, and the Authority shall keep such records for its use, and may maintain their confidentiality if the applicable circumstances so require.

Penalty

20. Any person who contravenes any provisions of these Regulations or commits an offence against these Regulations for which no other penalty is specifically provided in the Act, shall be liable, upon conviction to:

- (a) have his licence, permit or letter of authorisation revoked;
- (b) imprisonment for a term not exceeding eighteen months;
- (c) a fine not exceeding three hundred and fifty thousand shillings; or
- (d) to both such fine and imprisonment.

CHAPTER THREE

APPLICATIONS FOR LICENCES AND LICENSES

(To be completed in triplicate)

No.....

REPUBLIC OF KENYA

THE ENVIRONMENTAL MANAGEMENT AND CO-ORDINATION ACT

The Hazardous and Non-Hazardous Wastes Management Regulations, 1999

APPLICATION FOR A LICENCE TO TRANSPORT WASTES

(Regulation 11)

1. Name and address of applicant (*state whether a limited liability company, sole proprietorship or partnership and attach a certified copy of certificate of registration or incorporation, particulars of directors.*)

.....
.....

2. Location of business premises (Plot no. City/Town, Street, District)

.....
.....

3. Tax Personal Identification Number

4. Licensed disposal sites/plants to which the wastes are to be transported (*Name, Location, certified copy of licence, name of registered owners*)

.....
.....

5. Number and date of issue of previous licence held under the Act

6. Has any previous application made by the applicant for a licence under the Act been rejected? If so, give details .

.....
.....
.....

7. Has the applicant complied with the requirements, regulations, administrative orders or directives made and issued pursuant to the provisions of the Public Health Act Cap.242 and Local Government Act Cap.265?

.....
.....

8. Has the applicant or any of its shareholders or directors during the past five years been convicted of any offence under the Act or any other law applicable to the business? If so, give details

.....

9. Registration numbers and types of vehicles to transport the wastes

.....

10. Quantity of wastes per vehicles to be transported

.....

11. Source of the wastes to be transported

.....

12. Collection schedule per week

.....

13. Proposed routes between collection points and the disposal sites/plants

14. Any other information

.....

15. I, _____ a Director/Secretary/Managing Partner/Sole Proprietor of _____ hereby declare that the information given in this application is true and correct to the best of my knowledge and belief.

Date Signature

Designation/title:

FOR OFFICIAL USE ONLY

Application received by _____ on _____ 19 _____.

Fee paid Shs _____ (in words) _____

.....

DIRECTOR-GENERAL
National Environment Management Authority

REPUBLIC OF KENYA

THE ENVIRONMENTAL MANAGEMENT AND CO-ORDINATION ACT

The Hazardous and Non-Hazardous Wastes Management Regulations, 1999

LICENCE TO TRANSPORT WASTES

(Regulation 11)

Licence No

1. Name

Address

2. You are hereby licensed to transport wastes to

(Name/Location/District/Plot.No and Licence Number of Disposal Site/Plant)

from

(Name/Location/District/ Plot. No)

3. Number, type and registration number of vehicles licensed

This licence is valid from the _____ day of _____, 19_____

To the _____ day of _____, 19_____

This licence is granted subject to the following conditions:

Date Signature

DIRECTOR-GENERAL
National Environmental Management Authority

(To be completed in triplicate)

Form Number

REPUBLIC OF KENYA

THE ENVIRONMENTAL MANAGEMENT AND CO-ORDINATION ACT

The Hazardous and Non-Hazardous Wastes Management Regulations, 1999

APPLICATION FOR A LICENCE TO STORE HAZARDOUS WASTES

(Regulation 12)

1. Name and Address of Applicant:
.....
2. Address of Premises where storage will be done:
.....
(Plot No. Town, County, District)
3. Tax Personal Identification Number
4. Number and date of issue of previous licence held under the Act
5. Has any previous application made by the applicant for a licence under the Act been rejected? If so, give details
.....
.....
6. Has the applicant complied with the requirements of the Public Health Act, Cap 242 and the Local Government Act, Cap 265?
.....
.....
7. Has the applicant or any of its shareholders or directors during the past five years been convicted of any offence under the Act or any other Law applicable to the business? If so, give details
.....
.....
8. Type of wastes to be stored (*whether hazardous or non-hazardous and whether liquid, solid or gaseous and their possible impacts*):
.....
.....

9. Quantity of wastes to be stored in kg or tons for solids or in cm³, if liquids or gases:

.....

10. Type of containers in which the wastes are to be packaged

.....

11. Type of labels on the container (*Describe and attach sample*)

.....

12. Are there any other materials stored in the premises? (*Describe*)

.....

13. Surroundings of the premises (*Describe whether industrial, residential, commercial and whether it is near schools or recreational areas, water supply schemes*)

.....

14. Duration of storage applied for:

15. Final destination of the wastes

16. Specifications of the construction of the premises including ventilation or other measures and suitability for storage of the specific wastes. (*Describe and attach building plans*)

.....

17. Describe the safety measures at the premises

.....

18. Measures for the containment and treatment of leachate, if applicable

Date: Signature of Applicant

FOR OFFICIAL USE ONLY

Date received

Fee paid Shs (in words)

Comments of the lead agency

Date Signature

DIRECTOR-GENERAL
National Environmental Management Authority

REPUBLIC OF KENYA

THE ENVIRONMENTAL MANAGEMENT AND CO-ORDINATION ACT

The Hazardous and Non-Hazardous Wastes Management Regulations, 1999

LICENCE TO STORE WASTES

(Regulation 13)

1. Licence No

2. Name and Address

.....

.....

(Plot No. Town, County, District)

3. You are hereby licensed to operate a storage facility for the following wastes

(a)

(b)

(c)

(d)

(e)

(f)

(g)

(h)

4. The storage facility shall be located at the following address:

.....

.....

(Plot no. Town, County, District)

This licence is valid from the _____ day of _____, 19_____

To the _____ day of _____, 19_____

This licence is granted subject to the following conditions:

.....

Date Signature

DIRECTOR-GENERAL
National Environmental Management Authority

(To be completed in triplicate)

Form Number

REPUBLIC OF KENYA

THE ENVIRONMENTAL MANAGEMENT AND CO-ORDINATION ACT

The Hazardous and Non-Hazardous Wastes Management Regulations, 1999

**APPLICATION FOR A LICENCE TO OWN/OPERATE A WASTE DISPOSAL
SITE/PLANT**

(Regulation 13)

1. Name and address of applicant (*state whether a limited liability company, sole proprietorship, or partnership and attach a certified copy of certificate of registration, incorporation, particulars of directors*)

.....

2. Location of business premises (*Plot No. City/Town, Street, District*)

.....

3. Tax Personal Identification Number

4. Has the applicant complied with the requirements, regulations, administrative orders or directives made or issued pursuant to the provisions of the Public Health Act Cap 242 the Local Government Act; Cap 265

.....

.....

5. Has any previous application made by the applicant for a licence under the Act been rejected? If so, give details

.....

.....

6. Number and date of issue of previous licence held under the Act

.....

7. Has the applicant or any of its directors or shareholders during the past five years been convicted of any offence under the Act or any other law applicable to the business? If so, give details

.....

.....

8. Approval of the concerned Local Authority

.....

- 9. Types of wastes to be disposed of at site/plant
- 10. Quantity of wastes being disposed per annum in tonnes/kg
- 11. Type of facilities/treatment to be carried on at site/plant
 - (a) Land fill
 - (b) Compost
 - (c) Incinerator
- 12. Estimated life span of plant/site
- 13. Proposed hectare/area of site/plant (*attach copies of site/plant plan and design*)
- 14. Executive Summary of environment impact statement (*please attach*)
- 15. Any other information
- 16. I, a Director/Secretary/Managing Partner/Sole Proprietor of hereby declare that the information given in this application is true and correct to the best of my knowledge and belief.

Date: Signature:

Designation/title:

FOR OFFICIAL USE ONLY

Application received by on 19

Fee paid Shs (in words)

DIRECTOR-GENERAL
National Environmental Management Authority

Form No

REPUBLIC OF KENYA

THE ENVIRONMENTAL MANAGEMENT AND CO-ORDINATION ACT

The Hazardous and Non-Hazardous Wastes Management Regulations, 1999

LICENCE TO OWN/OPERATE A WASTE DISPOSAL SITE/PLANT

(Regulation 13)

1. Licence No

2. Name

3. Address

4. You are hereby licensed to own/operate a waste disposal site/plant at Plot No

(Town, County, District)

(5) This licence is valid from 19 to 19

(6) This licence is subject to the following conditions:

Date Signature

DIRECTOR-GENERAL
National Environmental Management Authority

(To be completed in triplicate)

Form Number

REPUBLIC OF KENYA

THE ENVIRONMENTAL MANAGEMENT AND CO-ORDINATION ACT

The Hazardous and Non-Hazardous Wastes Management Regulations, 1999

APPLICATION FOR A LICENCE TO IMPORT NON-HAZARDOUS WASTES

(Regulation 16)

1. Name and address of applicant (*state whether a limited liability company, sole proprietorship or partnership and attach a certified copy of certificate of registration or incorporation, particulars of directors*)

.....
.....

2. Location of business premises (Plot No. City/Town, Street, District)

.....

3. Tax Personal Identification Number

4. Has any previous application made by the applicant for a licence under the Act been rejected? If so, give details .

.....

5. Has the applicant complied with the requirements of the Public Health Act, Cap.242?

.....

6. Name, address and licence number of the premises where storage will be done

.....

.....

(Plot No, Town, County, District)

7. Type and characteristics of the wastes to be imported (*whether liquid, solid or gaseous and their possible impacts on human health and the environment*)

.....

.....

8. Quantity of the wastes to be imported in kg or tons, for solids or in cm³, if liquids or gases?

.....

.....

- 9. Types of containers in which the wastes are to be packaged at import(*provide a sample*)
- 10. Process by which the wastes to be imported were generated?
- 11. Name and address of the generator of the wastes to be imported
- 12. Reasons why the wastes cannot be disposed of in the country of origin
- 13. Reasons why the wastes have to be imported into Kenya
- 14. Special handling requirements, including emergency provisions in case of accidents
- 15. Means of transport envisaged
- 16. Approximate date of arrival and port of entry
- 17. Information relating to insurance in the course of the importation journey
- 18. Final destination of the wastes

Date Signature of Applicant

FOR OFFICIAL USE ONLY

Dated received

Fees paid Ksh (*in words*)

Comments by lead agencies

Director-General
National Environmental Management Authority

Form No

REPUBLIC OF KENYA

THE ENVIRONMENTAL MANAGEMENT AND CO-ORDINATION ACT

The Hazardous and Non-Hazardous Wastes Management Regulations, 1999

LICENCE TO IMPORT NON-HAZARDOUS WASTES

(Regulation 16)

1. Licence No
2. Name and Address of Importer
.....
(Plot no. Town, County, District)
3. Purpose for which the imported wastes are licensed
.....
.....
4. You are hereby licensed to import the following wastes
.....
.....
.....
.....
5. From *(name and address)*
.....
.....
6. To *(name and address)*
.....
.....
7. This import shall be made through Border/customs post.
8. This licence shall be valid from the day of 19 to the day of 19

9. This licence is subject to the following conditions:

- (a)
- (b)
- (c)
- (d)
- (e)
- (f)
- (g) Attach a copy of authorisation by the state from which the importation is to be made

Date: Signature

DIRECTOR-GENERAL
National Environmental Management Authority

Form No

REPUBLIC OF KENYA

THE ENVIRONMENTAL MANAGEMENT AND CO-ORDINATION ACT

The Hazardous and Non-Hazardous Wastes Management Regulations, 1999

LICENCE TO EXPORT WASTES

(Regulation 17)

1. Licence No.

2. Name and Address

.....

.....

(Plot no. Town, County, District)

3. You are hereby licensed to export the following wastes:

.....

.....

.....

4. To (name and address)

.....

.....

.....

5. This export shall be made through border/custom control post.

6. This licence shall be valid from the day of 19 to the day of 19

7. This licence is subject to the following conditions:

(a)

(b)

(c)

- (d)
- (e)
- (f)
- (g)
- (h)

Date: Signature

DIRECTOR-GENERAL
National Environmental Management Authority

Form No

REPUBLIC OF KENYA

THE ENVIRONMENTAL MANAGEMENT AND CO-ORDINATION ACT

The Hazardous and Non-Hazardous Wastes Management Regulations, 1999

MOVEMENT DOCUMENT FOR TRANSBOUNDARY MOVEMENT OF WASTES

(Regulation 16)

Notification for waste shipment was issued at:

Date of issuance

Notification for a single shipment

Notification for multiple shipments for the period

This shipment is number: of total shipments included in the general

Notification number:

To be issued in triplicate, one copy to Kenya Revenue Authority.

(To be completed in triplicate)

Form Number

REPUBLIC OF KENYA

THE ENVIRONMENTAL MANAGEMENT AND CO-ORDINATION ACT

The Hazardous and Non-Hazardous Wastes Management Regulations, 1999

NOTIFICATION DOCUMENT FOR TRANSBOUNDARY MOVEMENT OF WASTE

(Regulation 16)

(for transit purposes only)

1. NOTIFIER*

Name	Telephone
Address	Telefax E-mail
Contact Person (name, address, telefax, e-mail)	

* The Notifier is the exporter or importer of wastes.

2. GENERATOR(S) OF WASTE

Name:	Telephone:
Address:	Telefax: E-mail:
Contact Person (name, address, telephone, telefax, e-mail)	

Process by which the waste has generated

Site of generation

3. REASON FOR WASTE EXPORT/IMPORT

Why the waste can't be disposed in the country of origin

Why the waste has to be exported/imported through Kenya

4. WASTE

Waste Description

Y NUMBER
Shipping Name

H NUMBER

UN CLASS

UN NUMBER
IWIC Code

Physical state at 20°C

Powder

Solid

Paste/viscous

Sludge Liquid

Gaseous

Other (*specify*)

Estimated quantity (kg or L) of the shipment

Type of Packaging

Number of Packages

Special handling requirements including emergency provisions in case of accidents:

Method of disposal:

5. EXPORTER/IMPORTER OF THE WASTE

Competent Authority and details of approval

Exporter/Importer of the Waste in the country of origin/destination

Name

Telephone
E-mail

Telefax

6. DISPOSER OF THE WASTE

Contact person in case of emergency

Name

Telephone
E-mail

Telefax

Approximate Date of Disposal

Actual Site of Disposal

Signature and Official Stamp of Disposer

7. TRANSIT

Project length of time the waste shipment shall be on transit on Kenya territory.

Expected date of Entry

Expected date of exit

Means of Transport envisaged

Information relating to insurance

(Guarantee that the person responsible shall fully compensate any damage caused to human health, property or to the environment, or the environment by the waste in question during transit)

8. DECLARATION

I/we* _____, being the exporter/importer* hereby declare that on _____ I/we entered into a contact with the disposer and that I/we shall be bound by the terms of the said contact. *(attach a copy of contract)*

Signed (Exporter/Importer*)

I/we* _____, Being the exporter/importer* hereby guarantee/declare that the above information is correct and true.

Signed (Exporter/Importer*)

* delete whichever is inapplicable

(To be completed in triplicate)

Form Number

REPUBLIC OF KENYA

THE ENVIRONMENTAL MANAGEMENT AND CO-ORDINATION ACT

The Hazardous and Non-Hazardous Wastes Management Regulations, 1999

NOTIFICATION DOCUMENT FOR DISPOSAL OF WASTES

(Regulation 16)

(for transit purposes only)

1. EXPORTER (NOTIFIER) (1)

Name: Telephone:
Address: Telefax:
E-mail:

Contact person (name, address, telefax)

2. GENERATOR(S) OF WASTE

Name: Telephone
Address: Telefax:
E-mail:

Contact person (name, address, telephone, telefax, e-mail):

Process by which the waste was generated:

Site of generation:

3. DISPOSER OF THE WASTE

Name: **TO BE COMPLETED BY THE DISPOSER**
Address:
Telephone:
Telefax:
E-mail:

Contact person in case of emergency
(name, address, telephone, telefax, e-mail):

Certification of receipt of waste at Designated disposal
facility

Approximate date of Disposal:

Method of disposal (3)

D code R code

Actual Site of Disposal

Date

Signature:

Actual date of disposal:

Signature of Disposer:

4. WASTE

Description of the waste:

Y Number

H number

UN class

UN number

UN Shipping name

IWIC code

Physical state at 20°C:

Powder

Solid

Paste/viscous

Sludge Liquid

Gaseous

Other

Estimated quantity (kg or L) per shipments:

1st

2nd

3rd

4th

5th

Type of packaging

Number of packages

State the special handling requirements, including emergency provisions in case of Accidents:

5. ITINERARY

Country of export: Point of exit (*when designated*):

Transit countries:

(1)

Point of entry (*When designated*)

Point of exit (*when designated*):

(2) Point of entry (*when designated*):
Point of exit (*when designated*):

(3) Point of entry (*when designated*):
Point of exit (*when designated*):

(4) Point of entry (*when designated*):
Point of exit (*when designated*):

Country of import:
Point of entry (*when designated*):

6. CARRIER OF THE WASTE or his Agent

(1) Name: Date of transboundary movement started
Address:
Telephone:
Telefax: Signature of the carrier(s) or agent:
E-mail:

Contact person (name, address, telephones) Licence (when applicable):

Means of transportation:
 Sea Air Road Rail

(2) Name: Date of transboundary movement started:
Address:
Telephone:
Telefax: Signature of the carrier(s) or agent:
E-mail:

Contact person (name, address, telephone, telefax, e-mail): Licence (when applicable):

Means of transportation:
 Sea Air Road Rail

(3) Name: Date of transboundary movement started:
Address:
Telephone:
Signature of the carrier(s) or agent:
Licence (when applicable):

Contact person (name, address, telephone, telefax, e-mail):

Means of transportation:
 Sea Air Road Rail

7. CONSENT OF THE COMPETENT LOCAL AUTHORITY

(to be complete by the generator/exporter/importer)

I/we being the generator/
exporter/importer hereby declare/guarantee that the
information contained in this document is correct
and true.

Signed (*generator/importer/exporter*)

Date:

I/we being

Signed (*generator/importer/exporter*)

The generator/exporter/importer
hereby..... objections from all the contracting
parties to the Basel Convention and local authorities
through which the wastes will be transported.

Date:

(attach copies of no objections/consent)

Date of consent of Exporting

State:

Date of consent of Transit

State:

Date of consent of Transit

State:

Date of consent of Transit

State:

ANNEX to the Notification and Movement Document

1. The Notifier is:
the person who wants to transit hazardous waste through Kenya.
2. "Designation of the waste" means a designation of the nature and the concentration of the most hazardous components, in term of toxicity and other dangers presented by the waste both in handling and in relation to the proposed disposal method.
3. As per Annex IV of the Basel Convention: D or R code.
4. This must include the point of entry and the point of exit of the waste, inside or outside the country.
5. In the case of a general notification covering several shipments, the expected dates of each shipment have to be specified. If this is not known, the expected frequency of the shipments.

FIRST SCHEDULE*(Regulation 3)***WASTES CONSIDERED HAZARDOUS**

The following wastes shall be considered hazardous wastes:

- Y0 All wastes containing or contaminated by radio-nuclides the concentration of properties of which result from human activity.
- Y2 Wastes generated from medical care and/or medical examination in hospitals clinics, elderly medical care centres and maternity wards and in medical care centres and wastes from medical examination in medical examination laboratories
- Y3 Waste pharmaceutical, drugs and medicines
- Y4 a) Wastes generated from the production and import of the chemicals including germicides, fungicides, bactericides, ratcides, herbicides and other chemicals for prevention of the breeding and extermination of animals, plants and viruses; and growth promoting chemicals, germination control and other chemicals for the promotion and suppression of physiological activities of plants (hereafter referred to as "biocides etc.").
 b) Wastes generated from formulation of biocides etc. for sales and grant.
 c) Wastes generated from sales and use of biocides etc.
- Y5 a) Wastes generated from the production and import of decay-preventing agents, insect control agents and other chemicals for wood preservation (hereafter referred to as "wood preserving chemicals").
 b) Wastes generated from formulation of wood preserving chemicals for sales and grant
 c) Wastes generated from sales and use of wood preserving chemicals
- Y6 a) Wastes generated from the production and import of organic solvents
 b) Wastes generated from formulation of organic solvents for sales and grants
 c) Wastes generated from sales and use of organic solvents
- Y7 Wastes from heat treatment and tempering operations containing cyanides.
- Y8 Waste mineral oils unfit for their originally intended use.
- Y9 Waste oils/water, hydrocarbons/water mixtures, emulsions.
- Y10 Waste substances and articles containing or contaminated with Polychlorinated Biphenyls (PCBs) and/or Polychlorinated triphenyls (PCTs) and/or Polybrominated Biphenyls (PBBs)
- Y11 Waste tarry residues arising from refining, distillation and any parlytic treatment b) Wastes generated from formulation of inks, etc. for sales and grant
- Y12 a) Wastes generated from the production and import of inks, dyes, pigment paints, lacquers and varnishes (hereafter referred to as "inks, etc.")
 b) Wastes generated from formulation of inks, etc. for sales and grant
- Y13 a) Wastes generated from production and import of resins, latex, plasticizers, glues/adhesives (hereafter referred to as "resins, etc.")
 b) Wastes generated from formulation of resins, etc. for sales and grant
 c) Wastes generated form sales and use of resins, etc.
- Y14 Waste chemical materials arising from research and development or teaching activities, in the following facilities, which are not identified and/or are new and whose effects on man and/or the environment are not known.
 i) research and examination institutions owned by central and local governments;
 ii) universities, colleges, junior colleges, professional schools and their subsidiary research and study institutions, and;
 iii) institutions for research and development of products and technologies.
- Y15 Wastes of an explosive nature not subject to the Explosives Act, Cap 309.
- Y16 a) Wastes generated from the production and import of sensitive chemicals and materials for photographs (hereafter referred to as "photographic chemicals, etc.")
 b) Wastes generated from the formulation of photographic chemicals, etc. for sales and grant.
 c) Wastes generated from the sales and use of photographic chemicals, etc.
- Y17 Wastes resulting from the surface treatment of metals and plastics
- Y18 Residues arising from industrial waste disposal operations.

Y19 Wastes containing metal carbonyls listed as follows:

- a) Wastes containing 0.1% or more by weight or any of the following metal carbonyls:
Iron-pentacarbonyl, Nickel-tetracarbonyl, Methyl cyclopentadienyl manganese-tricarbonyl
- b) Wastes containing other metal carbonyls

Y20 Wastes containing beryllium and/or beryllium compounds listed as follows:

- a) Wastes containing 0.1% or more by weight of any of the following beryllium and/or beryllium compounds:
Beryllium, Beryllium chloride, Beryllium oxide, Beryllium nitrate, Beryllium hydroxide, Beryllium fluoride, Beryllium sulfate.
- b) Wastes containing other beryllium and/or beryllium compounds

Y21 Wastes containing hexavalent chromium compounds listed as follows:

- a) Wastes containing 0.1% or more by weight of any of the following hexavalent chromium compounds:
Chromium oxychloride, Chromic acid solution, Zinc chromate, Potassium zinc chromate, Potassium chromate, Silver chromate, Strontium chromate, Sodium chromate, Lead chromate, Barium chromate, Bismuth chromate, chromosulphuric acid, chromium trioxide, anhydrous, Ammonium dichromate, Potassium dichromate, Sodium dichromate, Lead chromate molybdate sulfate.
- b) Wastes containing other hexavalent chromium compounds.
- c) Wastes to be exported for the purpose of DI to D4 or R10 of Annex IV of the Convention which cannot meet the following criteria:
 - i) Wastes in solid form, which cannot meet the Ambient Soil quality Standards established under the Environment Management and Co-ordination Act.

Y22 Wastes containing copper compounds listed as follows:

- a) Wastes containing 0.1% or more by weight of any of the following copper compounds:
Copper acetoarsenite, Copper N, N=-Ethylenebis (sarcylideneaminato), Cuprous chloride, Cupric chloride, Copper cyanide, Sodium cuprocyanide, Cupriethylenediamine solution, Copper arsenate, and Copper sulfate
- b) Waste containing 1% or more by weight of any of the following compounds:
Copper (II) diammonium chloride dihydrate, Potassium cupric chloride, Copper acetate, Potassium cuprocyanide, Cupric nitrate, Cupric carbonate, Cuprous thiocyanate, Copper pyrophosphate, Cupric fluoride and Cuprous iodide
- c) Wastes containing copper compounds other than those listed in a) and b) above.
- d) Wastes in solid form to be exported for the purpose of R10 of Annex IV of the Convention, which cannot meet the Ambient Soil Quality Standards in terms of copper compounds.

Y23 Wastes containing zinc compounds listed as follows:

- a) Wastes containing 0.1% or more by weight of any of the following zinc compounds:
Zinc dithionite, Zinc arsenite, Zinc chloride, Zinc cyanide, Zinc arsenate
- b) Wastes containing 1% or more by weight of any of the following zinc compounds:
Zinc chlorate, Zinc peroxide, Zinc permanganate, Zinc chromate, Zinc fluorosilicate, Zinc acetate, Diethyl zinc, 2, 5-Diethoxy-4-morpholinobenzenediazonium zinc chloride, Dimethyl zinc, 4-Dimethylamino-6-(2-dimethylaminoethoxy) toluence-2-diazonium zinc chloride, zinc oxalate, Zinc bromate, Zinc nitrate, Zinc thiocyanate, 3-(2-Hydroxyethoxy) 4-pyrrolidin-1-ylbenzenediazonium zinc chloride, Zinc pyrophosphate, Zinc Fluoride, 4-{Benzyl(ethyl) amino}-3-ethoxybenzenediazonium zinc chloride 4-{Benzyl 9methyl) amino}-3-ethoxybenzenediazonium zinc chloride, Zinc methylthiocarbamate, Zinc sulfate, Zinc phosphide, Zinc phosphate.
- c) Wastes containing zinc compounds other than those listed in a) and b) above.
Wastes containing arsenic and/or arsenic compounds listed as follows:
 - a) Wastes containing 0.1% or more by weight of any of the following arsenic and/or arsenic compounds:
Arsenic, Copper acetoarsenite, Zinc arsenite, Calcium arsenite, Silver arsenite, Strontium arsenite, Ferric arsenite, Copper arsenite, Sodium arsenite, Lead arsenite, Alkylarsenic compounds, Ethyldichloroarsine, cacodylic acid, Sodium cacodylate, Diarsenic pentoxide, Arsenic pentafluoride, Arsenic trichloride, Arsenous trioxide, Arsenic tribromide, Acia managenese arsenate, Arsenic trifluoride, Diphenylamine chloroarsine, Diphenylchloroarsine, Tetrarsenic tatasulfide, Vinyzene, Arsenic acid, Zinc arsenate, Ammonium arsenate, Potassium arsenate, Calciul arsenate, Sodium arsenate dibasic, Calcium arsenate, Ferrous arsenate, Mercuric Ferric arsenate, Copper arsenate, Sodium arsenate, Lead arsenate, magnesium arsenate, Calcium arsenate fluoride, benzeneearsonic acid, Potassium Metaarsenite, Sodium metaarsenite, Calcium methanearsonate, Ferric methanearsonate, Arsenic disulfide, Arsenic trisulfide.

- b) Wastes containing arsenic and/or arsenic compounds other than those listed in (a) above.
 - c) Wastes to be exported for the purpose of D1 to D4 or R10 of Annex IV of the Convention, which cannot meet the following criteria:
 - i) Wastes in solid form, which cannot meet the Ambient Soil Quality Standards in terms of arsenic and/or arsenic compounds
 - ii) Wastes in liquid form, which cannot meet the waste water discharge standards to solid in terms of arsenic and/or arsenic compounds.
 - d) Wastes to be exported for the purposes other than those listed in c) above and which cannot meet the following criteria:
 - i) Wastes in solid form, which cannot meet the standards in Attached Table 1 of the verification standards for hazardous wastes in terms of arsenic and/or arsenic compounds
 - ii) Wastes in liquid form, which cannot meet the standards in Attached Table No.1 of the effluent quality standards in terms of arsenic and/or arsenic compounds.
- Y25 Wastes containing selenium and/or selenium compounds listed as follows:
- a) Wastes containing 0.1% or more by weight of any of the following selenium and/or selenium compounds: Selenium, Sodium selenite, Selenium oxychloride, Selenium chloride, Selenic acid, Sodium selenite, Selenium dioxide, Selenium disulphide, cadmium red.
 - b) Wastes containing 1% or more by weight of any of the following selenium and/or selenium compounds: Selenious acid, Barium selenite, Ferrous selenide.
 - c) Wastes containing selenium and/or selenium compounds other than those listed in a) and b) above.
- Y26 Wastes containing cadmium and/or cadmium compounds listed as follows:
- a) Wastes containing 0.1% or more by weight of any of the following cadmium and/or cadmium compounds: Cadmium, Cadmium Chloride, Cadmium acetate, dihydrate, Cadmium oxide, Cadmium cyanide, Dimethyl cadmium, Cadmium bromide, Cadmium nitrate, Cadmium hydroxide, Cadmium stearate, Cadmium carbonate, Cadmium iodide, Cadmium laurate, Cadmium sulfate, Cadmium yellow, Cadmium red.
 - b) Wastes containing cadmium and/or cadmium compounds other than those listed in the above a)
 - c) Wastes to be exported for the purpose of D1 to D4 or R10 of Annex IV of the Convention, which cannot meet the following criteria:
 - i) Wastes in solid form, which cannot meet the Ambient Soil Quality Standards in terms of cadmium and/or cadmium compounds;
 - ii) Wastes in liquid form, which cannot meet waste water discharge standards to soil in terms of cadmium and/or cadmium compound.
 - d) Wastes to be exported for purposes other than those listed in the 8 above which cannot meet the following criteria:
 - i) Wastes in solid form, which cannot meet the standards in Attached Table 1 of the verification standards for hazardous wastes in terms of cadmium and/or cadmium compounds;
 - ii) Wastes in liquid form, which cannot meet the standards in Attached Table 1 of the effluent quality standards in terms of cadmium and/or cadmium compounds.
- Y27 Wastes containing antimony and/or antimony compounds listed as follows:
- a) Wastes containing 0.1% or more by weight of any of the following antimony and/or antimony compounds: Sodium antimonate, Lead antimonate, Antimony pentachloride, Antimonypentoxide, Antimonypentafluoride, Antimony trichloride, Antimony trioxide, Potassium hexahydroxoantimonate (V), Antimony trifluoride, Potassiumantimonyl tartrate, Antimony lactate, Sodiummetaantimonate
 - b) Wastes containing 1% or more by weight of antimony
 - c) Wastes containing antimony and/or antimony compounds other than those listed in the above a) and b)
- Y28 Wastes containing tellurium and/or tellurium compounds listed as follows:
- a) Wastes containing 1% or more by weight of any of the following tellurium and/or tellurium compounds: Tellurium, Diethyl tellurium, Dimethyl tellurium.
 - b) Wastes containing tellurium and/or tellurium compounds other than those listed in the (a) above,
- Y29 Wastes containing mercury and/or mercury compounds listed as follows:
- a) Wastes containing 0.1% or more by weight of any of the following mercury and/or mercury compounds: Mercury, Mercury benzoate, Ethylmercury chloride, Mercurous chloride, Mercuric chloride, Mercury ammonium chloride, Methylmercuric chloride, Mercuric oxycyanide, Mercury oleate, Mercury gluconate,

Mercury acetate, Mercury salicylate, Mercuric oxide, Mercury cyanide, Mercury potassium cyanide, Diethyl mercury, Dimethyl mercury, Mercury (I) bromide, Mercurous Nitrate, Mercuric nitrate, phenyl mercuric hydroxide, Mercuric thiocyanate, Mercuricarsenate, mercury (II) iodide, Mercury potassium iodide, Mercury fulminate, Mercury sulphide, Mercurous sulfate, Mercuric sulfate.

- b) Wastes containing 1% or more by weight of any of the following mercury and/or mercury compounds: Mercury nucleate, Mercurous acetate, Phenylmercury acetate, Phenylmercuric nitrate, Thimerosal;
- c) Wastes containing mercury and/or mercury compounds other than those listed in a) and b) above
- d) Wastes to be exported for the purpose of D1 to D4 or R10 of Annex IV of the Convention, which cannot meet the following criteria:
 - i) Wastes in solid form, which cannot meet the Ambient Soil Quality Standards in terms of mercury and/or mercury compounds;
 - ii) Wastes in liquid form, which cannot meet the waste water discharge standards to soil in terms of mercury and/or Mercury compounds.
- e) Wastes to be exported for purposes other than those listed in the d) above, which cannot meet the following criteria;
 - i) Wastes in solid form, which cannot meet the standards in Attached Table 1 of the verification standards for hazardous wastes in terms of mercury and/or mercury compounds;
 - ii) Wastes in liquid form, which cannot meet the standards in Attached Table 1 of the effluent quality standards in terms of mercury and/or mercury compounds.

Y30 Wastes containing thallium and/or thallium compounds listed as follows:

- a) Wastes containing 0.1% or more by weight of any of the following thallium and/or thallium compounds: Thallium chlorate, Thallium acetate, Thallic oxide, Thallium bromide, Thallous nitrate, Thallium iodide, Thallium sulfate.
- b) Wastes containing 1% or more by weight of thallium
- c) Wastes containing thallium and/or thallium compounds other than those listed in a) and b) above.

Y31 Wastes containing lead and/or lead compounds listed as follows:

- a) Wastes containing 0.1% or more by weight of any of the following lead and/or lead compounds: Lead, Lead azide, Lead arsenite, Lead monoxide, Lead chloride, Basic lead silicate, Lead perchlorate, Lead chromate, Lead silicate, lead acetate, Tribasic lead sulfate, lead cyanamide, tetraalkyllead, Lead cyanide, Lead tetroxide, lead nitrate, Lead hydroxide, lead styphnate, Lead stearate, Lead carbonate, Lead naphtenate, Calcium plumbate, dibasic lead sulfite, Dibasic lead phosphite, Lead stearate dibasic, basic lead phthalate, Lead dioxide, Lead flouoroborate solution, Lead phosphite dibasic, Lead arsenate, Lead flouride, Lead metaborate, Lead methanesuphonate, Lead iodide, Lead sulfate, Lead iodide, Lead sulfate, Lead chromate molybdate sulfate.
- b) Wastes containing lead and/or lead compounds other than those listed in a) above.
- c) Wastes to be exported for the purpose of D1 or D4 or R10 on Annex IV of the Convention, which cannot meet the following criteria;
 - i) Wastes in solid form, which cannot meet the Ambient Soil Quality Standards in terms of lead and/or lead compounds;
 - ii) Wastes in liquid form, which cannot meet the waste water discharge standards to soil in terms of lead and/or lead compounds;
- d) Wastes to be exported or imported for purposes other than those listed in c) above, which can not meet the following criteria.
 - i) Wastes in solid form, which cannot meet the standards Attached Table 1 of the verification standards for hazardous wastes in terms of Lead and/or lead compounds.
 - ii) Wastes in liquid form, which cannot meet the standards in Attached Table 2 of the effluent quality standards in terms of Lead and or Lead compounds.

Y32 Wastes containing inorganic flourine compound excluding calcium flouride listed as follows:

- a) Wastes containing 0.1% or more by weight of any of the following inorganic flourine compounds: Flourosilicic acid, Bromide pentaflouride, Bromide trifluoride, Bromide trifluoride dihydrate, Pottassium bifluoride, Difluorophosphoric acid, Ammonium flouride, Potassium flouride (spray dide), Chromic fluoric, Hydrofluoride, Ammonium hydrogenfluoride, Hydrofluoric acid, Sodium flouride, Fluorosulphonic acid, Fluorophosphoric acid Anhydrous, hexafluorophosphoric acid, Fluobolic acid.
- b) Wastes containing 1% or more by weight of any of the following inorganic flourine compounds:

Ammonium fluoroborate, Ammoniumfluorosilicate, Barium fluorids, Barium fluorosilicate, Iodine pentafluoride, Lithium borofluoride, magnesium borofluoride, Magnesium fluorosilicate, manganese fluorosilicate, Potassium fluoroborate, Potassium fluorosilicate, Potassium hydrogen fluoride, Sodium fluorosilicate, sodium hydrogen fluoride, stannous fluoride, sodium fluoroborate, zinc fluorosilicate.

c) Wastes containing inorganic fluorine compounds other than those listed in a) and b) above.

Y33 Wastes containing inorganic cyanides listed as follows:

a) Wastes containing 0.1% or more by weight of any of the following inorganic cyanides:

Cyanogen bromide, Hydrogen cyanide, hydrocyanic acid aqueous, leadcyanide, mercurycyanide, mercuric potassium cyanide, nickel cyanide, Potassium cyanide, Silver cyanide, sodiumcuprocyanide, Sodiumcyanide, Zinc cyanide.

b) Wastes containing 1% or more by weight of any of the following inorganic cyanides:

Barium cyanide, Barium platinum cyanide, Calcium cyanide, Copper cyanide, Potassium cobalt cyanide, Potassium cuprocyanide; Potassium gold cyanide, Potassium nickel cyanide.

c) Wastes containing inorganic cyanide other than those listed in a) and b) above.

d) Wastes to be exported or imported for the purpose of D1 to D4 or R10 which cannot meet the following criteria:

- i) Wastes in solid form, which cannot meet the Ambient Soil Quality Standards in terms of inorganic cyanide
- ii) Wastes in liquid form, which cannot meet the waste water discharge standards to soil in terms of inorganic cyanide.

e) Wastes to be exported or imported for the purposes other than those listed in d) above, which cannot meet the following criteria:

- i) Waste in solid form, which cannot meet the standards in Attached Table 1 of the verification standards for hazardous wastes in terms of inorganic cyanide;
- ii) Wastes in liquid form, which cannot meet the standards in Attached Table 1 of the effluent quality standards in terms of inorganic cyanide.

Y34 Acidic solutions or acid in solid form with pH value of 2.0 or less, or basic solutions or bases in solid form with pH value of 11.5 or more by weight (in case of substances in solid form, pH value of the solution of water-substance has a ratio 1:3 in weight)

Y35 Basic solutions or bases in solid form.

Y36 Wastes containing asbestos in the form of dust or fibers

Y37 Wastes containing organic phosphorus compounds listed as follows:

a) Wastes containing 0.1% or more by weight of any of the following organic phosphorus compounds:

Azinphos-ethyl, Azinphos-methyl, Butyl phosphorotrithionate, Carbophenothion, Chlorfenvinphos (I SO), Chlormephos, S{(6-Chloro-2-oxo-3-brenzosyazolyl) methyl} O, O-diethyl phosphorodithioate, Chlorthiophos, Camaphos, Cresyldiphenyl Phosphote, Crotoxyphos, Crufomate, Demephion, Demeton-O-methyl, Demeton-S-methyl, Dialifos, dichlofenthion, dichloromethylphosphine, Dicrotophos, O, O-Diethyl-S-2 (ethylthio) ethyl phosphorodithioate, diethyl = 4-nitrobenzylaphosphonate, O-O-Diethyl-O (5-phenyl-3-isooxazolyl) phosphorothioate, O, O-Diethyl-O-3,5,6-trichloro-2-pyriylphosphorothioate, Dimefox, O, O-Dimethyl-S (1, 2-ethylthioethyl phosphorodithioate, Dimethyl 2,2-dichlorovinylphospate, Dimethyl ethylthioethyl dithiophosphate, Dimethylhydrogen phosphite, Dimethyl-methylcarbonylethylthioethyl thiophosphate, O-O-Dimethyl-N-methylcarbamoyl-methyl dithiophosphate, dimethyl-S- (N-methyl-N-formoylcarbamoylmethyl) dithiophosphate O, O-Dimethyl-O{3-methyl-4-(methylthio) phenyl}thiophosphate, O-O-Dimethyl-O-(3-methyl-4-nitrophenyl) thiophosphate, O-O-Dimethyl-S-(phenylaceticacidethylester) dithiophosphate, O, O-Dimethyl phthalimid methylthiophosphate, Dimethylthiophosphoryl chloride Dimethyl 2,2,2-trichloro-1-hydroxyethyl phosphorate, Dioxathiory, Diphenyl-2, 4, 6-trimethylbenzoylphosphine-oxide, Edifenphos, Endothior Ethion, Eithoatethyl, Eithoprophos, O-ethyl-O-p-nitrophenylthionobenzenephosphate, Fenamiphos, Fensulthion, Fonofos, Hexaethyl tetraphosphate, Hexamethylphosphoric triamide, heptenophos, Isodecyl diphenylphosphate, 2-Isopropyl 1-4-methylpyrimidyl 6-diethylthiophosphate, Isothioate, Mecarbam, Menazon, Mephosfolan Methamidophos, 2-methos-4H-1, 3, 4-thiadiazolyl- (3)-methyl} dimethyl phospholothiolothionate, Methyl parathion, Methyltrithion, Mevinphos Naled, Omethoate, Oxydisulfoton, Oxydemetonmethyl, Paraoxon, Parathion, Pirimiphosethyl, Phenkapton, Phorate, Phosfolan, Phosphamidon, prothoate, propaphos, pyrazophos, Pyrazoxon, Quinalphos, Scharadan, Sulprofos, Tetraethyl dithiopyrophosphate, Thionazin, Temephos, Terbfos, Tris (1-aziridinyl) phosphine oxide, Triamiphos, Triazophos, Trichloronate, Triethylphosphate Tris(1-aziridinyl) phosphine

sulphide, Tris (4-methoxy-3, 5 dimethylphenyl) phosphine, Triethyl phosphate, Tributyl phosphates-S-3-(dimethoxyphosphinyloxy)-N-methylcrotonamide, Di-(2-ethylhexyl) phosphoric acid, di-(ethylhexyl) phosphoric acid, Triallyl phosphate, Tricresyl phosphate, Tris (isopropylphenyl) phosphate, Tri(2,3-dibromopropyl) phosphate.

- b) Wastes containing 1% or more by weight of any of the following organic phosphorus compounds: Amidothiazate, Bialaphos, O-4-Bromo-2-chlorophenyl-O-ethyl-S-propyl phosphorothioate, Bromophosethyl, Butamifos, O-Buthyl-S-benzyl-S-ethyl phosphorodithioate, 2-chloro-1-(2, 4 dichlorophenyl) vinyl diethyl phosphate, DEE, Demeton, Demeton-O, Dialkyl phosphodithioate, O-2, 4-Dichlorophenyl-O-ethyl-S-propyl phosphorodithioate, Diethyl-S-benzyl thiophosphate, Diethyl-4-chlorophenylmercaptoethyl dithiophosphate, Diethyl-(1, 3 dithiocyclopentylidene) thiophosphoramidate, Diethyl-4-methylsulfanylphenyl-thiophosphate, O, O-Diethyl-O-(3-oxo-2-phenyl-2H-pyridazin-6-yl) phosphorothionate Diethyl-paradimethylamino sulfonylphenylthio phosphate, Diethylthiophosphorylchloride, O, O-Diisopropyl-S-benzylthiophosphate, Diisopropyl-S-(ethylsulfanylmethyl)-dithiophosphate, Dimethyl-S-p-chlorophenylthiophosphate, O, O-Dimethyl-O-4-cyanophenyl phosphorothioate, 2, 3 (Dimethyldithiophosphoro) paradioxan, O, O-Dimethyl-S-2(ethylsulfanyl)-isopropyl-thiophosphate, Dimethyl-{2-(1-methylbenzoyloxycarbonyl)-1-methylethylene}-phosphate O, O-Dimethyl-O-(3, 5, 6-trichloro-2-pyridinyl) phosphorothioate, Ethyl-2-dichlorophenylthionobenzene phosphorate, O-6-Ethoxy-2-ethylpyrimidinyl-O, O-dimethyl-phosphorothioate, Fosthiazate, Leptophos, Mesulfenfos, Methylcyclohexyl-4-chlorophenylthiophosphate Octyldiphenyl Phosphate, Phenylphosphonic dichloride, Phenylphosphoro thiodichloride, piperophos, propetamphos, pyraclofos, Sulfote Tetraethylpyrophosphate, Temvinphos, Tributoxyethyl phosphate, Tributyl phosphine, S,S,S-Tributyl phosphorotrithioate, Triethyl phosphite Trimethyl phosphate, Trimethyl phosphite, Trioctyl phosphate Tris(chloroethyl) phosphate, Tris (B-chloropropyl) phosphate, Tris (dichloropropyl) phosphate.
- c) Wastes containing organic phosphorus compounds other than those listed in a) and b) above.
- d) Wastes to be exported for the purpose of D1 to D4 or R10 of Annex IV of the Convention, which cannot meet the following criteria:
- i) Wastes in solid form, which cannot meet the Ambient Soil Quality Standards in terms of organic phosphorus compounds;
 - ii) Wastes in liquid form, which cannot meet the waste water discharge standards to soil in terms of organic phosphorus compounds
- e) Wastes to be exported for the purposes other than those listed in the d) above, which cannot meet the following criteria:
- i) Wastes in solid form, which cannot meet the standards in Attached Table 1 of the verification standards for hazardous wastes in terms of organic phosphorus compounds;
 - ii) Wastes in liquid form, which cannot meet the effluent quality standards in terms of organic phosphorus compounds.

Y38 Wastes containing organic cyanides listed as follows:

- a) Wastes containing 0.1% or more by weight of any of the following organic cyanides; Acetone cyanhydrin, Acrylonitrile, Adiponitrile, 2-Amino-5(2-chloro-4-nitrophenylazo) 4-methyl-3-thiophenecarbonitrile, 2,2 B Azobis-[2-(hydroxymethyl) propionitrile], 2,2 B Azobis B (methylbutyronitrile), Benzonitrile, Bromobenzylcyanides, Bromoxynil, 3-Chloro-4-methylphenyl isocyanate, Cyanazine, a-Cyano-3-phenoxybenzyl-bis (trifluoromethyl) methyl 1-(3,4-isopropylidene) butene-1, 4-decarboxylate, Cyclohexyl isocyanate, 2,6-Dichlorobenzonitrile, dichlorophenylisocyanate, 3,3 B Dimethyl-4-4 B biphenylenediisocyanate, Diphenylmethane-4, 4-diisocyanate, Ethylene Cyanhydrin, Fenprothrin, Ioxynil, Isophor diisocyanate, lactonitrile, Melonitrile, Methacrylonitrile, met isocyanate, Phenylacetoneitrile, Phenyl isocyanate, O-phthalodinitrile, Propionitrile, Trimethylhexamethylene diisocyanate, Tolylenediisocyanate.
- b) Waste containing 1% or more by weight of any of the following organo cyanides: Acetonitrile, 2,2 B Azobis isobutyronitrile, 2,2 B Azobis B(2 dimethylvaleronitrile), 2,2, -Azobis(2,4-dimethyl-4-methoxyvaleronitrile) 1,1 B Azobis (hexahydrobenzonitrile), Butyronitrile, N-cyanoethyl-monochloroacetoamide, Cyanofenphos (CYP), (RS)-a-cyanophenoxybenzyl, Cyhalothrin, Cyphenothrin, Cyfluthrin, 2, Dibromopropionitrile, 2-Dimethylaminoacetoneitril, Ethyl cyanoacetate, Ethyl isocyanate, Fluvalinate, Hexamethylene diisocyanate, Isobut isocyanate, Isobutyronitrile, Isocyanatobenzotrifluoride, Isoprop isocyanate, Methoxymethyl isocyanate, Methyl isothiocyanate, 3-(N-Nitrosomethylamino) propionitrile, n-Propyl isocyanate, Terephthalonitrile, Tralomethrin, 1,2,5-Trithiocycloheptadiene-3,4,6,7-tatranitrile (TCH)
- c) Wastes containing organic cyanides other than those listed in a) and b) above.

Y39 Wastes containing phenol and/or phenol compounds

- a) Wastes containing 0.1% or more by weight of any of the following phenol and/or phenol compounds:
 2-Aminoanthraquinon, 7-Amino-4-hydroxy-2naphthalene sulfonic acid, p-t Butylphenol, Carboic oil, Chlorophenol, Coal tar, Cresols, Cyclohexylaminophenol, dichlorophenols, 2,4 dichloro-3-methylphenol, 1,4-Dihydro-9, 10 dihydroxyanthracene, 2,4-Dinitro-6-secbutylphenoldimethyl acrylate, 4,6 Dinitro-O-cresol, 2,4-Dinitrophenol, Dinoseb, Dinosebacetate, Dinoterb, Dinoterbacetate, Dodecylphenol, O-Ethylphenol Heptyl-1{2,5 dimethyl-4(2-methylphenylazo) phenylazo-2-naphthol, Hydroxybenzene, Isoamyl salicylate, Medinoterb, Methyl silicylate, Nitrocresols, Nitrophenols, Nonylphenol, Nonylphenol poly (4-12) ethoxylates, Pentachlorophenol, 4-Phenoxyphenol, Picric acid, Sodium pentachlorophenate, Trichlorophenols, 2-(thiocyanatomethylthio) benzothiasol, Xylenols.
- b) Waste containing 1% or more by weight of any of the following phenol and/or phenol compounds:
 2-Amino-4-chlorophenol, Aminophenols, Ammonium dinitro-O-cresolate Ammonium picrate, Chlorocresols, Diazodinitrophenol, 2, 4-Dinitro-cyclohexylphenol, 2, 4-Dinitro-6-(1-methylpropyl) phenol Dinitrophenolate, alkali metals, Dinitroresorcinol, Dyes, Hydroquinone, Hydroxysulfonic acid, N-Methylcarbanyl-2-chlorophenol (CPMC), 1 naphtho, resorcinol, sodium-2 4-dichloro-6-nitrophenolate (DNCP Sodiumdinitro-O-cresolate, 2,4,6-Trinitroresolcinol.
- c) Wastes containing phenol and/or phenol compounds other than those listed in a) and b) above.

Y40 Wastes containing ethers listed as follows:

- a) Wastes containing 0.1% or more by weight of any of the following ethers
 o-Anisidine, 2-(2-aminoethoxy) ethanol, 2-Amino-dimethoxypyrimidine, a-{1-[Allyloxy) methyl] B 2 B(nonylphenoxy) ethyl} w-hydroxypoli (n=1-100 (oxyethylene), Allylglycidylether, Alkaryl polyether (C9 B C20 Alcohol (C6 B C17) sec-poly (3-12) thoxylates, alcohol (C12-C15) poly (1-11) ethoxylates, Alcohol (C13 B C15) lyethoxylates, 1,2-Butylene oxide, Butyl glycidyl ether, Butyl hydroxy anisol, 2-t-Butyl-6-nitro-5-[p-(1,1,3,3 B tetramethylbutyl) phenoxy] benzoxazole, Carbofran, 4-Chlorobenzyl-4-ethoxyphenyl ether, p-(2-Chloroethyl) anisol, M-Chloromethylanisol, Coumafuryl, p-Cresidine, Endothal sodium, 2,3-Epoxy-1-propanol, 2,3,-Epoxypropyl-acetate, 2-(2,3 B Epoxyproyl)-6-methoxyphenyl-acetate, a-2, 3-Epoxypropoxyphenyl-w-hydrotropolin (n=17)

SECOND SCHEDULE

(Regulation 3)

LIST OF HAZARDOUS CHARACTERISTICS

UN CODE CHARACTERISTICS CLASS

1. H1 Explosive
- An explosive substance or waste is a solid or liquid substance or waste (or mixture of substances or wastes) which is in itself capable by chemical reaction of producing gas at such a temperature and pressure and at such a speed as to cause damage to the surroundings.
3. H3 Flammable liquids
- The word "flammable" has the same meaning as "inflammable". Flammable liquid are liquids, or mixtures of liquids, or liquids containing solids in solution or suspension (for example paints, varnishes, lacquers and others but not including substances or wastes otherwise classified on account of their dangerous characteristics) which give off a flammable vapour at temperatures of not more than 60.5°C, closed-cup test, or not more than 65.6°C open-cup test (Since the results of open-cup tests and closedup tests are not strictly comparable and even individual results by the same tests are often variable, regulations varying from the above figures to make allowance for such difference would be within the spirit of this definition.)
- 4.1 H4.1 Flammable solids
- Solids or waste solids, other than those classed as explosives, which under conditions encountered in transport are readily combustible, or may cause or contribute to fire through friction.
- 4.2 H4.2 Substances or wastes liable to spontaneous combustion
- Substance or wastes which are liable to spontanous heating under normal conditions encountered in transport or to heating up on tract with air, and being then liable to catch fire.
- 4.3 H4.3 Substances or wastes which, in contact with water emit flammable gases; substances or wastes which, by interaction with water, are liable to become spontaneously flammable or give off flammable gases in dangerous quantities.
- 5.1 H5.1 Oxiding
- Substances or wastes which, while in themselves not necessary combustible, may generally, by yielding oxygen, cause or contribute to the combustion of other materials.
- 5.2. H5.2 Organic peroxides
- Organic substances or wastes which contain the bivalent O-O-structure are thermally unstable substances which may undergo exothermic self accelerating decomposition.
- 6.1 H6.1 Toxic or poisonous (Acute)
- Substances or wastes liable either to cause death or serious injury or to the human health if swallowed or inhaled or by skin contact.

- 6.2 H6.2 Infectious substances extremely hazardous to health.
Substances or wastes containing viable micro-organisms or their toxins which are known or suspected to cause disease in animals or humans.
8. H8 Corrosives
Substances or wastes which, by chemical action, will cause severe damage when in contact with living tissue, Or in the case of leakage will materially damage, or even destroy, other goods in the means of transport; they may also cause other hazards.
9. H10 Liberation of toxic gases in contact with air or water
Substances or wastes which by interaction with air or water, are liable to give out toxic gases in dangerous quantities.
- H11 Toxic (delayed or chronic)
Substances or wastes which, by interaction with air or water, are liable to give out toxic gases in dangerous quantities.
Substances or wastes which, if they are inhaled or ingested or if they penetrate through the skin may involve delayed or chronic effects, including carcinogenicity.
- H12 Ecotoxic
Substances or wastes which, if released present or may present immediate or delayed adverse impacts to the environment by means of bio-accumulation and / or toxic effects upon biotic systems.
- H13 Capable, by means, after disposal, of yielding another material e.g. leachate which possesses any of the characteristics listed above.
10. H14 Radioactive waste
11. H15 Persistent waste; waste which contaminate the environment for long periods of time.
12. H16 Carcinogenic wastes which may lead to development of cancer in human beings or animals.

THIRD SCHEDULE

(Regulation 3)

GUIDELINES FOR THE DETERMINATION OF SOME HAZARDOUS CHARACTERISTICS

Testing Methods	Judging Criteria
1. Thermal analysis test using 2,4- dinitrotoluene and dibenzoyl peroxides as standard substances as specified in Annex 1	The results of the thermal analysis of test substances on the rectangular coordinates, where the common logarithm of corrected initiation temperature (real-measured initiation temperature 25°C) is on X axis (horizontal) and the common logarithm of calorific value is on Y axis (vertical). Then, a plot of the common logarithm of corrected initiation temperatures and adjusted calorific value (real measured calorific value multiplied by 0.7) of 2,4- dinitrotoluene and a plot of the common logarithms of corrected initiation temperature and adjusted calorific value (real measured calorific value multiplied by 0.8) of dibenzoyl peroxide are placed in the same coordinate. The Criterion is whether the plot of test substance in question is placed on or above the line to link the plots of 2,4- dinitrotoluene and dibenzoyl peroxides.
2. Flash point test by Tag closed cup apparatus as specified in I of Annex 2 (Flash point test by seta closed cup apparatus as specified in II of Annex 2 should be utilized instead, in case that, flash point measured by Tag closed cup apparatus be between 0°C and 80°C and also kinetic viscosity of test substance in question at the flash point is of 10 cent-stokes or more.)	Flash point of 60.5°C or less.
3. Small gas flash ignition test as specified in I of Annex 3 and flash point test by Seta closed cup apparatus, as specified in II of Annex 3	The criteria are a) whether test substance ignites within 10 seconds and burning continues by small gas flash ignition test, or b) whether the filter paper becomes scorched.
4. Spontaneous combustion test as specified in Annex 4	The Criteria are a) whether gas substance combusts, or b) whether the filter paper becomes scorched.
5. Reaction-to-water tests as specified in Annex 5.	The criteria are a) whether gas generated by the reaction of test substance to water auto-ignites or catches fire or, b) whether gas generated per one kilogram of test substance is one litre or more and also that has flammable component
6. Burning test using ammonium persulfate as standard substance, as specified in I of Annex 6 (applicable only for test substance in liquid form).	The criterion is whether the burning time of test substance is equal to or shorter than that of standard substance.

7. Burning test using 90% nitric acid solution as standard substance, as specified in II of Annex 6 (applicable only for tests substance in liquid form).	The Criterion is whether the burning time of test substance is equal to or shorter than that of standard substance.
8. Oral toxicity test, as specified in I Annex 7.	a) LD ₅₀ of 200mg/kg or less (applicable for test substance in solid form) b) LD ₅₀ of 500mg/kg or less (applicable for test substance in liquid form).
9. Dermal toxicity test as specified in II of Annex 7.	LD ₅₀ of 1,000mg/kg or less.
10. Inhalation toxicity test, as specified in III of Annex 7 (applicable only for test substance in form of dust or mist.)	LC ₅₀ of 10mg/kg or less.
11. Corrosion test for metals as specified in Annex 8.	Corrosion rate of metal chip of 6.25mm/year.

REMARKS

1. Test substances which are determined not to fall into the class I (explosives) and class (organic peroxides) based on the rules of the United Nations Recommendations on the transport of Dangerous Goods

- (2) Test procedure for dibenzoyl peroxide Carry out the procedure from (1) to (ii) using 2mg each of bibenzoyl peroxide and the standard substance.
- (1) Testing methods for test substance carry out the procedure (1) to (iii) using 2 mg each of the test substance and the standard substance

ANNEX 1

The thermal analysis test with 2-4-dinitrotoluene and dibenzoyl peroxides as standard substances uses the apparatus specified in item 1 to measure the starting heating temperature and the heating value of the waste in question and the standard substance when heated according to the testing methods specified in item 2.

1. APPARATUS

The apparatus shall be a differential scanning calorimetry (DSC) or a differential thermal analysis (DTA) apparatus using aluminum oxide (&) as standard substance.

2. TESTING METHODS

- (I) Testing methods for 2,4-dinitrotoluene
- (II) Encapsulate 1 mg of 2-4dinitrotoluene and 1 mg of the standard substance in a pressure of 50 kfg/cm² or more and load it on the apparatus. Then, heat it so that the temperature of the 2-4dinitrotoluene and the standard substance rises at a rate of 10°C in 60 seconds.
- (III) Determine the initiation temperature of heat generation and calorific value from the chart obtained.

ANNEX 2**A FLASH POINT TEST BY TAG CLOSED CUP APPARATUS**

The flash point test by Tag closed Cup Apparatus uses the apparatus specified item 1. The flash point of the waste in question is measured in the laboratory specified in item 2 according to the testing methods specified in item 3.

1. APPARATUS

The apparatus shall be a tag closed cup apparatus.

LABORATORY

The laboratory shall be in almost windless conditions.

3. TESTING METHODS

- (1) Put 50cm³ of a test substance in a test cup and then put the lid in place.
- (2) Produce a test flame and adjust its size to a diameter of 4mm.
- (3) Adjust the heating condition of the bath so that the temperature of the test substance will rise by 10°C per

60 seconds. When the temperature of the test substance reaches a value of 5°C below the expected flash is to be confirmed, (the same applying hereafter), open the shutter to make the test flame apply to the position. In this case, do not rapidly adjust the test flame up and down.

- (4) Where the test substance does not flash in (3), open the shutter every time the temperature of the test substance rises by 0.5°C, make the test flame apply to the vapour space of the cup for one second, and return it to the original position. Repeat this operation until the flash is observed.
- (5) Where the test substance flashes at a temperature lower than 60°C in (4) and in addition, the difference between that temperature and the expected flash point does not exceed 2°C the temperature at which the test substance flashes shall be deemed the flash point of the test substance.
- (6) When the test substance flashes in (3) or when there is a difference between the temperatures at which the test substance flashes in (4) and the expected flash point exceeds 2°C, repeat the procedures from (1) to (4).
- (7) Where the temperature at which the test substance flashes in (4) or (6) is not less than 60°C, carry out the following procedure.
- (8) Carry out the procedure described in (1) and (2)
- (9) Adjust the heating condition of the bath so that the temperature of the substance rises by 3°C within 60 seconds. When the temperature of test substance reaches a value 5°C below the expected flash point, open shutter to make the test flame apply to the vapour space of the cup for about one second and then return it to the original position. In this case, do not rapidly adjust the test flame up and down.
- (10) Where the test substance does not flash in (9) open the shutter every time the temperature of the test substance rise 1°C to make the test flame apply to the vapor space of the cup, then return it to the original position repeat this operation until the test substance catches fire.
- (11) Where the difference between the temperature at which the test substance flashes in (10) and the expected flash point does not exceed 2°C the temperature at which the test substance flashes shall be deemed the flash point of that test substance.

(12) When the test substance flashes in (9) and /or when the difference between the temperature at which the test substance flashes in (10) and the expected flash point exceeds 2°C, repeat the procedure from (8) to (10)

B. FLASH POINT TEST BY SETA CLOSED CUP APPARATUS

The flash point test by Seta closed cup apparatus shall measure the flash point the waste in question by using the apparatus specified in Item 1 at the laboratory specified in Item 22 and according to the testing methods specified in item 3.

1. Apparatus

The apparatus shall be a seta flash closed cup apparatus

2. Laboratory

The laboratory shall be in a place under atmospheric pressure in almost windless conditions.

3. Testing methods

- (1) Heat or cool a sample cup to the expected flash point, keep the sample cup at that temperature, pour 2cm³ of the test substance (when the expected flash point is lower than the room temperature of the laboratory, the sample shall be cooled down to the expected flash point in the cup, and then immediately place the lid and close the shutter.
- (2) Retain the temperature of the sample cup at the expected flash point for one minute.
- (3) Produce a test flame and adjust it to a diameter of 4mm.
- (4) After one minute, open the shutter to make the test flame apparatus the sample cup for 2.5seconds and then return it to original position. In this case, do not rapidly adjust the test flash up and down.
- (5) Where the sample flashes in (4) lower the expected flash points step wise and perform the procedure from (1) to (4) until it does not flash anymore. Where the sample does not flash in (4) , raise expected flash point step-wise and perform the procedure from (1) to (4) until it flashes.

ANNEX 3

A. SMALL GAS FLASH IGNITION TEST

The small gas flame ignition test measures the duration of time from when the waste in question makes contact with the flame to when a flame is ignited and observes whether burning continues or not. This test is conducted at the laboratory

specified in item 1 and according to the testing methods specified in item 2.

1. Laboratory

The laboratory shall be in a place under atmospheric pressure at temperature of 20°C and humidity of 50% in almost windless conditions.

2. Testing Methods

- (1) Put 3cm³ of the test substance (conditioned for 24 hours or more at temperature of 20°C in a desiccator containing silica gel for drying) on an impervious low-heat conducting base rate plate with thickness of 10mm or more. In this case, powdery or granula substance shall be put on the impervious low-heat conducting base plate in a hemispherical shape.
- (2) Keep a flame of liquefied petroleum gas (a diffusion flame from an ignition device with a rod like nozzle, and the flame length adjusted to 70mm with the nozzle of the said ignition device held upward) in touch with the test specimen for 10 seconds. (The contact area of the flame and test substance shall be 2cm² and the angle of contact shall be approx. 30 degrees).
- (3) Measure the time after the flame makes contact with the test substance until it is ignited. Determine whether burning including burning with no flame) continues. A test substance shall be judged to have undergone continues burning in the case where it burns out completely during its contact with the flame, where it burns out completely within 10 seconds after the flame is detached, or where it continues to burn for 10 seconds or more after the flame is detached.

B FLASH POINT TEST BY SETA CLOSED CUP APPARATUS

The flash point test by Seta closed cup apparatus measures the flash point of the waste in question using the apparatus specified in item 1 at the laboratory specified in item 2 and according to the testing methods specified in item 3.

1. Apparatus

The apparatus shall be a Seta flash closed cup apparatus

2. Laboratory

The laboratory shall be in a place under atmospheric pressure in almost windless conditions.

3. Testing Methods

- (1) Heat or cool a sample cup to the expected flash point, and while keeping the sample cup at that temperature, put 2g of the test substance in the cup (where the expected flash point is lower than the room temperature in the laboratory, the sample shall be cooled down to the expected flash point), and immediately place the lid and close the shutter.
- (2) Retain the temperature of the sample cup at the expected flash point for five minutes.
- (3) Produce a test flame and adjust its diameter to 4mm.
- (4) After five minutes, open the shutter to make the test flame apply to the vapour space of the sample cup for about 2.5 seconds and then return it to the original position. In this case, do not rapidly adjust the test flame up and down.
- (5) Where the sample flashes in (4), lower the expected flash point stepwise and perform the procedure from (1) to (4) until it does not flash anymore. Where the sample does not flash in (4), raise the expected flash point stepwise and perform the procedure from (1) to (4) until it flashes.

ANNEX 4

The spontaneous combustion test is conducted at the laboratory specified in item 1 and according to the testing methods specified in item 2. This test examines whether or not the waste in question combusts and whether or not the filter paper becomes scorched when exposed to air.

1. Laboratory

The laboratory shall be in a place under atmospheric pressure at a temperature of 20°C and humidity of 50% in almost windless conditions.

2. Testing Methods

(1) Testing methods for solid substance

- (i) Drop 2 cm³ of the test substance onto an impervious low-heat conducting base plate (with a heat transfer coefficient 86 cal(m.hr.c) or less) from a height of 1m, and determine whether spontaneous combustion occurs during the fall or within 5 minutes after falling. In this case, when the test substance does not pass through a 0.3 mm sieve, the test substance should be pulverized to pass through the same sieve.

- (ii) Where spontaneous combustion does not occur, repeat the same procedure six times, and determine whether spontaneous combustion occurs once or more.
- (2) Testing methods for liquid substance
 - (i) Fill a porcelain cup with a diameter of approx. 70mm with diatomaceous earth or silica gel to a height of 5mm)
 - (ii) Drop the entire 5cm³ of the test substance onto the porcelain cup from a height of 20mm for 30seconds at a constant speed using a syringe and determine whether spontaneous combustion may occur within 5 minutes from first drop.
 - (iii) Where spontaneous combustion does not occur in (ii), repeat this operations six times using new samples of the wastes in question. If spontaneous combustion does not occur for any of the six trials, conduct the test shown in (iv).
 - (iv) Drop the entire 0.5cm³ of the test substance onto filter paper and conditioned for 24 hours or more at a temperature of 20°C in a desiccator containing silica gel for drying) with a diameter of 90mm placed on a porcelain with a diameter of approx. 70mm from a height of 20mm for 30 seconds at a constant speed using a syringe. Determine whether spontaneous combustion or scorching of the filter paper occurs within 5 minutes.

TANZANIA COUNTRY REPORT

EXECUTIVE SUMMARY

In general terms and in respect hereof waste is taken to include any discarded material be it solid, liquid, semi-solid or containing gaseous material resulting from industrial, commercial, mining and agricultural operations, or from community activities, it includes any garbage, refuse, sludge from a waste treatment plant, water supply treatment plant or air pollution control facility.

Any waste, if not properly managed can, not only be socially undesirable and hence, a nuisance, but can be dangerous to human health and environmentally dangerous. Therefore, every waste can be potentially hazardous; proper management is not a matter of choice but a necessity for purposes of human survival especially given the increasing wastes generation resulting from increasing human activities and population growth.

Waste is classified under two categories, hazardous and non-hazardous. It may be noted that the classification, in some instances, is made conveniently for purposes of management alone, and where this is the case, it means that if some wastes, if not the majority, non-hazardous waste if not properly managed, can be hazardous. In this regard, hazardous waste is taken to mean a waste or combination of wastes which, because of their quantity, or concentration or physical, chemical or infectious characteristics may-

- (a) cause, or significantly contribute to an increase in mortality or an increase in serious irreversible or incapacitating reversible illness, or
- (b) pose a substantial present or potential hazard to human health or the environment when improperly treated stored, transported, disposed or otherwise managed.

In some jurisdictions, the category of hazardous waste has been taken to mean the category of waste as listed under Basel or Bamako Convention or as declared by the authorities to be hazardous waste under their national laws. Unless a particular waste is listed under Bamako and/or Basel Convention or declared so under national laws, it is a non-hazardous waste. This mode of distinction simplifies the process of categorisation and eases the enforcement mechanism. However, it is important to note that categorization of waste by listing is effective only in jurisdictions, whereby all producers of waste are closely monitored and that production of waste is checked periodically or frequently as is convenient, a new and different type of waste which may be hazardous hitherto unknown can

be detected and controlled before being introduced into the environment.

Tanzania may have no capacity technologically or otherwise to monitor production of waste. It would therefore be unsafe to rely solely on management of wastes, by way of listing them or as declaration do but also should impose statutory obligation upon producers not to discharge transport, store, or deposit any type of waste whatsoever without first obtaining, permission from relevant authorities. The Apolluter-pays-principle@ would be of great assistance in this regard.

This Report is intended to deal with Management of non-hazardous wastes in Tanzania. The terms of reference are-

1. The problem of non-hazardous waste in Tanzania in relation to the existing national policy.
2. In view of para (1) above, critically evaluate existing environmental law, rules, regulations and practices governing transportation, handling, storage and disposal of non-hazardous wastes.
3. Based on para (2) above, identify gaps in the legal regime for better management of non-hazardous wastes.
4. Pursuant to the policy objectives in paragraph 50 section (a) and (b) of the NEP of December, 1997 and on the basis of existing scientific knowledge and extensive consultations with relevant institutions both public and private, establish criteria for classification of non-hazardous waste.
5. Develop draft regulations and guidelines to prescribe measures for the management of non-hazardous wastes on the basis of criteria mentioned in para 4 above and formulate proposals for amendments as appropriate.
6. Recommend the necessary capacity building requirements for the enforcement of guidelines and measures.

This report is divided into the following parts:

Part 1: Addresses the problem of non-hazardous wastes and the policy leading to the existing situation. It should be noted that to date Tanzania does not have a Waste Management Policy but, has several legal instruments addressing waste and is also a party to International and regional instruments

which encourages the implementation of internationally recognized hierarchy of reduction, reuse, recycling, recovery and residual management. The implementation of this is yet to be seen.

Part 2: Deals with, the analysis of existing laws, which address the issue of waste and their limitation or gaps.

Part 3: Deals with capacity building requirements for, the implementation-.Q Draft Regulation measures and to developing and enhancing waste management programmes.

Part 4: Consists of the Schedule, which contains:

- (i) Draft Regulations and Guidelines. However, Guidelines are for developing a management strategy, which is locally oriented but requires approval of the Minister responsible.
- (ii) Criteria for classification of non-hazardous wastes are appended as part of Draft Regulations.

CHAPTER ONE

PROBLEM OF NON-HAZARDOUS WASTES IN TANZANIA

1.1 INTRODUCTION

In most urban centres of Tanzania, heaps of uncollected garbage, crude dumping of waste, squatters areas, condemned buildings, haphazard developments, highway area structures, hazard area buildings, streets hijacked by overflowing sewage sludge, straying animals, farming, among others have become increasingly a common phenomenon in the recent past. These are the effects of poor planning, control or policy or both whereby the urban population becomes unmanageable and well beyond the planner's capacity to match heading to the squatter problem.

It can be noted from waste statistics in most urban areas that a large percentage of garbage generated is domestic. Kironde, J. M. L. in his paper on "Urbanization in Tanzania" makes an analysis on how African urban centres collapsed. He traces and concludes that what is seen now is the result of a collapsed system struggling to revive and to seek for identity.

Waste management is another side of land planning, they complement each other and none can exist without the other. It can be observed that the most adversely affected environmentally areas in any urban centres are squattered and unplanned areas. In Tanzania with the collapse of rural economy, urban centres became victims of a population boom with the result that the majority of its dwellers are squatters and peasants in the cities.

1.2 SQUATTERS AND "PEASANTS IN CITIES"

By law, a squatter is a trespasser. He is a person who lives on land without a title or other legal authority and without paying rent. Individuals occupy such land either because they do not have the capacity to buy land or there is not enough surveyed land to meet the demand for land. In Tanzania both problems exist. The land planning authorities are so overwhelmed by the urban Population exposition so much so those even officials concerned are also largely squatters themselves.

In other jurisdictions, a tradition has been set-up to counter the squatter problem. Some of the solutions have been re-

location of squatters, provision of equivalent or alternative plots of land, compensation and pre-emption. It is not worthy to dwell on this at this juncture, however, it is sufficient to point out that Tanzania squatter rights have been recognised by the law though in a backhanded fashion. It is this protection which has in a way contributed to the problem. Under the Land Ordinance, Cap. 113, a squatter can only be evicted from public land by a court of law that must provide for modalities of compensating the squatter.

Case law up to the court of Appeal of East Africa has refused to recognise legislation that makes natives "trespassers in their own country". In the 1960s, squatters improvement programmes re-developed areas in Dar es Salaam City such as Magomeni, Ilala, Kinondoni and Temeke. Urban improvement saw the execution of World Bank funds developing sites and services schemes in the 1970s whose component included squatter improvement for the Manzese area in Dar es Salaam.

During same period in the 1970s, however, Tanzania had vowed to pursue the Policy of Socialism termed "*Ujamaa Na Kujitegemea*". In its course, the Government of the then President Julius Nyerere, failed to convince peasants to form joint collective villages (*Ujamaa Villages*). The classical response was to use force. The early 1970s saw the "*Operation Vijiji*" where peasants were forcefully relocated and their homes demolished. Peasants were humbled and promised a better planned rural environment with provision of services and agricultural inputs. On the altar of development the peasants of Tanzania were improvised by their own state. No development as promised came about, and whatever existed of a rational rural life and infrastructure progressively collapsed.

As a result, the rural-urban immigration increased to unprecedented levels. The population of Dar es Salaam hit the million-mark peak in the 1970s and today has a pride of having over 3 million people in an urban environment mostly made up of "peasants in-a-city". The slum, ghetto or squatter problem in Tanzania arises from failure of central planning and the collapse of rural economy. The urban planners are faced with multifaceted problems of planning for peasant's

in cities. The peasant would migrate to the city not only with the illusions of what the urban life may provide but with his arts, crafts and rural economy, his hoe, chickens, goats, cows and garden. On the planned plot he cannot be accommodated. He must create a space to reproduce the village.

Similarly, retired, and laid off workers could not go to the village, which is being abandoned, he can only re-produce as a villager in the urban land - unplanned but re-created by him i.e. the squatter land. In this re-created environment no planning has been organised. Land use and effluent treatment is totally unknown. The peasant re-creates waste management as known in the village, the urbanites resort to some quasi-urban method.

1.3 STATE INVOLVEMENT IN VIOLATION OF LAW

The prime mover of policy and the law which had disenfranchised the rural peasant and laid off the workers, is the state, yet it has the same state that is the major enforcer and custodian of planning laws. However, the same state which condoned and acquiesced to the incremental abrogation of planning. The state had forced the violation of planning laws for example during "*Kilimo cha kufa na Kupona*" which was a national agricultural operation for survival,

whereby people were encouraged to undertake agricultural activities in the urban areas and many were allocated residential surveyed areas for farming and without permit. With this stance, Government cannot claim mandate to enforce planning laws against its citizens or even boast to have respect on them. Therefore, that leaves us with the now propagated community based option proposed in the Regulations following hereinafter.¹

1.4 SOURCES OF WASTES

1.4.1 SOLID WASTE - URBAN AREA

Solid waste problem in Tanzania is felt most in urban areas for reasons elucidated above, however, no statistics are available to provide percentages of solid waste generated from various sources. It should be noted that identification of solid waste according to source of generation is usually done for purposes of qualification but does not characterize the nature. This is so because nature of waste within a single source

category may vary greatly. For management purposes, however, both source and nature of waste are equally important.

In Tanzania, like in most countries, municipal solid wastes include:-

- household waste
- commercial waste
- institutional waste
- yard and street waste (car wrecks, construction and demolition)
- market waste
- hospital waste
- industrial waste

Table 1 shows the waste generation situation in the Municipalities of Tanzania.

(i) Household Waste: Household waste, otherwise called domestic waste usually contain the following:

- vegetables & bones
- papers
- glasses
- metals
- textiles
- plastics & rubber

Due to insufficient information on the amount of household waste generated in Tanzania as a whole it is proposed to adopt data available for Dar es Salaam City to represent the whole of the country for the purposes of this report.

The 1988 data for Dar es Salaam City shows that total domestic solid waste generation can be calculated to vary between 600 and 750 tonnes per day. The yearly average generation rate is therefore estimated at 650 tonnes per day. Out of which:

- Vegetable accounts for 62.5%
- Paper accounts for 6.2%
- Glass accounts for 0.3%
- Metal accounts for 1.20%
- Textiles accounts for 1.80%
- Plastic & rubber accounts for 0.30%
- Bones account for 0.30%
- Other constituents account for 27.30%

¹ In the case of *Joseph A. Kessy & Others vs. Dar es Salaam City Council* CC No. 299/1998 (unreported) and *Festo Balegala & Others vs. Dar es Salaam City Council* Misc. CC 90/1991 (unreported) both of Dar es Salaam where citizen took action to protect their environment from pollution against dumping of waste in residential area.

(ii) Commercial Waste

Generator in this category include enterprises such hotels and all catering entities, shops and stores. Waste from hotels and restaurants include kitchen wastes, while from shops includes papers and package materials. For Dar es Salaam, total quantity of commercial waste generated is estimated at 45 tonnes a day.² Market generated waste are the most notorious type of waste which can be observed most of the towns in the country. It contains fruits and vegetable wastes, package material, fish and meat waste. An average daily market waste generated in Dar es Salaam alone is estimated at 200 tonnes.³

(iii) Institutional Wastes

Generators under this category will include institutions in public sector such as Government offices, universities, schools, airports, army and the Harbour. Also private institutions in commercial services such as financial institutions, engineering firms, and the like. In Dar es Salaam, total generation of this category is assessed at 60 tonnes per day.⁴

(iv) Yard and Street Waste

Under this category is included waste from car wrecks, construction and demolition debris. Waste not properly

TABLE 1: SHOWING SOLID WASTE GENERATED AND COLLECTED:

Urban Areas	Population	Waste generated (tons/day)	Waste collected (tons/day)	%Waste collected	Final Disposal
Dar es Salaam	3,000,000	2,000	200	10.0	Crude dumping
Mwanza	500,000	210	80	38.0	Crude dumping
Moshi	137,200	93	47	50.5	Crude dumping
Shinyanga	135,740	95	24	25.0	Crude dumping
Tabora	160,000	120	12	10.0	Crude dumping
Bukoba	67,000	24	7.2	30.0	Crude dumping
Arusha	250,000	200	NA	NA	Crude dumping
Tanga	187,000	190	NA	NA	Crude dumping
Mtwara	100,000	50	15	30.0	Crude dumping
Songea	113,000	57	NA	NA	Crude dumping
Musoma	80,000	30	7	23.3	Crude dumping
Lindi	59,000	NA	NA	NA	Crude dumping
Iringa	121,000	36	16	46.0	Crude dumping
Dodoma	300,000	NA	NA	NA	Crude dumping
Kigoma	105,000	60	10	17.0	Crude dumping
Morogoro	206,000	260	26	10.0	Crude dumping

Source: Kironde, 1998

2 *supra*

3 *supra*

4 *supra*

collected or disposed which litter the streets and clog the drainages. Such waste is generated from commercial activities in the street, for instance, the selling of fruits, vegetables, Machinga. Statistics for Dar es Salaam show that such waste is generated at 35 tonnes a day. While car wrecks, trucks and buses are estimated to be generated at 8,500 tonnes annually. Dar es Salaam is estimated to have been 15,000 B 20,000 wrecks and abandoned cars.⁵ Construction and demolition waste is a result of construction, maintenance, repair and demolition of houses, buildings, roads and other structures which produce materials like sand, stones, bricks, concrete, irons and the like.

(v) Hospital Waste

Experts in waste analysis have categorised waste from hospitals under two headings, one is waste similar to domestic solid waste which contains kitchen waste, paper and package material. While the second heading contains bandages, syringes, needles, theatre waste, placentas and drug waste. This categorization can be termed as hazardous and non-hazardous, respectfully. Statistics estimate that Dar es Salaam, in both hospital waste category generates about 20 tonnes a day.

(vi) Industrial Waste

It includes waste generated from processing and non-processing industries. The following are industries found in Tanzania showing some characteristics of pollutants/waste they generate-

In comparison terms, however, the industrial sector in Tanzania is small and of late production has suffered economic set backs leading to the closure of some and the majority which were

publicly owned have ceased and are earmarked for privatisation. But the impact caused by pollution from these industries is evidence mainly of poor management of handling wastes with few industries equipped with the facilities for minimising, recycling or treating the wastes they generate. Industrial wastes are haphazardly deposited on land surface in dump sites, as environmentally sound disposal methods such as sanitary land fill, composting or incineration are not practiced, only crude dumping. The main cause for this is that the positioning or selection of technology and operation of industries have been implemented without consideration of the environmental implication but rather to achieve socioeconomic development goals.

1.4.2 SOLID WASTE -RURAL

In rural areas, waste is usually generated from rural economic activities such as mining and agriculture. While in agriculture there is agriculture waste which is basically biodegradable on one hand, and on the other hand, pesticide waste which basically falls under the hazardous waste category and should be managed as such. Mining activities include mining of gold, tin, diamond, ruby, quarrying and coal coarse air and water pollution resulting from dust and noxious gases which originates from mineral exploitation. Inadequate processing technologies contribute to a higher concentration of waste and by-product higher concentration of waste and by-product desirable.

It has been reported that water pollution in gold mining areas resulting from the use of mercury is a problem. About 1.5 tonnes of mercury are introduced into the environment for every tonne of gold recovered by mercury amalgamation in the small-scale mining centres. Extraction of gold by cyanidisation is another source of water pollution and a

Industry	Pollutant
Food and beverages	Sludge
Cotton Industry	Dyes
Metal Industry	Heavy metals, phenol, cyanide, asbestos
Paper and wood industry	Dyes
Shoe and leather industry	Chromium
Plastic and Pesticide	Sludge and Pesticide
Pharmaceutical Industry, electroplating basic organic chemicals, oil industry	Oils, phenols, aromatic solvents

⁵ *supra*

number of diseases have been proven to be directly or indirectly caused by mining and mineral-based activities. A better technology needs to be adopted to recover the mineral instead of the use of mercury, which is discharged directly to the environment.

The coal mine especially at Kiwira in the South, is likely going to cause more environmental problems associated with large scale coal production such as disposal of slurry and ash, the control of pollutant emissions and disposal of process water.

Mining operations in the country are currently growing rapidly following Government policy for promotion of investment both locally and internationally and many multi-national companies have shown interest in participating. This means more discharge of waste.

1.4.3 LIQUID WASTES

Untreated wastewater is discharged from several sources, such as factories, households, and public facilities. They emanate from untreated sewage from sewerage areas, overflow of septic tanks and soak-aways which are filled up. Together with poor drainage systems, the insufficient waste water handling result in the building of pools of sewage and contaminated runoff in streets and yards which, during the wet seasons, life quality of town dwellers is affected.

According to some surveys done, it is revealed that a minority of urbanites are connected to a central sewer or to septic tanks, and the majority depend on pit latrines. In Dar es Salaam alone, less than 5% of the city's population is connected to a central sewer network, and the remaining 80% depend on on-site sanitation arrangements, (that is 70% pit latrines and 20% septic tanks), and the rest of 20% lack even elementary sanitation facilities. In Morogoro municipality, the 1995 survey shows that 21.3% of the household use water-borne facilities, while 82.8% depend on pit latrines.

In Tabora, out of the 17,565 households in 1988, 89% use ordinary pit latrines, 0.7% used VIPs, 4.3% septic tanks and

5.9% had no toilets. While in 1988, Bukoba town with a population of 46,055, only 18% used waterborne facilities, 78% used pit latrine and 4% had no toilets. Kironde I.M.L. in his Workshop Paper on "Urbanization in Tanzania" 2-3 September 1998, observes:

"Many of the pit latrines are simple, sometimes make-shift. Many are shared and overused and tend to be filled up quickly particularly in areas with high water table, or during the rainy season. It is difficult to empty them since they are not accessible to motor traffic; although there are local ways of emptying filled up pit latrines (known as "kutapisba," literally meaning "to make vomit"). Emptying is usually done into a pit dug nearby a process which can be difficult in densely built up areas."

Among all the industries, few have taken protection measures, however, existing effluent standards are not enforced. In Dar es Salaam, discharge from industries such as textile industries, abattoirs, breweries, chemical plants, food-processing plants, ends up in the sea. Nearby rivers are heavily polluted by varieties of wastes originating from various sources, which has produced adverse-ecological effects. Where investigations have been made, for instance, in Msimbazi river in Dar es Salaam, by NEMC in 1984-86, and the Ministry of Water (Haskoning & M-Konsult Ltd.) in 1988, they show presence of substantial amount of organic matter and nutrients due to influence by waste water. Bacteriological investigations revealed human induced bacteria in concentrations making the river unsuitable for domestic use or irrigation of vegetables. If similar investigations were to be carried elsewhere in surface waters of other towns they would show the same results. Preliminary studies undertaken by NEMC in Arusha, Moshi and Tanga indicates a high level of pollution in river Themis in Arusha, Rau river in Moshi, Pangani river in Tanga and some parts of Lake Victoria in Mwanza.

Generally speaking, waste water us not treatment, where few treatment plants exist are no longer functioning and the rest of the municipal towns have no treatment facilities at all and therefore all the sewage is discharged into the sea, for coast towns/cities or lakes untreated.

CHAPTER TWO

REVIEW OF THE WASTES GOVERNING STATUTES

2.1 STATUTES THAT RELATE TO LOCAL AUTHORITIES

(a) Dar es Salaam Water and Sanitation Act-

Up to a recent past, management of waste was the domain of Local Authorities. Beginning 1997, the Government introduced other authorities for management of liquid wastes in some urban areas. Act No. 8 of 1997, **The Water Utilization (Miscellaneous Amendments Act) 1997** part II amended the **National Urban Water Authority Act 1981** by introducing and establishing, "Dar es Salaam Water and Sewerage Authority Act, 1981 (DAWASA) whose functions are, in addition to the provision of supply of water in towns, it has an added functions which are -

5(k) to construct and maintain sewerage disposal works on any public and or land acquired a lawfully appropriated for that purposes

(l) to construct and maintain a public sewer in, on, under or over any street or under or through any cellar or vault below any street.

The Act, which originally applied to specified towns, now applies to Dar es Salaam alone after amendments. According to the foregoing Act, control of liquid waste on central sewerage system in Dar es Salaam is the domain of DAWASA but liquid waste discharge through other means still remain within the management of city authority.

It should be noted, however, that at the time of writing this report, the business of managing sewage system originally carried on by city fathers has not been transferred to DAWASA as city fathers were showing reluctance to transfer the investment done especially the headquarters at Mwananyamala area which is quite developed with modern laboratory facilities.

Information received later is to the effect that the former headquarter complex for sewage management under the City authority has changed its title to Environment Department

and the sewage headquarters have been transferred to less or underdeveloped structured originally, catered for malaria operation located at Kisutu area. It has been proposed that DAWASA will take over these operations with its headquarter at Kisutu area.

Nevertheless it should be observed that the formation of DAWASA and other companies/bodies alike whether by statute or formation of a company does not erode the role of Local Authorities. Under the Local Government Acts, the responsibility to manage Urban Centre rests with the Urban Authorities, but with DAWASA, a creature of statute, to whom are they accountable?

As stated above, the duty to manage waste is placed on Local Authorities. The following analysis of statutes in field of waste management shall reveal this. But it should be pointed out at this junction that DAWASA Act has taken away those functions of Local Authority without expressly amending necessary acts on Local Authorities. In this context, two statutory creatures exist together with overlapping functions. However, in law, it is presumed that whenever a parliament passes a Bill Acts and therefore whenever a conflict of laws occurs a recent Act is taken to have amended a previous one. In this case has taken one of over 40 functions of a city council⁶, so if one goes by the rule of interpretation of *ejusdem generis* rule the mandate to manage urban centres lies with the local Government which has the power to work to check, monitor and approve every operation within its jurisdiction.

How these two Authorities are going to work together is still too early to state but conflict is likely to occur to the detriment of the environment. Below is an analysis of statutes on waste management.

(b) Statutes for Local Government

The legislation which provide for enabling functions upon Local Authorities for waste management include-

- Local Government (Urban Authorities) Act, 1982
- Local Government (District Authorities) Act, 1982

⁶ See Schedule of functions of Urban Authorities in Local Government (Urban Authorities) Act, 1982

- Municipalities Ordinance, Cap. 105
- Public Health (Sewerage and Drainage) Ordinance, Cap. 336
- Town and Country Planning Ordinance
- Township Ordinance Cap. 101
- Local Government (Decoration of Buildings) Act, 1968

District, urban and township authorities are governing bodies under the Local Government Act democratically elected with powers to govern their local areas of jurisdiction. The schedules to these Acts provide a range of functions.⁷ However, those functions relating to waste include prevention and abatement of nuisance causing annoyance, danger or injury to health,⁸ establishment, maintenance, operation and control of drainage and sewage work,⁹ and to regulate the use and prevent the misuse or waste of or an interference with water, gas, oil or electric power,¹⁰ and the prevention of pollution in any water body or water course for purpose of prohibiting or regulating or controlling the use of such water.¹¹ Under the Urban Authorities Act, apart from the Schedule, have the duty to maintain public places in hygienic condition¹² and to undertake all works, matters and services necessary for or conducive to public safety, health or convenience.¹³

In addition to the schedules in the Act above, some of the functions of Local Authorities are also provide for in some other statutes that provide in some detail, the powers involved in performing those functions as well as the procedures to be followed.

First, there is the **Town and Country Planning Ordinance**, the prime purpose of this Ordinance is not to stimulate or initiate economic development but rather to control that development and reconcile it with the requirements of public health. It is intended to enable Local Authorities to plan and divide their land areas into development zones; to locate industrial estates, with their pollution and industrial waste, in areas that will be safe for the residents of the towns or districts concerned, to parcel out residential areas and plots in such a way as to enable their maintenance within the

standards necessary for healthy living conditions. Even the sizes, standards and spacing of the houses have to be planned and made in such a way as to enable drainage, sewerage, refuse collection, cleaning of both the houses and their surroundings to be carried out with relative ease.

To ensure compliance with its planning requirements, the **Town and Country Planning Ordinance** empowers Local Authorities to enter any land at all reasonable times.¹⁴ Where any development is carried out without a local authority's planning consent, or contrary to the development conditions given in any planning consent, the local authority may order the owner of such land to discontinue the developments or to demolish them.¹⁵

Those powers to demolish or order demolition can be invoked for the purpose of clearing slums. It seems, however, that technically, a house can be demolished under that Ordinance only on the basis of contravening planning conditions. In many cases that will be sufficient basis for demolishing slums and squatter houses.

But there are other provisions of the law, which give a wider basis for demolition order. Under the **Land Acquisition Act 1967**, the Minister responsible for lands has such powers and he can delegate their exercise to Local Authorities. Under the Act,¹⁶ a slum area can be declared a redevelopment area, and all land in the area is then subject to the disposition of the President who may re-grant rights of occupancy to those dispossessed in the area, subject to new development conditions. The Act states that the redevelopment area declaration may be made if two conditions are met. The first is that the houses in the area, by reason of their bad arrangement, or manner of construction, or of their construction materials, or of lack of sanitary facilities or generally of suitability as dwellings, are unfit for human habitation. The second is that a scheme for the redevelopment of such areas has been or will be prepared. The basis here is not whether a house was built in accordance with planning conditions but its public health suitability at the time the area is declared a redevelopment area. After an area has been so declared the local

⁷ There are 104 functions for District Council, 47 for Township authorities and 104 for Urban Authorities provided for in Schedules to both Local Government (District and Urban Authorities) Acts of 1982.

⁸ Item 37, 1st Schedule to District Authorities and 37 Schedule to Urban Authorities Acts.

⁹ Item 47, *supra*

¹⁰ Item 98, *supra*

¹¹ Item 91, *supra*

¹² Section 55 (g)

¹³ Section 55 (o)

¹⁴ S.69

¹⁵ S.72

¹⁶ S.34

authority responsible for the area can move in and demolish the houses certified to be unsuitable.

Local Authorities can also demolish slums under the Acts that establish such slums. The schedules to both the **District Authorities Act 1982** and the **Urban Authorities Act 1982**, provide that Local Authorities, excepting village councils, may demolish any houses which, in their opinion, are dangerous or unfit for occupation for structural or sanitary reasons or which, otherwise, constitute a nuisance or a danger or public health or public safety.

To maintain public health, Local Authorities make by-laws,¹⁷ requiring all residents to keep their surroundings clean, not to litter the streets and compounds, not to allow the growth of breeding grounds for mosquitoes near their premises and generally to abate nuisances. Such by-laws are more common in the urban areas. Some by-laws also restrict the movement of livestock and in certain case people so as to prevent the spread of communicable diseases. Since the outbreak of cholera in late 1977, restrictions on peoples movements have been imposed in several areas at different times. Similarly, the sale of certain foods and liquors has been prohibited in certain places from time to time.

On their part, Local Authorities have to clean the markets, sweep the streets and pavements, clear the drains, provide rubbish bins for the use of the public and empty them regularly, provide dumping grounds for refuse, empty sewage tanks, construct and maintain public toilets, and so on. All these are functions they have to perform not only under the legislation creating them, but also under the Public health (Sewerage and Drainage) Ordinance.

Local Authorities employ Health Inspectors to ensure that public places and other premises for the use of the public are in a good condition. Hotels, bars and restaurants are among the places under constant inspection by the Health Inspectors. If any is found to be dirty and unhygienic, either in the food and drinks served, or in the manner in which they are served, or the things they are served in, or in the general condition of the premises, the Health Inspector may order its immediate closure.

Despite the many powers of Local Authorities, public health conditions in the urban areas are generally bad. Indeed, urban

councils try their best to prevent nuisances in the sense of dangerous and unsafe buildings and shelters. But the general environment in the towns is dirty. Some facilities like public toilets are a rare sight; the few in existence are not maintained. In many parts of most towns there are no streetlights. Road signs are few and often misleading. The roads themselves are not repaired. As a whole, there seems to be an attitude of general neglect in the performance of functions.

There are various reasons for such a state of affairs. Prominent among them is lack of resources. At the same time, corrupt practices and in the way the limited resources are used cannot be ruled out. An assessment of local government performance, however, should take into consideration the fact that once they were abolished and later on reestablished. Thus, for example, the present state of deterioration in public health services in urban areas was reached for the first time when the central government itself was responsible under the decentralization, which preceded present local government systems.

The **Municipalities Ordinance** (Cap. 105) and the **Public Health (Sewerage and Drainage) Ordinance** (Cap. 336), with the 1955 **Public Health (Sewerage and Drainage) Rules** are the basis on which the powers and duties of the Authorities are based on matter of health.

The **Municipalities Ordinance** sets out the powers to undertake and carry out sewerage and drainage works and the duties in connection with the recovery of charges and fees for sewerage and other sanitary services.

The **Public Health (Sewerage and Drainage) Ordinance** deals with public sewers, drainage and latrines of new buildings, and general provisions. Rules are made under the Ordinance, a standard set of rules being issued in support of the Ordinance. Such rules are to have precedence, and section 34 of the Ordinance states "If any rule or bylaws relating to sewage, drainage or sanitation made under the **Townships Ordinance**, **Minor Settlements Ordinance**, the **Municipalities Ordinance** or the **Local Government Ordinance**, conflicts with or is inconsistent with or repugnant to any rule made under the Ordinance the rule made under the Ordinance shall prevail."

The Rules set out in 1955 consist of parts dealing with:

¹⁷ For example, the following by-laws have been made in that regard:

The Dar es Salaam City (Removal and Disposal of Obstructions and derelict vehicles) By-la, 1996

The Dar es Salaam City (Disposal of Refuse) By-laws, 1990

The Dar es Salaam City (Collection and disposal of Refuse) By-law 1994

The Lindi District (Environment Protection) By-law, 1996 to mention a few.

- general matters affecting sewers and drains;
- specifications and detailed requirements for the construction of foul water drains and the erections of fittings etc.;
- special provisions relating to latrine accommodation;
- specifications and detailed requirements for the construction of subsoil, storm and surface water drainage; and,
- Miscellaneous items.

The Ordinances and rules that cover the sewage and effluent disposal service, and the standard and control of sanitation fittings, together with the powers of Local Authorities with regard to the licensing of buildings and building extensions, are detailed and give power to a local authority to maintain high and necessary public health standards.

2.2 OTHER STATUTES

2.2.1 NATIONAL INDUSTRIES LICENSING AND REGISTRATION ACT

The **Industries Licensing and Registration Act** of 1967 provides regulations for licensing and registering of industrial and other manufacturing companies. The companies are by-law required, to be licenced and registered. The Act mainly deals with micro and macro economic aspects; production technology; skills, labour and equipment requirements; financial requirement, and consumer and labour interests. Under the Act an Industrial Licensing Board is established. This board deals with applications for licensing and registration and all related aspects as covered by the Act.

The Industrial Licensing Act does not contain specific paragraphs on the preventing of pollution. Only some sections could be used for the control of surface water pollution by industries. For instance, the Board may consider all matters it considers relevant including the sitting in relation to the availability of land and water. The Board may specify in the license any condition it thinks fit to impose.¹⁸

The Board may include in the licensing procedure any inquiry deemed necessary.¹⁹ Such inquiries could therefore include research into the effluents of the Applicant Company, leading to possible conditions attached to the licence concerning pre-treatment to standards acceptable to Tanzania before discharge.

The Board has the right to revoke a license, also when conditions attached to a granted license are not met by the

applicant; an important incentive. Alternatively, the Board may add or adjust the license conditions, as it thinks fit. Such provision could open the way for compulsory industrial counseling with respect to the prevention of pollution.

The Minister of Industries may, for instance, for the better implementation of the act, make regulations requiring the licensees to keep records and submit these on matters he may think necessary. This provision can be used for the monitoring by the licensed themselves on levels of polluting effluents. In addition, a provision is made for the cost of recovery of licensing procedures from the applicant. Costs of environmental investigation by the Board preceding the licensing could be covered under this provision.

In addition to a revocation of the license, the act includes very moderate fines only for offences against the act a maximum of three thousand Tshs and One thousand Tshs for offences against the main act Part VGII respectively. These fines can be considered moderate in comparison with hazardous activity.

2.2.2 MERCHANT SHIPPING ACT

The **Merchant Shipping Act** No. 43 of 1967 (including the **Merchant Shipping Amendment Act** No. 21 of 1980) provides only regulations for coastal area and the sea up to 100 miles from any land. This law has been amended in 1980 for inland water transport. Further regulations have been provided for the safety of transport through requirements for standards of seamen's competence. The law has the following objectives:

- Of direct relevance for the environment is Part IX of the 1957 Act, concerning the pollution of the sea by oil. "Oil" means crude oil, pure oil, heavy diesel oil, oil mixtures.
- Provisions for safety at sea aiming to maximize safety at sea and minimizing shipping accidents, which may cause great damage to sea and coast.
- Potential creation of regulations for the transport of hazardous and/or dangerous goods by ships.

The scope of the Act should be extended to cover potentially toxic chemicals others than oil, which potentially may pollute the sea. Further the legislation does not cover the installation of special equipment on ships, the provisions of reception facilities at oil loading terminals.

¹⁸ S.16.

¹⁹ S.20(4)

2.2.3 FISHERIES ACT

The **Fisheries Act, 1970**, the **Fisheries (General) Regulations** (Government Notice No. 57 of 16-03-1973) and the **Fisheries (Explosives, Poisons and Water Pollution)** give powers to the Minister to make regulations on preventing the pollution of territorial waters. The use of explosives for the purposes of fishing is prohibited. Furthermore, the use of poisonous or toxic substances for purposes of fishing is prohibited. Pursuant to the Fisheries (general) Regulations, 1973, it is prohibited to throw overboard certain substances like ballast, coal ashes, or other dangerous substances in water where fishing is carried out. The Regulations also prohibit anybody from putting into any water lime, chemical substances or drugs, poisonous matter, dead or decaying fish or remnants, saw dust or anything injurious to fish or fishing grounds. All these restrictions are meant to safeguard the aquatic environment for sustainable fish production.

2.3 LEGISLATION SHORTFALLS

It has been observed time and again that Tanzania legislation addressing environmental issues do not adequately address the situation. Research on these legislation has revealed the same shortfalls beginning with Hicklock L. in 1994 and similar remarks were made in the following reports made thereafter.²⁰ However, it suffices to say that these legislation and in particular, those addressing wastes, bear the following shortfalls-

- (i) Most, if not all, suffer from an old style/fashion of managing wastes. They address a problem after it has occurred and are not geared to prevent such occurrences.
- (ii) They are too much of sectoral in nature and do not complement each other.
- (iii) They suffer from the command/control approach as against community oriented approach, i.e. control from above only.

- (iv) They carry very minimal penalties, which, by any standard, are not deterrent enough.
- (v) They do not adequately address waste problems both in terms of areas they were enacted to control and worse still in new areas developing due to economic achievements of the time. In other words, the laws existing are not dynamic enough to cater for new changes arising out of economic activities of Tanzania as a developing country.
- (vi) Legislation are silent on the role of scientific and research institutions on waste management.
- (vii) Waste is treated only by accident and is not accorded the emphasis it deserves.
- (viii) Waste management policies do not exist. This is important because, for instance, waste reduction goals will be identified at national levels and therefore, rules and regulations would be enacted to achieve a common strategy in a way to complement each other.
- (ix) Generally, the attention is given to management of environment under Tanzania law has always been treated with less emphasis. What appears in the field of waste management is a result of emphasis given to the environment. It was only until end of 1977 when Tanzania produced a National Environment Policy and to-date an environmental framework legislation has not been enacted. Such legislation is useful for all aspects of the environment including waste in order to achieve effective management of the environment.

The Draft proposed Regulations are presented with the expectation that a national framework statute will soon be in place to give powers to the Minister to make Regulations for Waste Management without which the proposed Regulations will be hanging. The Draft believes that these regulations will to a greater extent, address gaps or shortfalls above narrated.

²⁰ Reports such as LIQUID and SOLID WASTE MANAGEMENT AND POLLUTION CAUSED BY SEWERAGE AND SANITATION SYSTEM DSM1988 *supra*.

CHAPTER THREE

CAPACITY BUILDING FOR IMPLEMENTATION OF REGULATIONS AND GUIDELINES

3.1 INTRODUCTION

Tanzania is a signatory to the Rio Declaration on Environment Development. Chapter 28 of Agenda 21 provides for the full participation of local governments where it states that their involvement is crucial to achieve the objectives of Agenda 21 through the making of regulations, over seeing planning, maintaining infrastructures, assisting mobilization the public for sustainable development. Chapter 28.3 of Agenda 21 provides-

"28.3 Each local authority should enter into a dialogue with its citizens, local organisations and private enterprises and adopt 'a Local Agenda 21'. Through consultations and consensus building, local authorities would learn from citizens and from local, civic, community, business and industrial organisations and acquire the information needed for formulating the best strategies."

In recognition of the importance of local authorities in managing environmental affairs, the Tanzania National Environmental Policy²¹ upholds the fact that so many of the environmental problems and solutions have their roots in local authorities, Local Authorities are a determining factor in fulfilling environmental policy objectives.²² Article 102 of the said Policy provides-

10.2 Local authorities shall be responsible for overseeing the planning process and for establishing local environmental policies and regulations. At the level of governance closest to the people, local authorities are best placed to play the vital role of educating, mobilizing and responding to their public to promote environmental objectives. Their role as environmental authorities in their area of jurisdiction shall be enhanced.

Waste management should not be taken in isolation but jointly with other demands of environmental management. Capacity means, when it is referred to capacity of the local authority.

(i) The Local Authorities

These are corporate bodies which have powers and privileges of a legal person. With their corporate status they are capable of entering into contracts, owning property, employing servants, suing and being sued, committing certain crimes and torts on their own name. In their corporate status, which is a great value, local authorities employ engineers and surveyors, economists and planners, accountants and lawyers, administrators, health and welfare officers and numerous other skilled and servants of their choice for purposes of carrying out the functions given to the local authorities. With this mandate, the local authorities employ skilled labour for management of environment including wastes.

Apart from having corporate personality, local authorities have added status, which is governmental in nature. They carry out governmental functions in which they exercise public powers. In spite of their governmental responsibilities the corporate status helps to transform local authorities from the position of a mere agent of government to a position of autonomy. They make their own budgets and spend money of their own.

To execute their functions, local governments may make byelaws, enforce them and have power to raise and spend public funds.

The local authorities are democratically elected bodies with representation of citizens within their areas of jurisdiction. They are made up of a Council at the top and at bottom they have wards for urban centres and village council for District authorities. With this kind of set-up local authorities become the most appropriate organ with an in built mechanism which enhance incapacity to execute and oversee the implementation of regulations and guidelines herein proposed. However, to be more effective the following are needed.

(ii) Local Authorities Capacity

Having the necessary organizational infrastructure, local authorities need to develop or acquire human, scientific,

²¹ The United Republic of Tanzania, National Environmental Policy, Vice President's Office, Dar es Salaam, December 1997 (NEP)

²² Article 101 of NEP, *supra*

technological, and resource capabilities to effectively implement Chapter 37 of Agenda 21, signatories to the Rio Declaration were required to have developed the said capacity by year 1994, which Tanzania has not. The biggest obstacle is resources. Majority of authorities do not have ms of funds, personnel, equipment, (such a laboratories), skilled personnel and sufficient facilities for monitoring, storing and enforce waste standards. The following recommendations are made:

- (a) That waste management should not be the responsibility of the local authorities alone. The local authorities should be the overseers. Management of wastes should be the responsibility of every citizen and more specific, the responsibility of waste generators. Under the draft Regulations, local authorities are required to provide for enabling environment or a platform where generators of wastes would agree on the best method to manage waste by preparing a Waste Management Plan for the Minister's approval.
- (b) Locally integrated environmental management requires co-ordination of contributions made by the central government, research institutions, government agencies, industries and the local communities.
- (c) Councils will need to ensure strategic alliances with the following:
 - The Ministry responsible for environment in order to be posted of sets, national goals, standards from other ministries responsible (e.g. water), policies and regulations.
 - Government agencies, research institutions for supply of necessary information and data on wastes.
 - Advisory bodies to enhance skills and information.
 - Other government authorities to provide national linkages and share experiences.
 - International sector for assistance and information.
 - Community sector for dialogue and implementation of strategies, for application of development programs, to create information sharing network, and the provision of public support.

With the above, it can be concluded that local authorities capacity to implement Draft Regulation shall be enhanced.

(iii) Polluter-Pays Principle

It is a settled principle acceptable internationally that those who are responsible for polluting the should be made to pay for costs of cleaning or keeping the environment clean. Local

authorities are vested with power to levy charges on service they provide and under the Local Government (Finance) Act, 1982, subject to approval of the Minister responsible for Local Government affairs, may raise financial capability from waste generators to manage waste.

SCHEDULE

This Schedule contains proposed Draft subsidiary legislation entitled **The Non-Hazardous Wastes Management Regulations**, which it is proposed to introduce into Tanzania a Waste Management Programme which is community based. Consideration has been given to the recently adopted **National Environmental Policy** of December 1997 (hereinafter the Policy) whereby under Article 50 the main health objective is to protect public health in broad sense by promoting human well-being and informed participation in primary environmental care. The Policy objectives to be pursued have been identified to include, *inter alia*, promotion of health related programmes such as food hygiene, separation of toxic/hazardous wastes and pollution control at the household level.

This objective cannot be realised without involvement of the occupants of households.

Further, Tanzania environmental policy does not envisage sustainable development to be a common goal without engaging the interests of all Tanzanians. It states, without mincing words) that environmental management must be everybody's responsibility. Issues of environmental concern) according to the policy, can be best handled with participation of all citizens at the relevant levels. At the level of public participation, the policy sees the responsibilities of government institutions and Non- governmental Organisation as necessary only to assist local communities become aware of their own situation and support them to become responsible for their own destiny. (See Articles 34-39).

The Proposed Regulations have also take cognisance of the fact that waste is generated by human activities which are directly under various government agencies. However, the overwhelming majority of such activities are under the jurisdiction of Local Authorities i.e. either Urban or District Authorities in which case the said Authorities are the appropriate agents in these regards. In some few cases, authorities have been established to manage waste such as DAWASA (Dar es Salaam Water and Sewerage Authority); these exceptions have also been taken into consideration.

In preparing the proposed Regulations, -it was noted that the Policy recognizes the fact that local authorities represent the powerful tier of Government, and provide the most accessible

channels for people to express their concerns and take action to create sustainable conditions. (See Articles 101-102 of the Policy). On this strength the local authorities have been recommended to be the law enforcing agents in waste management programmes under the Regulations.

Under the Proposed Regulations, an Authority responsible for Waste Management, in most cases the Local Authority, either *suo motto* or upon Minister's direction, prepares and submits a Solid Waste Management Plan for the Minister's approval or Liquid Waste Management Plan for the whole or part of the area within their jurisdiction. In the course of preparing the Plan, the Authorities are required to involve the public in absence of which the Plan will not be approved.

The purpose here is to bring in active role of the public while emphasizing the role of the Ministry responsible for environment as envisaged in the policy. (See Articles 88 - 93 of the Policy).

It is envisaged that the Minister's role under the regulations can be delegated to any authority either in part or as may be deemed expedient.

Since it is the role of the Ministry responsible for environment to provide for overall policy guidance and advice on

development of strategic -environmental vision, and generally with planning and implementation oversight, the Regulations propose the need to issue guidelines in preparation of Liquid and Waste Management Plans.

Together with the Proposed Regulations, the said Guidelines have also been prepared as proposals.

Why opt for Management Plans -

It is recommended that Tanzania should to for Waste Management Plans approach because of the economic delicacy of the country. The general level of development attained has assumed a diverse level of technology. It will be difficult for Tanzania to have a uniform waste management strategy, which commands a uniform waste management guidelines for a sustainable development. Such plan is foreseeable when is undertaken in a particular line or type of industry or activity. The Minister under the proposed Draft Regulations has authority to direct an area or industry or activity to submit to him for approval a waste management plan designed particularly for such activity. Or a local authority or industry may prepare and submit to the Minister for his approval a plan prepared *suo moto*. This is what is proposed in these Draft Regulations which will be more practical in our situation.

NON-HAZARDOUS WASTE MANAGEMENT REGULATIONS

PART I

TITLE AND INTERPRETATION

Title and Commencement

1 These Regulations shall be cited as the Non-hazardous Waste Regulation, 19.....and shall come into force on

Definitions and Interpretation

2. (I) In these Regulations: unless the context otherwise requires,

air” means the atmosphere but does not include the atmosphere inside

- (a) a human made enclosure that is not open to the weather,
- (b) an underground mine .

air contaminant” means a substance that is emitted into the air and that;

- (a) injures or is capable of injuring the health or safety of a person,
- (b) injures or is capable of injuring property or any form of life,
- (c) interferes or is capable of interfering with visibility,
- (d) interferes or is capable of interfering with the normal conduct of business,
- (e) causes or is capable of causing material discomfort to a person, or damages or is capable of damaging the environment.

“Authority” means Urban or District Authority established under the Local Government Act (Urban Authorities) Act and The Local Government (District Authorities) Act or such other authority established or empowered by any written Law with the duty to manage wastes.

“biomedical waste” means

- (a) a substance that is prescribed as a biomedical waste by the Minister, and
- (b) if the Minister prescribes circumstances in which a substance is a biomedical waste, a substance that is present in those circumstances.

“effluent” means a substance that is discharged into water or onto land and that;

- (a) injures or is capable of injuring the health or safety of a person,
- (b) injures or is capable of injuring property or any form of life,
- (c) interferes or is capable of interfering with visibility,
- (d) interferes or is capable of interfering with the normal conduct of business,
- (e) causes or is capable of causing material physical discomfort to a person, or
- (f) damages or is capable of damaging the environment.

“environment” means the air, land, water and all other external conditions or influences under which humans, animals and plants live or are developed.

“facility” includes any land or building, and any machinery, equipment, device, tank, system or other works.

“hazardous wastes” means waste as defined by Hazardous Wastes Regulations.

“land” means the solid part of the earth’s surface and includes the foreshore and land covered by water.

“Minister” means the Minister responsible for Environmental Affairs.

“municipal liquid waste” means-

- (a) effluent that originates from any source and is discharged into a municipal sewer system,
- (b) effluent from residential urban sources discharged to the ground;

“municipal solid waste” means

- (a) refuse that originates from residential, commercial, institutional, demolition, land clearing or construction sources, or ;
- (b) refuse specified in a waste management plan.

municipality means a city or town that has an object the disposal of sewage or refuse, or the provision of a system for the disposal of sewage or refuse or both.

non-hazardous waste means waste other than waste defined as hazardous waste under Hazardous Waste Regulations.

packaging means a material, substance or object that is:

- (a) used to protect, contain or transport a commodity or product, or
- (b) attached to a commodity or product or its container for the purpose of marketing or communicating information about the commodity or product.

permit means a permit issued under a Waste Management Plan or these regulations.

pollution” means the presence in the environment of substances or contaminants that substantially alter or impair the usefulness of the environment.

recyclable material means -

- (a) compostable waste, other than wood waste, from residential, commercial and institutional sources,
- (b) used white goods,
- (c) auto hulks,

**Waste disposal
strict liability**

(2) Subject to these Regulations, no person shall:

- (a) in the course of conducting an industry, trade or business, introduce or cause or allow waste to be introduced into the environment, or
- (b) introduce or cause or allow to be introduced into the environment, waste produced by any prescribed activity or operation, or
- (c) introduce waste into the environment in such a manner or quantity as to cause pollution.

(3) Nothing in these Regulations shall be construed to prohibit any of the following:

- (a) the disposal of waste in compliance with a valid and subsisting permit, approval, order or regulation, or with a waste management plan approved by the Minister,

- (b) the discharge into the air of an air contaminant from an incinerator operated under authority, licence or permit of a municipality,
 - (c) the disposal of human remains in crematoria in compliance with the relevant laws,
 - (d) the discharge of air contaminants authorised,
 - (e) the burning of leaves, foliage, weeds, crops or stubble for domestic or agricultural purposes or in compliance with these Regulations,
 - (f) the use of pesticides or biocides for agricultural, domestic or forestry purposes in compliance with the regulation governing their use,
 - (g) burning if:
 - (i) the burning is for land clearing, land grading or tilling,
 - (ii) the volume of material burned does not exceed in the aggregate 10 m³ per hectare per month,
 - (iii) the duration of any burning is less than 24 hours,
 - (iv) the land on which the burning takes place is a part of or contiguous with the land from which the material originates.
 - (h) emissions from steam powered or internal combustion engines in compliance, if applicable, with Rotor Vehicle Act or Traffic Ordinance
 - (i) emission into the air of soil particles or grit in the course of agriculture or horticulture,
 - (j) the disposal of waste by a person other than a municipality:
 - (i) by means of a system of waste disposal lawfully operated by a municipality or other public authority, and
 - (ii) in compliance with the rules and regulations applicable to that system;
 - (k) emission of an air contaminant from combustion of wood of fossil fuels used slowly for the purpose of cooking or comfort heating of domestic, institutional or commercial buildings;
 - (l) emission of an air contaminant from food preparation in
 - (i) residential premises, or
 - (ii) retail or commercial food outlets.
- (4) Nothing in sub-regulation (3) (b) or (k) authorizes the use of an incinerator or domestic, institutional or commercial heating equipment for the purpose of destroying waste by means of combustion.
- (5) In sub-regulation (3) (1):

residential premises" includes hospitals, clinics, lodging camps, factory and office canteens and other similar premises.

retail food outlets" means

- (a) restaurants, hotels, motels and similar premises, and
- (b) premises in which food is prepared and sold by retail sale, such as:
 - (i) exclusively retail bakeries, and
 - (ii) premises selling take out food.

4. (1) If the Minister considers it to be necessary in the public interest, the Minister may exercise, in respect of wastes, all the powers that a District or Urban Authority may exercise under these Regulations in respect of wastes, and without limiting that power, may, after any consultations considers desirable, issue permits for the construction and operation of facilities for the environment.

- (2) In acting under this regulation, the Minister may act in a manner considered to be in the public interest and is not limited to the considerations that would be taken into account by District or Urban Authority.
- Packaging, product containers and disposable products** 5. No person shall use, offer for sale or sell packaging, product containers or disposable products, or any material used in packaging, product containers or disposable products, contrary to these Regulations.
- No person shall store waste** 6. (1) No person shall store more than a prescribed amount of waste except in accordance with:
- (a) an approval, order or permit that requires or authorizes the person to store that kind of waste, or
- (b) a waste management plan approved under Part III.
- (2) A person who is storing a quantity of a substance at the time that the substance is prescribed to be a waste does not contravene sub regulation (1) by continuing to store the same or a different quantity of that substance if the person notifies the Authority responsible in that area in accordance with the regulations of the location, quantity and type of substance that the person is storing.
- (3) Despite sub-regulation (2), the Authority responsible in the area may by writing, order a person referred to in sub-regulation (2), who is storing waste, to apply for a permit or approval and that person must apply for the permit or approval within 60 days of being served with notice of the order.
- (4) If a person applies for a permit or approval as required under sub-regulation (3) and his or her application is refused, the person must dispose of the waste in accordance with an order of the Authority.
- Transportation of wastes** 7.(1) A person who produces or stores waste:
- (a) must not cause or allow more than a prescribed amount of waste to be transported from the property where he or she produces or stores it unless the person first:
- (i) completes, in the form and manner prescribed, the part of a manifest that applies to him or her, and
- (ii) files the manifest in the manner prescribed.
- (b) must ensure that the person transporting more than the prescribed amount of waste from the place where it is produced or stored has a licence for that purpose, if a licence is required by the Authority responsible in that area, and must not cause or allow more than the prescribed amount of the waste to be transported to a place unless
- (i) a permit, order, approval, waste management plan or regulation permits or requires it to be stored or introduced into the environment at that place, or
- (ii) storage of the waste at that place is permitted.
- (2) A person must not transport more than a prescribed amount of waste unless the person
- (a) carries with him or her
- (i) a manifest completed as required by subregulation (1) and this sub-regulation, and
- (ii) if required by the regulations, a licence, and
- (b) has completed, in accordance with these regulations, that part of the manifest that applies to him or her.

- (3) A person must not accept delivery of more than a prescribed amount of waste unless the person
 - (a) receives from the transporter a manifest that has been completed as required by subregulation (1) and (2)
 - (b) completes the part of the manifest that applies to him or her and files the manifest in the form and manner prescribed, and
 - (c) has a permit or approval to store or 'introduce into the environment that kind and amount of waste, or is allowed to store waste by the operation of regulation 5, or the storage or introduction is authorized by the regulations or by an order or waste management plan.
- (4) In a prosecution for a contravention of this regulation, the burden of proving compliance with sub-regulation (1)(a) or (c) or with sub-regulation (2) or (3), is on the accused person

Permits

- 8.(1) The Authority responsible may issue a permit to introduce waste or to treat or recycle waste subject to requirements for the protection of the environment considered advisable and, without limiting that power, may in the permit do one or more of the following:
 - (a) require the permittee to repair, alter, remove, improve or add to works or to construct new works and to submit plans and specifications for works specified in the permit;
 - (b) require the permittee to give security in the amount and form subject to conditions the Authority may specify;
 - (c) require the permittee to monitor in the way specified by the Authority, the method of handling, treating, transporting, discharging and storing waste and the places and things that the Authority considers will be affected by the discharge of the waste or the handling, treatment, transportation or storage of the waste,
 - (d) require the permittee to conduct studies and to report information specified by the Authority in the manner specified,
 - (e) specify procedures or requirements respecting the handling, treatment, transportation, discharge or storage of waste that the permittee must fulfill;
 - (f) require the permittee to recycle certain wastes, and to recover certain reusable resources, including energy potential from wastes.
- (2) A permit does not authorize the introduction of unauthorized or restricted waste into the environment unless it specifies the characteristics and quantity of waste that may be introduced.

Approvals

- 9.(1) The Authority responsible may approve the introduction of waste into the environment, the storage of waste or the treatment or recycling of waste for a period of up to 6 months without issuing a permit.
- (2) The Authority responsible may issue his or her approval subject to requirements for the protection of the environment that the Authority considers advisable and, without restricting that power, may include as a requirement anything referred to in regulation 8(1).

Spill prevention and reporting

- 10.(1) In this regulation Apolluting waste substance@ means any substance, whether gaseous, liquid or solid that could, in the opinion of the Minister or the Authority responsible, substantially impair the usefulness of land, water or air if it were to escape into the air, or were spilled on or were to escape onto any land or into any body of water. In case of conflicting opinions, Minister's opinion shall take precedence.

- (2) If a person has possession, charge or control of any polluting substances, the authority responsible may, or at the instance of the Minister, if he considers it reasonable and necessary to lessen the risk of an escape or spill of the substance, order that person
 - (a) to undertake investigations, test, surveys and any other action the minister or the Authority responsible considers necessary to determine the magnitude of the risk and to report the results to the minister or the Authority responsible,
 - (b) to prepare, in accordance with the Minister or the Authority's directions, a contingency plan containing information the Minister or Authority requires, and
 - (c) to construct, alter or acquire at the person's expense any works, or carry out at the person's expense any measures that the Minister or the Authority considers reasonable and necessary to prevent or abate and escape or spill of the substance.
- (3) If an escape or spill occurs of a substance for which a contingency plan was prepared, the Authority responsible may order any person having possession, charge or control of the substance at the time it escaped or was spilled, or the person who prepared the plan or all of them to put the contingency plan into operation at their expense.
- (4) The Minister or the Authority responsible may order a person who prepared a contingency plan to test the plan.
- (5) If a polluting substance escapes or is spilled or waste is introduced into the environment other than as allowed or authorized by
 - (a) regulation 3,
 - (b) a waste management plan approved by the Minister, or
 - (c) a permit, approval or order, the person who had possession, charge or control of the substance or waste immediately before the escape, spill or introduction must, immediately after he or she learns of the escape, spill or introduction, report the escape, spill or introduction in accordance with the regulations.
- (6) In a Prosecution for a contravention of sub-regulation (5), it is presumed that the accused person knew of the escape, spill or introduction at the time of the alleged contravention and the burden of proving that he or she did not know upon him or her.
- (7) The Minister may amend or cancel an order made under this regulation.

Amendment of permits and approvals

- ll.(1) The Authority responsible may, subject to these regulations, and for the protection of the environment
 - (a) on the Authority's own initiative if he or she considers it necessary, or
 - (b) on application by a holder of a permit or holder of an approval, amend the requirements of the permit or approval.
- (2) The Authority responsible may, after consultation with the Minister, amend a permit or approval issued by the Minister.
- (3) The power of the Authority responsible to amend a permit or approval includes all of the following:
 - (a) authorizing or requiring the construction of new works in addition to or instead of works previously authorized or required;
 - (b) authorizing or requiring the repair of, alteration to, improvement of, removal of or addition to existing works;

- (c) Requiring security, altering the security required or changing the type of security required or the conditions of giving security;
 - (d) Extending or reducing the term of the permit or approval or renewing it;
 - (e) Authorizing or requiring a change in the characteristics or components of waste discharged, stored, treated, handled or transported;
 - (f) Authorizing or requiring a change in the quantity of waste discharged, stored, treated, handled or transported;
 - (g) Authorizing or requiring a change in the location of the discharge or storage, treatment, handling or transportation of the waste;
 - (h) Altering the time specified for the construction of works or the time for other requirements imposed on the holder of the permit or the approval;
 - (i) Authorizing or requiring a change in the method of discharging, storing, treating, handling or transporting the waste;
 - (j) Changing or imposing any procedure or requirement that was imposed or could have been imposed under regulation 8 or 9.
- (4) The Authority responsible may renew an approval before or after the end of the term of the approval.
- (5) The Authority may not renew an approval if the term of the approval and the term of renewal, when taken together, would exceed 12 months.
- (6) If the Authority amends a permit or approval:-
- (a) may require that a holder of the permit or approval supply the plans, specifications and other information the Authority requests, and must give the holder of the permit or approval notice in writing of the amendment.

Transfer of permits, approvals

12. (1) A transfer of a permit or approval is without effect unless the Authority responsible or the Minister, whoever is the issuer, has consented in writing to the transfer.
- (2) A licence referred to in regulation 7 is not transferable.
13. (1) If the Minister considers that a person should have temporary relief from the requirements of an order, permit, approval, licence or waste management plan, the minister may issue a variance order with respect to that order, permit, approval, licence or waste management plan.
- (2) If the Minister issues a variance order, the minister must:
- (a) specify the requirements in respect of the relief granted;
 - (b) specify the period during which the variance order will remain in effect, and
 - (c) cause notice of the variance order to be published in the Government Gazette.
- (3) The Minister may, despite sub-regulation (2):
- (a) cancel a variance order, or
 - (b) renew or extend a variance order.

Abandonment

14. (1) A person to whom a permit or approval is issued, but who has not exercised any right under it to discharge waste or store waste, may abandon it by sending or delivering it to the Authority responsible notice that the person elects to abandon it.

- (2) A person who elects under sub-regulation (1) to abandon a permit or approval does not commit an offence merely because he or she has not complied with a requirement of the permit or approval.
- (3) A person to whom a permit or approval has been issued, and who has exercised a right under it to discharge waste or store waste may, subject to sub-regulation (4), abandon it by sending or delivery to Authority responsible notice that the person elects to abandon it.
- (4) A notice under sub-regulation (3) is not effective unless it is received by or delivered to the Authority.
- (5) A person who elects under sub-regulation (3) to abandon a permit or approval:
 - (a) does not commit an offence merely because after the abandonment became effective he or she has not complied with the requirements of the permit or approval, and
 - (b) is, despite the abandonment, bound by those additional requirements that the Authority responsible imposes respecting restoration of the environment or the control and monitoring of the waste discharged or the waste that continues to be discharged after abandonment.

15. In this Part:

“sewage facility means works operated by a municipality or any other Authority licensed or established for that purpose that gather, treat, transport, store, utilize or discharge sewage.

“waste management plan” means a plan that contains provisions or requirements for the collection, transportation, handling, storage, treatment, utilization and disposal of recyclable material or wastes or a class of wastes in all or a specified part of a municipality or the municipalities.

16. (1) A municipality or any designated authority, alone or with one or more other municipalities, may submit for approval by the minister a Waste Management Plan respecting the management of municipal liquid waste.
- (2) district Authority shall, on the written request of the Minister, submit for approval by the Minister a Waste Management Plan for biomedical waste that is for the benefit of the total area of the district.
- (3) Despite any other requirement, the Minister may, by notice in writing:
 - (a) Direct a municipality or any authority designated to prepare or revise a waste management plan and submit it to the minister on or before a date specified by the minister, or
 - (b) specify a date by which a municipality or authority designated must furnish proof, in a form satisfactory to the minister, of the progress that the municipality or such authority is making to comply with this regulation.
- (4) If the minister considers it to be in the public interest and is satisfied that a municipality is making efforts in good faith to complete a waste management plan in accordance with these regulation he minister may, on conditions specified by the minister, grant an extension of a date specified under this regulation.
- (5) If a waste management plan is approved by the Minister, the Authority responsible may:

- (a) Issue an operational certificate to operators or to any person who is the owner of a site or facility covered by the waste management plan, and
- (b) Attach conditions to the operational certificate, and the operational certificate forms a part of the waste management plan.
- (6) Despite sub-regulation (5), an operational certificate must be issued in accordance with an approved waste management plan and must not conflict with the waste management plan in any substantive fashion.
- (7) The Minister may, at any time, with or without conditions, approve all or any part of a waste management plan or an amendment to a waste management plan.
- (8) The minister may, by order, amend or cancel a waste management plan and, if cancelled, the waste management plan ceases to have force or effect.
- (9) Nothing in a waste management plan prevents the exercise of rights conferred by a permit or approval subsisting on the date the waste management plan is approved unless the permit or approval is suspended or cancelled by the minister.
- (10) Despite sub-regulation (9), if a permit or approval contains any provision that conflicts with a requirement of an approved waste management plan, that provision of the permit or approval that conflicts does not apply after the waste management plan is approved.
- (11) Despite sub-regulation (9), if an operational certificate is issued in respect of a site or facility for which a permit or approval was previously issued for the discharge of waste in the jurisdiction covered by an approved waste management plan, the permit or approval is cancelled.

PART III - MUNICIPAL WASTE MANAGEMENT

Management of municipal solid waste

- 17.(1) The Authority responsible may:
 - (a) specify operating requirements for, and
 - (b) set and collect fees from the owner or operator of any site or facility managing municipal solid waste within its area of jurisdiction.
- (2) No person shall manage municipal solid waste at a site or facility except in accordance with
 - (a) conditions that the minister may impose when approving a waste management plan that applies to that site or facility, and
 - (b) conditions that the Authority responsible may attach to an operational certificate pertaining to that site or facility.
- (3) Sub-regulations (1) and (2) do not apply to any of the following:
 - (a) the storage of recyclable material if the recyclable material is stored on the same site as that at which it is generated;
 - (b) the storage or disposal of municipal solid waste if the municipal solid waste is stored or disposed of on the same site as that at which it is generated;
 - (c) a site or facility owned and operated by a person other than the Authority itself unless the minister has approved a waste management plan that applies to the site or facility.

- 18.(1) The Authority responsible shall provide a process for comprehensive review and consultation with the public respecting all aspects of the development, amendment and final content of a waste management plan which applies to that municipality.
- (2) A Waste Management Plan may not be approved by the minister unless the minister is satisfied that there has been adequate public review and consultation with respect to the development, amendment and final content of the waste management plan.
- (3) The Authority responsible shall, not less than 30 days before the issuance of an operational certificate, state his or her intention to issue the operational certificate by providing:
 - (a) written notice to the person named in the operational certificate, and
 - (b) any other public notice that may be prescribed but shall include notice in public media.
- (4) The Authority responsible shall allow any person who has been given notice under sub-regulation (3) to:
 - (a) inspect the proposed operational certificate, and
 - (b) provide comments to the Authority respecting the requirements of the proposed operational certificate.

Powers of the Municipal respecting operational certificates

- (3) A sewage control authority may order a person who discharges waste other than domestic sewage into a sewage facility, or who possesses waste other than domestic sewage that may ultimately be discharged into a sewage facility, to keep records and provide information in the form and manner required by the sewage control authority respecting the waste discharged, handled, stored, treated or transported.

Sewerage in the jurisdiction of districts authorities

- 21.(1) If a District Authority exercises a power to provide a service related to the disposal or treatment of sewage, the district, may provide for direction respecting the direct or indirect discharge of wastes into any sewer or drain connected to a sewage facility operated by the district.
- (2) Without limiting sub-regulation (1), any direction may be in one or more of the following:
 - (a) require the keeping of records and the provision of information respecting waste produced on property other than residential property;
 - (b) impose conditions respecting the discharge into sewers of waste produced on property other than residential property;
 - (c) provide that its prohibitions, restrictions and requirements apply only to specified classes or to specified persons.

PART IV ENFORCEMENT

Power of entry and inspection

- 22.(1) An officer of the Authority responsible or the Minister may at any reasonable time enter on works or land and investigate any process, works or activity that:
 - (a) produces or is capable of producing waste,
 - (b) causes or is capable of causing pollution, or
 - (c) is used for the storage, handling, treatment, destruction or disposal of waste, but nothing in this sub-regulation authorizes entry into any structure used solely as a private residence, or into any residential accommodation in any other structure.
- (2) The powers of such officer on entry under subregulation (1) include the power to:

- (a) examine and take away records relating to
 - (i) the causing of pollution,
 - (ii) the production, treatment, storage, handling, transportation and discharge of waste, and
 - (iii) the characteristics of the waste produced, treated, stored, handled, transported or discharged, and
- (b) carry out inspections, measurements and tests on the land or of any articles, substance or waste on it to ascertain the extent of the pollution or measure the quantity of waste produced, treated, stored, handled, transported or discharged and take away samples of the land, articles, substance or waste as the officer considers appropriate for the purpose.
- (3) An officer so authorized may take with him or her on to the land those other persons and equipment that may be necessary.
- (4) If an officer enters on works or land under subregulation (1), the officer, on request shall provide proof of identity to a person present at the works or land.

Inspection of vehicles

- 23.(1) In this regulation, “**officer**” includes any officer of the Authority responsible or of the Minister appointed for purposes of this regulation.
- (2) For the purpose of ensuring compliance with these regulations or with a permit, order, waste management plan, licence or approval issued, an officer may, at any reasonable time:
 - (a) request the opening and inspecting of, or open and inspect any road vehicle or pil vehicle or any vessel and any container or package carried by the vehicle that the officer believes, on reasonable and probable grounds, is being used for the handling or transportation of waste, and
 - (b) inspect and test anything carried by such vehicle or vessel and the contents of any package or container carried by the vehicle.
- (3) If as a result of a search, inspection or test carried out under this regulation it appears to the officer making the search, inspection or test that the vehicle or vessel was transporting waste in contravention of these regulations or any licence, permit, order, waste management plan or approval issued or given, the officer may require the driver to drive the motor vehicle to a place the officer specifies, and the officer may do one or more of the following:
 - (a) Order
 - (i) the owner of any waste found on or in the motor vehicle, or
 - (ii) the person operating the vehicle or the owner of the vehicle to deal with waste in a manner the officer considers necessary;
 - (b) Seize and, in accordance with these regulations, dispose of
 - (i) any waste found on or in the motor vehicle, and
 - (ii) any package or container holding waste;
 - (c) Detain the motor vehicle for any period that the officer considers necessary in order to exercise his or her powers under paragraphs (a) and (b).
- (4) The owner of the package or container and the owner of the vehicle transporting the waste, package or are jointly and severally liable to the Authority responsible for the cost of disposing of the waste, package or container under sub-regulation (3) (b), and that cost is recoverable from them by the Authority responsible as a Civil debt.

- Pollution abatement orders**
24. (1) If the Authority responsible is satisfied on reasonable grounds that a substance is causing pollution, may order any of the following persons to do any of the things referred to in sub-regulation (2):
- (a) the person who had possession, charge or control of the substance at the time it escaped or was emitted, spilled, dumped, discharged, abandoned or introduced into the environment;
 - (b) the person who owns or occupies the land on which the substance is located or on which the substance was located immediately before it escaped or was emitted, spilled, dumped, discharged, abandoned or introduced into the environment;
 - (c) a person who caused or authorized the pollution.
- (2) An order under sub-regulation (1) must be served on the person to whom it applies and may require that person, at his or her own expense, to do one or more of the following:
- (a) provide to the Authority responsible information that the Authority may request relating to the pollution;
 - (b) undertake investigations, tests, surveys and any other action the Authority considers necessary to determine the extent and effects of the pollution and to report the results to the Authority responsible;
 - (c) acquire, construct or carry out any works or measures that are reasonably necessary to control, abate or stop the pollution;
 - (d) adjust, repair or alter any works to the extent reasonably necessary to control, abate or stop the pollution;
 - (e) abate the pollution;
 - (f) carry out remediation in accordance with any criteria established and any other additional requirements as may be specified by the Authority responsible.
- (3) An order under sub-regulation (1) may authorize any persons designated by the Authority to enter upon the land for the purpose of controlling, abating or stopping the pollution or to carry out remediation.
- (4) The Authority responsible may amend or cancel an order made under this regulation.
- (5) The Powers given by this regulation may be exercised even though the introduction of the substance into the environment is not prohibited under regulation 4 and despite:
- (a) the terms of any permit or approval, and
 - (b) the abandonment of any permit or approval, under regulation 14.
- (6) For the purposes of this regulation, “**person**” does not include the Authority responsible.
- Powers respecting municipal pollution**
25. If the Minister considers that a municipality or the Authority is causing pollution, the Minister may, with respect to the municipality, exercise the powers that the Authority responsible may exercise under regulation 24 in relation to other persons.
- Pollution Prevention Order**
- (4) The powers of the Authority responsible under this regulation may not be exercised in relation to any part of an activity or operation that is in compliance with the regulations or a permit, approval, order, waste management plan or operational certificate or an authorization made under the regulations.
- Pollution by municipalities**
27. If the minister is satisfied on reasonable grounds that an activity or operation has been or is being performed by a municipality in a manner that is likely to release a substance that will cause pollution of the environment, the minister may, with respect to the

municipality, exercise the powers that may be exercised under regulation 26(1) in relation to other persons

Suspension or cancellation of permits and approvals

28. (1) Subject to this regulation the Authority responsible may or upon direction by the Minister, suspend the permit or approval for any period or cancel the permit or approval.
- (2) A notice served under sub-regulation (1) must state the time at which the suspension or cancellation is to take effect.
- (3) The power conferred by sub-regulation (1) may be exercised in any of the following circumstances:
- (a) a holder of a permit
 - (i) fails to complete construction of works specified in the permit within the time specified in the permit, or where no time is specified in the permit, within 1 year after issuance of the permit, or
 - (ii) construction of works specified in the permit within the time specified in the permit, or where no time is specified in the permit, within 1
 - (b) a holder of a permit or approval fails to pay money owing to the Authority under the permit or approval;
 - (c) a holder of a permit or approval fails to comply with the terms of the permit or approval;
 - (d) a holder of a permit or approval fails to comply with an order issued and relating to the subject matter of the permit or approval;
 - (e) a holder of a permit or approval or the holder's agent has made or makes a material misstatement or misrepresentation in the application for the permit or approval or in the information required under the regulations with respect to the permit or approval;
 - (f) a holder of a permit or approval fails to comply with any other requirements of these regulations;
 - (g) a permit or approval conflicts with or is replaced by a waste management plan approved by the minister;
 - (h) a permit or approval is not, in the opinion of the minister, in the public interest.
- (4) The Authority responsible may:
- (a) suspend a permit or approval for the length of time requested if the holder requests that the permit or approval be suspended, or
 - (b) cancel a permit or approval if the holder of the permit or approval:
 - (i) dies,
 - (ii) is a corporation that is struck off the register under the Company Ordinance or is dissolved,
 - (iii) is a partnership that is dissolved
 - (iv) requests that the permit or approval be cancelled, or
 - (v) has given notice of abandonment under regulation 14.

Restraining orders

29. (1) If a person by carrying on any activity or operation contravenes regulation 5, 6 or 7 or a suspension or cancellation made under regulation 28, the activity or operation may be restrained in a proceeding brought by the Authority responsible in the High Court.
- (2) The making of an order under sub-regulation (1) above does not prevent the imposition of a penalty in respect of an offence under regulation 5, 6 or 7 or a suspension or cancellation made under regulation 28.

PART V MISCELLANEOUS

- Confidentiality**
- 30.(1) If, under these regulations, information relating to any trade secret or any other process or technique that the user keeps confidential is disclosed to or obtained by any person engaged in the administration of these regulations, a person who has access to the information so disclosed or obtained must not communicate it to any other person except:
- (a) as may be required in connection with the administration of these regulations or any proceedings under any other law or regulation,
 - (b) to his or her counsel, or
 - (c) with the consent of the person rightfully possessing or using the trade secret, process or technique to which the information relates.
- (2) Except in a proceeding under these regulations or any other law, a person is not required to give testimony, other than testimony in respect of the deposit, addition, emission or discharge of a contaminant into the natural environment, in any civil suit or proceedings with regard to information obtained by or in the course of any investigation, survey, examination, test or inquiry under these regulations.
- Waste ownership**
- 31.(1) The ownership of waste that is accepted at a waste management facility by the owner of the facility is transferred to the owner of the facility on acceptance.
- (2) If, at a waste management facility, waste is stored or introduced into the environment without having been accepted by the owner of the facility, the ownership of the waste is deemed to be transferred to the owner of the facility immediately before the waste was stored or introduced into the environment.
- (3) Subregulations (1) and (2) apply only in respect of a waste management facility that is authorized in accordance with these regulations.
- (4) Subregulation (1) applies only in the absence of a contract to the contrary.
- (5) Subregulations (1) to (4) do not relieve any person from liability except liability as owner of waste that is delivered to and accepted by the owner of a waste management facility in accordance with law.
- (6) If the owner of a waste management facility is not the owner of the land on which the facility is located, subregulations (1) and (2) do not prevent the ownership of waste that is accepted or deposited at the site from being transferred to the owner of the land.
- Service of notice**
- 32.(1) A notice of a decision or order is conclusively deemed to have been served on a person, under these regulations if it is sent by registered mail to the last known address of the person.
- (2) Any notice under these regulations may be given by registered mail, and if sent by registered mail, the notice is deemed to be served on the person to whom it is addressed not later than the 14th day after the notice was deposited with the Post Office.
- Charges, fees and costs to be paid**
33. A person who is
- (a) a holder of a permit or approval,
 - (b) the holder of a licence for the transportation of wastes, in respect of which a waste management plan has been approved shall pay at the time and in accordance with the regulations, the fees and charges that may be established by the Authority responsible.

- Offences and penalties**
34. (1) A person who contravenes regulation 7.1 or 7.2 commits an offence and is liable to a penalty not exceeding 5 million shillings or two years imprisonment or both.
 - (2) A person who inserts in a manifest required by regulation information that he or she knows to be untrue or misleading information commits an offence and is liable to a penalty not exceeding 2 million shillings or one year imprisonment in default.
 - (3) A person who obstructs or resists an officer who is exercising duties under regulations 22 and 23 or fails to comply with a requirement of an officer commits an offence and is liable to a penalty not exceeding 1 million shillings or six months imprisonment in default.
 - (4) A person who, holding a permit or approval issued to the person under these regulation to introduce waste into the environment, introduces waste into the environment without having complied with the requirements of the permit or approval commits an offence and is liable to a penalty not exceeding 2 million shillings or to twelve months imprisonment on default.
 - (5) A person who, holding a permit or approval issued under these regulations to introduce waste into the environment, fails to comply with the requirements of the permit or approval commits an offence and is liable to a penalty not exceeding 1 million shillings or six months imprisonment on default.
 - (6) A person who, holding a permit or approval issued to the person under these regulations to store waste, stores the waste without having complied with the requirements of the permit or approval commits an offence and is liable to a penalty not exceeding 2 million shillings or 12 months imprisonment on default.
 - (7) A person who contravenes a requirement of a regulation that specifies the quantity or characteristics of waste that may be introduced into the environment commits an offence and is liable to a penalty not exceeding 5 million shillings or two years imprisonment on default or both.
 - (8) If a corporation or any body corporate commits an offence under these regulations, an employee, officer, director or agent of the corporation who authorized, permitted or acquiesced in the offence commits the offence even though the corporation or such body corporate is convicted.
 - (9) In a prosecution for an offence under or arising out of a contravention of these regulations, it is sufficient proof of the offence to establish that it was committed by an employee or agent of the accused whether or not the employer or agent is identified or has been prosecuted for the offence, unless the accused establishes that the offence was committed without his or her knowledge or consent or that he or she exercised all due diligence to prevent its commission.
 - (10) If an offence under these regulations continues for more than one day, separate fines, each not exceeding the maximum fine for the offence, may be imposed for each day the offence continues.
 - (11) A person who is liable to a monetary penalty specified in this regulation may also be liable to imprisonment for not more than 6 months.
 - (12) In any other offence committed under these regulations where no penalty is provide a fine not exceeding 5 million shillings or 3 years imprisonment in default or both may be imposed.

Additional fine

35. (1) If a person is convicted of an offence under these regulations and the court is satisfied that, as a result of the commission of the offence, the person acquired any monetary benefits or that monetary benefits accrued to the person, the court may order the person to pay a fine equal to the court's estimation of the amount of those monetary benefits.
- (2) A fine under subregulation (1) is in addition to and not in place of a fine under regulation 34.

Intentional damage

A person who, in contravention of these regulations; intentionally causes damage to or loss of the use of the environment, or shows wanton or reckless disregard for the lives or safety of other persons causing a risk of death or harm to other persons commits an offence and is liable to a fine of not more than 10 million shillings or to imprisonment for not more than 5 years, or to both.

PROPOSED GUIDELINES FOR PREPARATION OF SOLID WASTE MANAGEMENT PLANS (IN LINE WITH THE REQUIREMENT OF THE NON-HAZARDOUS WASTE MANAGEMENT REGULATIONS)

PART 1: INTRODUCTION

1. PURPOSE AND ORGANIZATION

- (1) This guide is intended to assist urban, districts and other Authorities responsible in preparing Solid Waste Management Plans. It also provides direction to local governments as well as reviewing and approving the plan at various states. In effect, the guide is a blueprint for reducing the generation of waste requiring disposal.
- (2) Part 1 provides definitions of certain words and phrases which have specific meanings in the context of the guide, a more detailed interpretation of legislative requirements and authority, a discussion of planning roles and jurisdiction.
- (3) Part 2 contains the ministry's requirements for development and content of Solid Waste Management Plans. Plans prepared in accordance with these requirements should receive approval by the Minister.
- (4) Part 3 describes the recommended steps and procedures for the planning process from initiation to adoption and implementation of a plan.
- (5) Part 4 of the Guide includes recommendations on the scope and detail of planning studies associated with the first two stages of plan preparation, and on the content of the plan itself. Plans prepared in accordance with these recommendations should satisfy the requirements in Part 2.

2. DEFINITIONS

For the purpose of this Guide,

approved plan means a plan approved under the Non-Hazardous Waste Management Regulations.

composting means the controlled biological decomposition of solid waste to a condition sufficiently stable for nuisance-free storage and for safe land application.

disposal means the introduction of waste into the environment for the purpose of final burial, destruction or placement for future recovery, and does not include reuse or recycling.

hauler license means a license issued by a local government adopted pursuant to an approved plan, to the owner or operator of a vehicle used to pick up, haul or deliver waste within or through the district, for the purpose of establishing operating and administrative requirements for the hauler.

household hazardous product means a substance and any product used to contain it which is explosive, corrosive, flammable, reactive and/or toxic and which originates from residential commercial, or institutional sources in quantities which are exempted from the application of the Hazardous Regulation.

manage means to handle, dispose of, transport, store, reduce, reuse, recycle, recover, treat, process or destroy any substance.

Minister means the Minister responsible for environmental affairs.

municipality means, for purposes of this guide, a municipality or district authority as the case may be.

open burning means the combustion of any material or solid waste without:

- (a) controlling combustion air to maintain adequate temperature for efficient combustion;
- (b) containing the combustion reaction in an enclosed device to provide sufficient residence time and mixing for complete combustion; or
- (c) controlling emissions of the gaseous combustion products.

plan means a waste management plan for the management of recyclable material and MSW required under Non-hazardous Waste management Regulations.

processing means any activity necessary for preparing a component of the solid waste stream for reuse, recycling, recovery or residual management.

recovery means reclaiming of recyclable components and/or energy from the post-collection solid waste stream by various methods including but not limited to manual or mechanical sorting, incineration, distillation, gasification or biological conversion other than composting.

reduction means decreasing the volume, weight or toxicity of municipal solid waste generated at source, and includes activities which result in more efficient reuse or recycling of primary products or materials, but does not include only compacting or otherwise densifying the waste.

recycler license means a license issued adopted pursuant to an approved plan, to the owner or operator of a site or facility involved in the management of recyclable material, for the purpose of establishing operating and administrative requirements for the site or facility.

recyclable refers to a product or substance, after it is no longer usable in its present form, that can be diverted from the solid waste stream through a widely available and economically viable collection, processing and marketing system, and used in the manufacture of a new product.

recycling means the collection, transportation and processing of products that are no longer useful in their present form and the subsequent use, including composting, of their material content in the manufacture of new products for which there is a market, and refers:

- (a) when used in the context of reduce, reuse, and recycle, to products which are separated from the solid waste stream at source,
- (b) and for all other purposes, to products separated from the waste stream at any point.

regulations means the Non-hazardous Wastes Management Regulations as amended by the Minister from time to time.

residual management means the disposal of what remains in the solid waste stream following reduction, reuse, recycling and recovery activities.

reuse means at least one further use of a product in the same form but not necessarily for the same purpose.

solid waste stream means the aggregate of all solid waste components and recyclable materials, and the process through which they move from generation to Utilisation or disposal.

waste stream management licence means a licence issued adopted pursuant to an approved plan, to the owner or operator of a site or facility involved in the management of municipal solid waste and incidental recyclable material, for the purpose of establishing operating and administrative requirements for the site, facility.

AUTHORITY FOR SOLID -WASTE MANAGEMENT PLANNING AND PLAN IMPLEMENTATION

The authority for Local Government authorities and other responsible authorities to undertake solid waste management planning derives from Non-hazardous Waste Regulations which require that every urban and district authorities shall, upon request by the Minister, submit for approval by the minister of a Waste Management Plan.

PART 2: PLAN DEVELOPMENT GUIDELINES

PURPOSE

The purpose of the guide is to provide guidelines for designing and undertaking the planning studies and for process of putting the plan into a form for approval of the Minister responsible for environmental affairs.

PART A: WASTE MANAGEMENT SYSTEM AND OPTIONS

1. PLAN AREA - FIRST STAGE

1.2 Geographical and Organizational Setting

1.2.1 This section should include a map or maps at a scale appropriate for showing the area to be covered by the plan; the location, name and level of organization of the various municipalities, electoral areas and communities involved in the plan; and the location and contributing area of the existing solid waste handling and disposal facilities. The plan area may include the entire urban or the district area and a portion or all of an adjacent district, or in special cases, one or more districts.

1.2.2 Since the pattern and timing of settlement and other land uses will have a significant effect on solid waste management, this section should include the relevant goals, objectives and policies from the following:

- (a) Official Community Plans for the area
- (b) Existing Official Settlement Plans'
- (c) Rural land use by-laws; and
- (d) Comprehensive Development Plans.

1.3 Population

1.3.1 In this section, the following should be included:

- (a) the existing population of the plan area, both overall and for sub-areas or community components relevant to the plan;

- (b) population projections for the plan area for at least the time horizon of the plan; and
- (c) any demographic data which are relevant to solid waste management planning.

1.4 Economic Base

1.4.1 This section should contain a description of the economic base of the plan area, both existing and projected, with particular reference to the existing and projected solid waste generation capacity of specific economic entities and activities. Relevant objectives and policies from existing Economic Development Plans in case they exist, should also be included.

1.5 Physical Descriptive Constraints

1.1.1 This section should contain a general description of the climate, major landforms, terrain, soils, surface watercourses, groundwater levels, air sheds, vegetation and wildlife, with particular reference to those factors which pose constraints to the siting, economics or operation of solid waste management facilities or programs.

2. EXISTING SOLID WASTE MANAGEMENT SYSTEM

2.1 Characteristics of a Solid Waste Stream

2.2.1 A detailed knowledge of the make-up of the solid waste stream is fundamental to the management strategy. This section should therefore contain an analysis of the composition of the solid waste stream, both at the baseline date and at the current date, by weight and volume, from the following sources of solid waste:

- (a) residential, both urban and rural as the case may be and
- (b) commercial/institutional
- (c) industrial.

2.1.2 Local Authorities are responsible for developing management strategies for the biomedical waste and household hazardous products (HHP) which are generated by households and firms whose waste stream is analysed under (1). For the sake of the comprehensiveness of the waste stream composition study, biomedical waste and HHP should be included in the analysis to provide information for education programs aimed at reducing the generation of such wastes and to provide the basis for the eventual management strategies that may be required.

2.1.3 Projected solid waste generation, based on economic and population projections, and existing generation trends, should also be included.

2.1.4 Another class of solid waste that should be analysed and quantified, as part of the solid waste stream, is "hard to dispose of" or "nuisance" solid waste, which includes the following:

- (a) semi-solid waste, including sewage sludge and septage;
- (b) oily waste, including used oil filters and oil containers;
- (c) demolition, land clearing and construction debris;
- (d) other wood waste;
- (e) consumer electronics;
- (f) pesticide and herbicide containers;
- (g) industrial and off-road tires;
- (h) animal carcasses, food processing and agricultural wastes; and
- (i) furniture and other bulky items.

2.1.5 Since periodic analyses of waste composition will be a valuable tool for monitoring the effect of the plan, and assessing the need for new recycling or recovery facilities, each authority is encouraged to provide for generating this data itself.

2.2 Collection System

2.2.1 This section should contain descriptions and analyses of the various significant pathways along which waste is transported from its point of generation to its end use or ultimate disposal, and the collection methods for each, according but not limited to the following:

- (a) type and number of pathways available, including modes such as transfer stations and marshalling yards;
- (b) estimates of the amount and type of municipal solid waste flowing along each pathway;
- (c) the persons responsible for funding, operating and maintaining the collection systems for each pathway;
- (d) the geographic area and population served by public systems;
- (e) the potential for and constraints to expansion of public systems;
- (f) problems with and impacts of various collection methods and pathways; and
- (g) the total collection system costs, in aggregate and for each pathway.

2.3 *Post-Collection System - Operations*

2.3.1 This section should contain information about the various methods of processing and disposing of waste after collection, including the following:

- (a) recovery;
- (b) thermal reduction, including incinerators; and
- (c) landfilling.

2.3.2 In addition to identifying existing landfill sites, the study should identify the location and environmental status of all landfill sites, including historical sites, private landfills and illegal dumps.

2.3.3 Each method identified in (1) should be described and analysed in terms of, but not limited to the following elements, as applicable:

- (a) site/facility locations, classification and number of people served;
- (b) operational status and requirements;
- (c) types and quantities of waste accepted and banned;
- (d) ownership and persons responsible for each aspect of the operation;
- (e) land, equipment and labour involved;
- (f) operational problems;
- (g) disposal of residue;
- (h) public involvement/support;
- (i) promotional/educational programs;
- (j) estimated life span of sites and facilities;
- (k) environmental, social and economic impacts;
- (l) opportunities for and constraints to handling greater quantities or additional types of waste; and
- (m) involvement/co-operation with industry or adjacent jurisdictions, including inter district solid waste transfers, joint facilities and waste exchanges.

2.4 *Post-collection System - Administrative and Financial Structure*

2.4.1 In terms of the administrative structure, this section should describe any existing or proposed solid waste management regulations. Specified area regulations should be described in terms of population served, location and functions. A listing and brief description of all existing waste management permits should also be included.

2.4.2 In terms of financial structure, this section should include total solid waste management system costs, including projected facilities. The funding of each system element should be described, including revenues and cost recovery mechanisms such as general taxation, specified areas, local service areas, user-pay strategies and government grants or loans. Finally, the economic viability of facilities or operations and future financial requirements should be assessed.

2.5 *Regional Solid Waste Management Issues and Objectives*

2.5.1 The description of the existing solid waste management system should conclude with an identification of issues that need to be addressed, and an identification of issues which may or will require the involvement of adjacent jurisdictions or other levels of government for resolution.

2.5.2 While waste reduction objectives are common to all focussing the planning process on regional issues as well is just as important and can foster ownership of the planning process by plan area's residents. The report should contain a set of objectives based on the issues identified, and in appropriate categories which facilitate identification of options and development of strategies.

2.6 *Description of Options*

2.6.1 This section should contain a brief description of the various major options available or practical at the local level for achieving objectives and for managing the components of the solid waste stream using one or several options plus recovery and residual management. The range of options should reflect all the stages that a material or product passes through from actual use to final disposal.

For reduction, reuse and to some extent recycling, detailed identification of options that may be deferred to Stage 2 where it may be accomplished in conjunction with detailed evaluation. For recovery, perhaps the only options to be identified at this stage are whether or not to evaluate recovery programs, and, if so, the suitable technologies and timing.

2.6.2 Regarding residual management, the study should identify a number of potential landfill and/or incineration sites, based on selection criteria such as the following:

- (a) general soil conditions and topography;
- (b) climatological conditions;
- (c) environmental impacts, including effects on water, soil and airshed quality for both the site and transfer of solid waste to the site;
- (d) social impacts, including effects of site aesthetics and on adjacent land uses;
- (e) potential human/wildlife conflicts;
- (f) economic impacts, including available land area and value, transfer costs, capital and operating costs and life/capacity;
- (g) impact on/of recycling, especially composting, and resource recovery, and
- (h) ultimate use.

2.7 Options Recommended for State 2 Evaluation

2.7.1 Once the various options have been identified, they should be given a preliminary appraisal, to determine which ones should be recommended for detailed evaluation in Stage 2, and to identify information gaps that should be addressed by Stage 2 planning studies. The appraisal of options should be based on compliance with the environmental guiding principles and specific criteria which related to the goals and objectives for the plan. These should include, but not be limited to:

- (a) compatibility with Urban/District waste management criteria, policies and legislation and regulations;
- (b) public acceptability;
- (c) technical feasibility;
- (d) risk of failure; and
- (e) cost impacts, including environmental costs and savings compared to alternatives, including disposal if relevant.

PART B: DETAILED EVALUATION OF OPTIONS - SECOND STAGE

3.0 REDUCTION AND REUSE

3.1 Local Programs

3.1.1 The study should determine if there are means available at the district or urban level to reduce the amount of solid waste created and encourage the reuse of materials or products. The reduction and reuse programs listed below should be considered as possible options, and the list is not intended to be exhaustive:

- (a) public awareness education, such as encouraging consumers to utilise second-

hand, rental and repair businesses, and to increase bulk buying;

- (b) reducing the flow into the area of non-refillable and non-recyclable material and of products with excessive packaging into the area, and enlisting co-operation and co-ordination among adjacent jurisdictions for even greater effect;
- (c) procurement standards for local government purchases; including durability, reusability, recyclability, and recycled material content;
- (d) user-pay programs, including volume-or weight-based garbage collection rates;
- (e) increased and/or variable tipping fees at disposal sites;
- (f) school curricula;
- (g) commercial, retail and industrial education, and/or technical assistance/education programs;
- (h) local government setting examples through in-house programs such as employee education, increased use of double-sided copying and printing; decreased use of nonrecyclable paper, and using only reusable and recyclable containers and packaging in food operations;
- (i) awards and other forms of public recognition;
- (j) banning the acceptance at disposal sites of certain materials for which there are appropriate alternatives; and
- (k) encouraging or mandating waste audits in the institutional/commercial/industrial sector.

3.1.2 For programs, especially public awareness education and school curricula, it would be useful to local governments implementing these programs in collaboration with other government agencies, departments and ministries e.g. Education, etc.

3.1.3 The study should evaluate local waste reduction options and recommend the suitability of each option for the local community and its priority. Viable waste reduction programs should be explored and recommended, including specific reduction goals or targets, means of monitoring the achievement of those goals and targets, projected costs and an education component aimed at all generators of solid waste.

3.2 Encouragement for Regional Programs

3.2.1 While the above programs can have significant effects, another effective way to promote reduction and reuse is to encourage regional programs. The plan can

influence policies at these levels, and the study should consider which recommendations, based on the solid waste stream characteristics of the plan area, should be made to government at regional levels.

- 3.2.2 The plan can also encourage product stewardship by the manufacturers of products which enter the waste stream, either directly through local retailers or producers of the product, or indirectly through encouraging action by the government at regional levels.

4. **RECYCLING**

4.1 *Solid Waste Stream Targets*

- 4.1.1 Based on detailed knowledge of the solid waste stream, the study should determine which sources, types or classes of solid waste could be targeted for recycling programs. For example, source could be commercial, class could be paper, and type could include ledger, newsprint or corrugated cardboard. Each of these targets may require a different approach or management strategy, including how soon management efforts should be directed at a particular target.

- 4.1.2 The list of targets for which a strategy should be developed should include the following recyclable materials:

- (a) compostable waste, from residential, commercial and institutional sources,
- (b) used white goods,
- (c) auto hulks,
- (d) used tires,
- (e) used lead acid batteries,
- (f) used glass containers,
- (g) used tin plated steel containers,
- (h) used aluminium containers,
- (i) used cardboard packaging,
- (j) used newspapers and magazines,
- (k) used high density polyethylene containers, and
- (l) any substance prescribed as a recyclable material.

- 4.1.3 For the purpose of determining the full list of materials to be targeted by Waste Management Plan strategies, the generic definition of 'recyclable' from section 2 of this guide may be used - 'recyclable' refers to a product or substance, after it is no longer usable in its present form, that can be diverted from the solid

waste stream through a widely available and economically viable collection, processing and marketing system, and used in the manufacture of a new product. The cost of transporting recyclables to a market should be included in the conditions for recyclability, and becomes a determining factor if there is insufficient storage capacity to accumulate materials until unit transportation costs are affordable.

- 4.1.4 The above definition suggests that the target list will differ from one area to another and will depend on the local importance of impediments such as low quantity available, cost or difficult of separation and/or collection; extremely high transportation costs; limited physical or financial access to processing centres, and very unstable and/or limited markets.

4.2 *Solid Waste Stream Strategies*

- 4.2.1 The strategies for the Waste Management Plan target list should be based on the following variables:

- (a) potential for significant waste stream reduction;
- (b) ease and cost of separation from waste stream and collection, with respect to the variable and true disposal cost;
- (c) local recycling goals;
- (d) local and external market conditions,
- (e) transportation costs and means of reducing transportation costs, such as subsidies, storage/accumulating of marketable quantities, intermediate processing, and cooperation with adjacent jurisdictions; and
- (f) existing or proposed strategies and initiatives.

- 4.2.2 A major class of solid waste which should be given considerable attention is compostable material, including kitchen scraps, yard and most land clearing debris, some paper, food processing residues, septage and sewage biosolids and some of the wood in demolition and construction debris. This class alone can account for approximately 30-35% or more by weight of the solid waste stream. Its diversion would simplify management of the remainder, especially regarding its bulk, attractiveness to wildlife, impact of leachate on soil and groundwater quality, and generation of landfill gas where possible.

- 4.2.3 An important strategy that should be part of all plans is to encourage citizens to become responsible for their own organic wastes through backyard composting. Backyard composting has proven to be

one of the most cost effective approaches to waste reduction in the short term and probably will generate long term educational benefits as well. At this level, composting is clearly a reduction strategy.

4.2.4 Composting as a recycling strategy may involve a central composting facility. Its primary feedstock should be clean compostables collected from the Industrial and Commercial Institution sector, augmented by collection of separated compostable organic material that for reasons of type, size or volume cannot be composted easily at the household level. Composting technology options range in complexity from open windows to enclosed in-vessel systems in developed economies. A central facility can be planned to compost a single feedstock such as yard waste or a combination such as wood chips, Industrial Commercial Institutions compostables, and domestic sludge and septage.

4.2.5 Recyclables generated by an entire sector are an appropriate subject for a separate management strategy. The Industrial and Commercial Institutions sector in particular is one that should be addressed. This sector generates high percentage at urban solid waste stream, its output of waste and recyclables is much more homogenous in nature than the residential sector, and the number of generators is more manageable. Just as important, generators in this sector are inherently much more responsive to economic instruments such as user-pay programs.

4.3 Responsibility

4.3.1 The options to be considered are related to the responsibility for various parts of the strategy. For instance, the recycling operation could be made and operated by a private firm, community-based non-profit society, or by some combination of those. The most appropriate option may differ according to economic, geographic area or urban/rural character.

4.3.2 The options should certainly reflect private sector activities. In some parts, to some degree, private individuals operate long-established trade practices for diverting certain commodities, mainly metals, from the waste stream.

4.3.3 The options for sites or facilities managing waste should reflect the authority the council will have, once the plan is approved, to specify operating requirements and set and collect fees from the owner or operator of the site or facility. Financial and

operational control can be achieved through (a) the urban/district's by-law authority using mechanisms such as waste stream management licences, and (b) contracts or some other form of partnership with private firms or municipalities who own or operate such facilities.

4.4 Collection from Multi-Family and Rural Residential Areas

4.4.1 In order to provide the opportunity to recycle to as many plan area residents as possible, two other areas deserve considerable attention - multi-family housing and rural areas:

(a) Multi-family housing collection programs should include one or more of the following options:

- Drop-off stations within the building/complex;
- Drop-off depot or bins near the building/complex;
- Door-to-door service within building/complex;
- Curbside collection for complexes with less than 20 units which have individual garbage cans;
- Provision for collection of recyclables in the design of new multi-family buildings or complexes.

(b) Rural or low density collection programs may include one or more of the following options:

- Combined collection of garbage and recyclables where garbage collection is carried out;
- Collection from individual households or groups or "households";
- Collection of recyclables by traders, neighbourhood or public service group;
- Drop-off bins or depots, at convenient locations such as shopping, service and recreational centres, other meeting places, and all solid waste facilities, such as transfer stations; and
- Mobile as well as stationary drop off facilities.

4.5 Processing and Shipping Systems

4.5.1 The study should explore options related to the level of processing required for each solid waste target, including equipment, land and labour requirements,

and location of processing facilities within the region. Utilisation of facilities in another region or sharing major processing should also be evaluated.

- 4.5.2 Finally, the various means and routes of shipping to intermediate or end destinations should be reviewed, recognising that processing strategies may pre-determine or limit shipping options.

5. **RECOVERY**

5.1 *Justification*

- 5.1.1 Recovery is an optional element in the process, where possible waste processing and recovery plants may be considered as a possible way to achieve reduction goals. The study should therefore analyse the feasibility and suitability of, recovery facilities, in comparison with management strategies at a higher level of the hierarchy for the specific solid waste type(s), and with regard to the impacts of the recovery facility and those higher level strategies on each other.

5.2 *Targets, Technology, Location and Markets*

- 5.2.1 If justifiable, the study should look at:
- (a) which components of the solid waste stream may be accessible by proposed recovery facility,
 - (b) which technologies are available and suitable,
 - (c) possible locations for siting one or more recovery facilities, and
 - (d) potential markets for recovery facility products.
- 5.2.2 Possible technologies include material recovery systems producing recyclables, compost and/or refuse derived fuel, and incineration, other than simple destruction system which are only recommended in special circumstances such as remote camps. Markets for certain outputs of recovery facilities, should be located fairly close to the facility.

6. **RESIDUAL MANAGEMENT**

6.1 *Site Evaluation*

- 6.1.1 The study should estimate the number, size and location of landfill and/or incineration sites required, based on analysis of the life expectancy and integrity of existing sites and on the type and amount of residual that may require disposal under the various options

already evaluated. Sites which could fulfil these needs should be selected from the list of potential sites that were identified and given preliminary evaluation. Detailed and previously evaluated may include, but not be limited to the following:

- (a) land acquisition costs;
- (b) surface water hydrology;
- (c) geological and hydrogeologic conditions;
- (d) quality of local and regional airsheds;
- (e) techniques for gas recovery and use;
- (f) suitability for disposal of nuisance solid waste;
- (g) life expectancy and ultimate use;
- (h) estimated capital, operating and maintenance costs, including closure and post-closure maintenance;
- (i) haulage costs; and
- (j) environmental, social and economic impacts, including human/wildlife conflicts.

The study should then recommend the preference site and backup site(s).

6.2 *Landfill Criteria for Solid Waste*

- 6.2.1 The need for landfills as a component of the local solid waste management plan will have been evaluated early in the planning process. Both existing and new landfills may serve a role in the overall plan. In liaison with the ministry introduce landfill criteria for MSW, the development of which Will be responding to the changing values of society and the increased emphasis on protection of the environment.
- 6.2.2 The purpose of these criteria is to establish minimum siting, design, operational and closure requirements and factors to be considered for all MSW Landfills in the area. These requirements will form the basis of the operational certificates and should be considered in the evaluation of siting and financing options for landfills.

6.3 *Responsibility*

- 6.3.1 The study should evaluate the options for administration, assumption of liability and operation of various disposal system components. With regard to operation of sites and facilities, consideration should be given to the training and certification of operational personnel.
- 6.3.2 District or Urban authorities with an approved plan will be able to control municipal and private landfills,

if their respective council decides that doing so is in its interest. The study should explore the options open for achieving the desired level of control through waste stream management licences and partnerships with suitable authority or private stakeholders.

6.4 Thermal Treatment

6.4.1 There may be situations where thermal treatment of residues to reduce volume and/or toxicity prior to landfilling may be desirable. If so, options to technology, responsible for administration and operation, phasing schedule, volume and type of solid waste accepted and location should be evaluated according to:

- Opportunity for recovery of materials or energy;
- Total capital, operating and maintenance costs;
- Funding sources and cost recovery mechanisms; and
- Environmental, social and economic impacts.

6.4.2 These options should not include open burning, a practice which will be phased out over time. The study should examine ways to eliminate this practice in regions where it currently occurs, with special consideration given to transfer stations, as noted in the following section.

6.5 Collection/Transfer System

6.5.1 Options related to design and location of solid waste transfer stations should be evaluated according, but not necessarily limited to the following:

- Land requirements and acquisition;
- Cost to users;
- Provision of deposit/storage areas for recyclables, hazardous waste and nuisance solid wastes;
- Size of collection vehicles required;
- Capital, operating and maintenance costs; and
- Environmental, social and economic impacts, including potential for dust, odour.

6.5.2 This study should first determine whether existing or future transfer stations would require an operational certificate or a waste stream management license. The study should then develop and recommend for inclusion in the plan, the generic and specific design and operational requirements, which will be incorporated in the appropriate document in the plan implementation stage.

6.5.3 Some collection system options are most appropriate in urban areas, and include improvement or modification of existing solid waste collection routes or equipment, particularly in light of reduced volumes as a result of source separation recycling programs. Integration of collection programs for refuse and recyclables should also be considered, along with by-laws and regulations controlling solid waste collection.

6.5.4 An important option area that should be considered is volume based or weight-based user-pay programs for refuse collection. This may involve tipping fees at disposal facilities, based on the true cost of such facilities and possibly the funding of recycling programs or a slight variation - to charge for the collection, of recyclables and refuse at the point of generation and to build in incentives to reduce. Either way, the generator receives more and better information to make decisions on the amount and kind of waste generated.

6.5.5 User-pay programs are much easier to introduce in urban areas with fewer unregulated disposal options in the former, and much more acceptable than standard tipping fees. The fear of unauthorised dumping has usually proved unwarranted, particularly where the user-pay program has been preceded by an effective promotional campaign. However, prohibition on backyard burning should be considered as a complement to user-pay programs, to avoid transferring the problem from the terrestrial to the atmospheric environment.

6.5.6 It is acknowledged that in many areas, user-pay programs will have to be introduced one step at a time, using a creative mix of strategies to reflect different population densities and landfills controls.

6.5.7 One other issue that may need to be addressed in relation to the collection system is licensing or otherwise controlling waste haulers to ensure that solid waste is hauled to approved facilities. This may be particularly critical where there may be sites within the plan area that are not under the jurisdiction either of the district or urban authorities.

6.6 Involvement with Industry, Adjacent Jurisdictions and Other Levels of Government

6.6.1 The study should examine possibilities for joint operation or cost-sharing of thermal treatment or landfill facilities with industry or other local

governments. There may be situations where solid waste generators in one jurisdiction are much closer to a disposal facility in another jurisdiction than to one in their own. As for involvement with other levels of government, regional programs may be available for the management of certain types of solid waste. In this case, the evaluation should be concerned with the options for collection, storage and possible transportation of such solid waste to the regional facilities.

6.7 *Financial Evaluation*

6.7.1 The study should first estimate the total capital, operating and maintenance cost of residual management facilities over their anticipated lifespan and for the closure and post-closure stages. Funding methods should then be examined, along with cost recovery mechanisms such as sale of products or energy and tipping fees.

6.7.2 When establishing the true cost of a landfill, the fair market value of the land should be used, even if actual acquisition and operating cost to be a landfill operator is nominal.

6.8 *Phasing Schedule*

6.8.1 The study should recommend an appropriate schedule for the installation or expansion of residual management capacity. Flexibility should be incorporated into this schedule in order that the authority may respond to changing technology or solid waste volume and character.

6.9 *Impacts*

6.9.1 The study should estimate the environmental, social and economic impacts of all-residual management options and facilities, and describe possible mitigation and correction measures if necessary.

6.10 *Monitoring Disposal of Solid Waste*

6.10.1 Knowledge of the weight and nature of the solid waste requiring disposal is essential, not only for setting priorities for future higher level management strategies, but for evaluating the effectiveness of the plan in meeting its reduction goal. The primary evaluation criterion will be the change in the *per capita* generation rate of solid waste requiring disposal, expressed in kilograms/person/day.

6.10.2 The study should therefore, examine options for describing and weighing all solid waste brought to disposal sites or facilities, including small, remote sites. In regard to the later, the study authors should review and make use of the report on this subject. In regard to the general description and weighing of solid waste, the study should identify the most appropriate procedure for collecting the MSW tracing information.

6.11 *Financial and Operating Control*

6.11.1 An urban or district authority with an approved plan may specify operation requirements for, and set and collect fees from the owner or operator of any site or facility, whether public or private, storing or managing municipal solid waste within its territorial boundaries. An Authority wishing to exercise this power should specify in the version of the plan reviewed by the public of its intention of doing so and identify the manner in which it will do so.

6.11.2 The study should therefore identify the sites and facilities over which the authority will exercise this control, develop draft-operating requirements to be contained in a waste stream management licence for each site or facility, and determine the amount and rationale for any fees to be charged.

6.12 *Final Report*

6.12.1 The final report of the study should recommend a set of strategies, which address the strategy objectives identified. The report should also identify all costs and impacts of the strategies, and determine funding requirements. The report should also include the rationale for why a particular recommendation was made and why other alternatives were not chosen or were recommended for deferral in accordance with an implementation schedule.

PART C: PLAN PREPARATION AND ADOPTION - THIRD STAGE

7.0 GOAL AND STRATEGY

7.1 Reduction Goal

7.1.1 Every authority is strongly advised to establish its own set of goals to be achieved under the plan. It is expected that each dict w ill contribute to achieving the national reduction desire by reducing the amount of solid waste generated in the area as much as possible, consistent with area resources and the

nature of the solid waste stream. Thus, a solid waste management plan will be evaluated according to the evidence of its intention to reduce and how much effort it proposes be made to reduce each portion of the solid waste stream not its intended achievement of an absolute percentage reduction.

7.2 Reduction Strategy

7.2.1 It is proposed herein that the strategy should base on the sequential hierarchy of reduce, reuse, recycle, plus recover and residual management. The practical meaning of "sequential hierarchy" in this context is as follows:

- The first priority effort is to reduce by as much as possible the amount or toxicity of material that enters the solid waste stream and also the impact on the environment of producing it in the first place
- The second priority is to ensure that materials or products are reused as many times as possible before entering the solid waste stream.

Efforts under these first two involve not only the redesign of products and packaging but also fundamental shifts in consciousness and lifestyle patterns. Educational and promotional campaigns and the setting of examples are more important at this level of the hierarchy than the application of existing or new technology. The greatest contribution to achieving a sustainable economy is made at this level.

- The next priority effort, where possible, is to recycle as much material as possible. This effort completes the shift in consciousness and lifestyles to personal responsibility for proper handling of the solid waste one generates. Educational and promotional programs and the setting of examples are still important, but collection, manufacturing programs, technology and marketing are equally important. A further distinction within recycling is that closed loop recycling is generally preferable to open loop recycling.
- The next priority effort is to recover as much material and/or energy from the solid waste stream as possible through the application of technology, demand for its products, political acceptability and the environmental, social and economic impact of applying that technology.

- The final priority effort is to provide safe and effective residual management. This activity takes place once the solid waste stream has been reduced by efforts under the first 4 steps, through the application of technology primarily in the form of well-designed and secure landfills. In the case of some areas or for certain classes of solid waste, thermal treatment may first be applied to change chemical properties, reduce volume and/or generate energy.

7.2.2 Another way of approaching strategy is for the community to ask the following series of questions for each product or material in its solid waste stream:

- Do we need to produce or use this product or material in the first place? If An@, what can we do about it at our level? If Ayes@, can the need for the product, and/or the amount or toxicity of material which goes into it and its packaging be reduced, and what can we do about it at our level?
- Can the product be reused, or be redesigned to be reused, as many times as possible, either for the original purpose use or another?
- Once its usefulness in its present form is finished, can this product be separated from the waste stream at source and then be recycled? If it must be redesigned to be recyclable, how much can we do at our level?
- Can this material or its energy be recovered from our post-collection solid waste stream, and is this the best approach available to us at present?
- How can we safely dispose of the residual materials that at present cannot be reused, recycled or recovered?

7.2.3 *In asking these and other similar questions, it is necessary to look at the whole solid waste management system.*

The kind or degree of effort made at one level may result in unacceptable cost at another level in environmental, social or economic terms. For example, (a foreign example though), reusable containers have higher energy costs in production, transportation and processing compared to one-way, recyclable containers. But reusable containers have advantages at a smaller regional scale, whereas that same local area must be responsible for dealing with the recyclable containers produced far away by centralised manufacturers. It should also be recognised that costs generally increase as hierarchy. Thus, recycling should not be viewed as a cure-all

(panacea) to the exclusion of reduce and reuse, since recycling always has a cost, both directly, and in terms of impact on the world's resources.

7.2.4 On the basis of the foregoing, the reduction strategy is to achieve the reduction goal through the first 3Rs that is reduce, reuse and recycle, with recyclable materials including those obtained from a recovery operation and transfer stations. In terms of the application of the regional strategy at the level of each area, the effect is the same as for the reduction goal - a plan will be evaluated by the ministry according to the sincerity of its effort to achieve its reduction goal through the 3Rs. Energy recovery where possible should be considered only if thermal reduction is necessary to solve a problem of limited landfill capacity, and lack of or distance to markets for recyclables or other factors makes it impossible to achieve the required reduction through the first 3Rs in the available time. If the plan can justify the use of recovery programs, such programs should enable the area to achieve a reduction goal.

8. CONTROL OF SITES AND FACILITIES

8.1 Operational Certificate (OCs)

8.1.1 Following approval of the plan by the Minister, the responsible authority shall issue OCs in respect of all disposal facilities in compliance with the plan to deal with environmental protection aspects. Significant amendments to 'OC will effectively be amendments to the plan and will be subject to a development and

approval procedure determined by the Minister. It is thus important to achieve the right balance between ensuring the site will be operated in accordance with standards agreed to in the planning process and providing sufficient flexibility to make minor changes easily. Generally, the factors which determine environmental impact and the impact on the public should be included in the OC, while factors relating to the day-to-day operation of the site can be left to a more informal, working document developed by the district or urban authority responsible.

8.2 Hauler Licenses (HLs)

8.2.1 Authorities with an approved plan will be able to obtain authority to issue licenses to haulers of recyclable material or MSW operating in the area.

8.2.2 The ability to issue hauler licenses will likely be the most effective means available to authorities of ensuring that MSW and recyclable material generated within or being hauled into the plan area is deposited only to a site or facility authorised in the plan.

8.2.3 Some authorities may not wish to take on this function but do wish to exert some level of control over material flow, out of the plan area. One option may be to keep landfill tipping fees low and replace lost revenue for solid waste management with increased general taxes. This approach should be considered carefully with respect to its impact on user-pay strategies designed to encourage reduction and recycling.

GUIDELINES FOR DEVELOPING A LIQUID WASTE MANAGEMENT PLANS. (IN LINE WITH THE REQUIREMENT OF THE NON-HAZARDOUS WASTE MANAGEMENT REGULATIONS)

INTERPRETATION:

Effluent: A substance that is discharged into water or onto land and that;

- (a) injures or is capable of injuring the health or safety of a person,
- (b) injures or is capable of injuring property or any life form,
- (c) interferes or is capable of interfering with visibility,
- (d) interferes or is capable of interfering with the normal conduct of business,
- (e) causes or is capable of causing material physical discomfort to a person, or
- (f) damages or is capable of damaging the environment.

Environment: The air, land, water and all other external conditions or influences under which man, animals and plants live or are developed.

Facility: Includes any land or building, and any machinery, equipment, device, tank, system or other works.

Land: The solid part of the earth's surface and includes the foreshore and land covered by water.

Municipal Liquid Waste: Defined in Regulation (1) of the Non-Hazardous Waste Management Regulations as:

- (a) Effluent which originates from any source and is discharged into a municipal sewer system,
- (b) Effluent from residential sources discharged to the ground, or
- (c) Effluent specified by the Authority responsible to be included in a waste management plan.

Municipality: Includes a city, town or any Authority declared under any law, and, includes a district and urban authority that has an object the disposal of sewage or refuse, or the provision of a system for the disposal of sewage or refuse or both.

Operational Certificate: As defined under regulation 2(1) of the Non-hazardous Waste Management Regulations as a certificate issued for the design, operation, maintenance, performance and closure of sites or facilities used for the storage, treatment or disposal of recyclable material or waste.

Pollution: The presence in the environment of substances or contaminants that substantially alter or impair the usefulness of the environment.

SECTION 1.0: INTRODUCTION

The Non-hazardous Waste Management Regulations allows municipalities and districts authorities to develop Liquid Waste Management Plans for approval by the Minister of Environment. The Liquid Waste Management Plan (hereinafter to be referred to as LWMP) consists of operational certificates as a strategy, to ensure liquid waste disposal conforms with Ministry objectives; an implementation schedule; and measures to accommodate future development.

An approved plan authorizes a municipality to discharge waste and store recyclable materials in accordance with Operational Certificates, other provisions of the waste management plan, and the Minister's requirements. In most cases, it is anticipated that municipalities and regional districts will develop plans voluntarily. However, the minister is empowered to direct a municipality to prepare or revise a waste management plan.

LWMPs must be consistent with the ministry's long-term waste management objectives. These guidelines will help municipalities determine what should be addressed in a Liquid Waste Management Plan.

1.1 Municipality Liquid Waste Control Strategy

In accordance with the Ministry of Environment, the ministry's long-term goal is to achieve zero pollution. The proactive strategy to achieve this goal includes:

- **Pollution prevention :** This includes use of reduce, reuse and recycle (hereinafter 3 Rs)
- **Best Available Technology :** This is to facilitate pollution prevention, resource recovery and residuals management; and
- **The Principle of Polluter pay:** Waste discharge permit fees will assist in achieving the goal of zero pollution. In exceptional cases, when retrofitting existing sources, waste discharge standards which are more lenient than best available technology based criteria may be prescribed. Higher waste discharge fees will be payable under this situation, which will encourage compliance with best available technology criteria over time.

- The assimilative capacity of the receiving environment will be utilized only to allow time to upgrade to best available technology.
- Receiving water quality standards will be used to determine where discharge criteria need to be more stringent than that provided by the best available technology.
- The emphasis should also be on pollution prevention and on involving all stakeholders in an open and consultative approach to environmental protection.

1.2 Best Available Technology

Best Available Technology is determined based on optimum capacity to promote pollution prevention using the 3Rs and resource recovery and residuals management.

For example:

- For sewage discharges, pollution prevention using 3Rs means that it is intended to:
 - Reduce the toxic contaminants discharging to sewers and ultimately in the effluent;
 - Re-use the municipal sludge beneficially as a soil conditioner, fertilizer or for making top soil; and
 - Recycle the effluent economically as irrigation or industrial process water.
- Secondary sewage treatment best meets these goals and will satisfy the toxicity contaminants when necessary.
- Secondary sludge and effluent can be routinely tested for toxicity and materials, and therefore been determined to be secondary treatment.

1.3 The Strategy And Liquid Waste Management Plans

The strategy to achieve zero pollution applies to facilities with primary treatment or no treatment, and can be implemented in stages, taking into account the assimilative capacity of the receiving environment, the ability to finance the upgrade facilities, and public input to the waste management planning process.

This means that raw sewage discharges to the ocean could be upgraded first, to primary treatment and ultimately, to secondary treatment over a period of time. Liquid Waste Management Plans will be used to determine the schedule for upgrading raw sewage discharge to secondary treatment.

Liquid Waste Management Plans should be consistent with this strategy and include:

Public consultation;

A schedule to upgrade all liquid waste discharges to best available technology, which considers the ability to finance necessary facilities, and

A schedule and means to address all municipal liquid waste, specifically:

- (1) sewage discharges
- (2) combined sewer overflows
- (3) urban storm water runoff
- (4) municipal sludge management
- (5) pump station overflows
- (6) subdivisions with on-site disposal
- (7) source control programs
- (8) any other effluent to be included in a waste management plan

1.4 Wastes

Wastes to be addressed in the Liquid Waste Management Plan should include, but are not necessarily limited to:

- Municipal sewage;
- Urban storm water runoff;
- Combined sewer overflows;
- Septic tank pumpage;
- Pump station overflows;
- Sewage treatment plant sludge;
- Industrial or commercial wastes discharged to municipal sewers; and
- Septic tanks and other sewage disposal systems not connected to the community sewer system;
- Any other effluent specified by the Authority.

Estimates of waste quantity and quality should be based on long-term projections. For waste management planning areas where the background information of a land use plan is inadequate, growth projections must be developed.

1.5 Location

The location of a treatment facility or point of discharge can be most important in:

- Minimizing the environmental effects of waste disposal;
- Reducing costs; and
- Providing flexibility for future expansions or upgrades of the facilities.

The collection system and trunk sewers can be the major cost of sewage disposal works. Their location and design should be selected with care to avoid unnecessary expenditures. The use of satellite treatment plants can in some cases reduce costs and provide flexibility for the construction of other works.

Sewage works B including collection and storm sewers, pump stations, treatment plants, industrial pretreatment facilities, sludge treatment and handling works, and outfalls B should be considered as a complete, interrelated system. A change in the design or location of one part can affect the other parts of the system. To avoid costly future changes, facilities should be located where long-term land use conflicts will be minimized and where there is ample room for additions and alterations.

As the location of waste treatment is also a land-use issue, local governments are encouraged to incorporate waste treatment infrastructure considerations in the official planning process. These should also address the location of trunk sewer services.

SECTION 2.0: OUTLINE OF LIQUID WASTE MANAGEMENT PLANS

A Liquid Waste Management Plan is a written record of decisions and plans for the management of liquid wastes. The final document with attendant drawings should include but not necessarily be limited to the following.

2.1 Introduction

- (a) geographical outline of the area covered by the plan;
- (b) existing environmental, social and economic conditions;
- (c) existing official plan and proposed land use (land-use bylaws and zoning).

2.2 Projected Population And Industrial Growth B Sewered And Unsewered

- (b) residential pollution
- (c) industrial (type)
- (d) commercial

2.3 Source Control And Waste Volume Reduction

- (a) options for source control and reduction of sewage and industrial waste volumes and toxicity.
- (b) infiltration control options are to be considered to reduce the hydraulic load on treatment facilities.

For a secondary treatment process to operate correctly, a good source control program is essential. Infiltration and inflows must be controlled. Failure to do so will result in process upsets, toxic effluent and contaminated sludges.

2.4 Waste Recycling And Utilization

- (a) options for recycling and using sewage effluent
- (b) industrial and commercial waste
- (c) beneficial re-use of sewage sludge and septic tank pumpage

Secondary treatment effluent can be economically re-used or recycled as irrigation water, industrial process or cooling water, and to develop wetlands, ponds, etc. Sewage sludge recovers nutrients and organics which can be used as fertilizer and organic soil conditioner, and to produce top soil for distributed lands.

2.5 Estimated Waste Quantities As Per Growth Projections

- (a) residential sewage
- (b) residential septic tank pumpage
- (c) industrial and commercial waste discharged to sewer
- (d) commercial sewage and septic tank pumpage
- (e) sewage treatment plant sludge
- (f) urban storm water runoff
- (g) combined sewer overflows
- (h) pump station overflows

2.6 Capacity Of Water Bodies And Land To Accept Waste

- (a) water bodies
 - availability
 - capacity to accept waste
 - limitation regarding health, fisheries and limnological aspects (separate studies may be required)
 - possible hazards to the environment and other users
- (b) land
 - availability
 - capacity to accept or re-use waste
 - limitation and soil types for various uses (e.g. agricultural and infiltration capabilities)
 - failure contingencies
 - other hazards

- (c) groundwater
 - capacity to accept waste
 - limitations
 - failure contingencies
 - other hazards
- (e) cost to the authority considering applicable grants and other external sources of funding
- (f) cost of local taxpayer
- (g) stages of construction
- (h) a fiscal implementation plan with alternate funding strategies

2.7 Options For Treatment And Disposal Of Waste

- (a) treatment technology options for effluent disposal or re-use
- (b) source control treatment options
- (c) elimination and/or treatment of combined sewer overflows
- (d) urban storm water runoff management options, including source control and treatment
- (e) treatment technology for sludge and septic tank pumpage facilities
- (f) pump station overflow control
- (g) proposed effluent quality
- (h) final effluent disposal or re-use methods
- (i) individual on-site sewage disposal; factors to be considered include:
 - overall environmental impact assessment of subdivisions on groundwater or surface water,
 - soil and terrain suitability studies,
 - plot size and development density.

2.8 Site Location Options

- (a) sewage treatment plants and sewage effluent out falls
- (b) land treatment and re-use/disposal sites
- (c) septic tank pumpage and sewage sludge
- (d) effects on land use, zoning and growth patterns
- (e) official plan statement for the site
- (f) effect on Agricultural Land
- (g) pump stations
- (h) urban storm water runoff treatment facilities and/or discharges

2.9 Financial Aspects

- (a) capital and operating cost estimates for
 - waste collection alternatives including trunk sewers and force mains
 - treatment site options
 - sludge and septic tank pumpage facilities
 - final effluent disposal or re-use options
- (b) present worth analysis of alternatives
- (c) markets for recovery materials
- (d) benefits derived from re-used or recovered materials

2.10 Other Relevant Aspects

- (a) unique problems
- (b) public preferences
- (c) political considerations
- (d) other.

2.11 Recommended Course Of Action B Reduction, Collection, Treatment, Re-Use, Disposal, Site Location, Financing, Public Preferences

- (a) outline the reasons for choosing the selected methods of treatment and re-use or disposal and present an implementation schedule of the proposed works
- (b) outline the anticipated impact on the environment of chosen course of action
- (c) outline the benefits in terms of reducing toxicity and recycling, reusing or recovering materials and resources.

SECTION 3.0: DISCUSSION OF LIQUID WASTE MANAGEMENT PLAN ASPECTS

3.1 Environmental

To determine the environment's capacity to assimilate waste, other bodies and ministry responsible for water quality should be consulted where available. Close consultation with the ministry should be established to obtain all current applicable criteria and policies.

In most cases, additional studies will be required to fill information gaps. Some studies may need to extend beyond the planning phase to determine how much waste may be discharged without significantly affecting the environment. The options for discharging waste to surface waters and land and the possible effects on ground water should be thoroughly investigated.

In areas where no public systems are used, the total combined effect of the individual discharges on the environment will need to be considered. The lack of suitable soil or high permeability can lead to ground and surface-water contamination, and possibly eutrophication of surface waters.

3.2 Source Control And Pre-Treatment

The possibilities of using source control to reduce the organic load, toxicity and volume of industrial commercial waste should be fully explored. Bylaws to control quality of discharge to sewers may be required. Load reduction can mean significant cost savings in constructing and operating the treatment plant and in sewage sludge re-use or disposal.

3.3 Reduction, Re-Use And Recycling B The 5Rs

The Ministry of Environment would prefer adoption of the "5Rs" as guiding factors in its approach to waste management. The 5Rs entail Reduction, Re-use, Recycling, Recovery, and Residual management.

The first 2Rs, Reduce and Re-use, are the most important, and should be given the highest priority. Recycling and utilizing waste materials can have long-term economic and social benefits. For instance, it may be preferable to treat the sewage in satellite plants whenever possible for re-use as irrigation water on surrounding forests, farm land, or community facilities such as parks, golf courses and football grounds, even though this may incur additional costs.

Similar arguments can be made for recycling sewage effluent for its nutrient content, or recycling sludge for its humus and nutrient content.

The Liquid Waste Management Plan should address the potential for recycling and utilizing waste materials with particular attention paid to timing B what might not be possible now may well be possible in future. The final implementation costs of such programs will be lower if flexibility is considered when designing waste treatment works.

3.3.1 Reduction

All options to reduce the amount of waste, particularly toxic waste water, entering a disposal system should be explored. Measures should be taken to ensure that the system is in good order and that infiltration or inflow to sewers is minimized. Public education campaigns can promote conservation, minimize consumption, prevent toxic from entering the system. Source control programs can significantly reduce the toxicity of sewage.

3.3.2 Re-use, Recycling and Recovery

The greatest potential environmental, and to some extent economic, benefits can be achieved through re-use, recycling and recovery of waste sewage and sludge.

Options that can be explored include the use of treated effluent for irrigation, wetland development, industrial process or cooling water. Treated sludge can be used for fertilizer and soil conditioner, and in the production of topsoil for disturbed lands.

3.3.3 Residual Management

Sewage residues include sewage, sludge, grit and scum. Provided the sludge is not unduly contaminated, it can be re-used in a beneficial manner. Normal practice has been to bury the grit and scum. Treatment processes which can recover these as useful materials should be explored.

3.4 Alternative Methods Of Waste Treatment And Disposal

The Liquid Waste Management Plan should thoroughly review the alternatives for waste treatment and re-use or disposal. Options to be investigated should include:

- Opportunities for joint waste treatment with adjacent municipalities or districts;
- Joint treatment with industry;
- Waste reduction;
- Possible land treatment;
- Opportunities for re-use, recycling and recovery of waste resources;
- Land and water disposal;
- On-site and other non-public systems;
- Options for staged development of the system.

Some disposal options may be rejected by some government agencies. Approval-in-principle for all options should be obtained from government agencies in the early stages of the planning process, prior to any public involvement.

When the plan is presented to the public for review, it is prudent to present all alternatives in an easy-to-understand format clearly showing advantages and disadvantages of each option. Cost information should be broken down to individual households and industrial/commercial taxpayers whenever is possible.

Alternatives worth of further investigation should be determined after evaluating public concerns, economic aspects, input from other agencies and environmental assessments.

3.5 Financial

All cost-effective alternative waste treatment and disposal methods should be fully evaluated. Monetary costs should be

calculated in terms of present shilling values or equivalent annual values over the planning period.

Monetary costs include capital construction costs and annual operating and maintenance expenses, including routine replacement of equipment and parts.

Such factors as use and recovery of energy and scarce resources, and the value of recycling water and nutrients should be included in the monetary cost analysis. Annual revenues generated by the system through energy recovery, crop production or other outputs shall be deducted from annual costs.

Public system can often minimize costs, while providing the necessary flexibility for alternative disposal methods, water re-use and future expansion.

Non-monetary factors should be broadly defined to show their significance and impact. Non-monetary factors include social and environmental effects, implementation capability, operability, performance reliability and flexibility and some aspects of recycling/re-use opportunities.

SECTION 4.0: IMPLEMENTATION SCHEDULE

Ideally, the Liquid Waste Management Plan should forecast a period of 20 to 40 years. It is expected that waste treatment facilities will be built in stages, perhaps in increments of 5 to 15 years, depending on the type of system, economies of scale, interest rates, population growth rates, etc. Therefore it is important to include a preferred implementation schedule of the proposed works. Ongoing environmental studies may indicate that upgraded or modified treatment works or systems are needed ahead of schedule. The preferred implementation schedule can serve only as a guide to when expenditures may be required.

SECTION 5.0: LIQUID WASTE MANAGEMENT PLANNING PROCESS

5.1 Public Participation Process

The Regulations states that where the Minister of Environment Ais satisfied that there has been adequate public review and consultation with the public, with respect to the development, amendment and final content of the waste management plan. @ He may approve the plan.

Adequate public consultation during the plan's development is essential. The public participation process will depend on the unique blend of population characteristics and information channels in the municipality. Public participation

should foster acceptance and a feeling of ownership among the residents of the municipality.

A meaningful public participation process that meets the above objectives must fulfill the following criteria:

- Involvement by the general public in the planning process begins as early as possible and continues through to the plan's adoption and beyond implementation and monitoring stages.
- Encouragement of the involvement of a wide range of community interest and stakeholders, both in terms of general review at various stages.
- Allows for the open exchange of information between all parties.
- Provides the public with opportunities for direct consultation with appropriate officials, including representatives of Ministry responsible for Environment, the Ministry of Health, the Ministry of Agriculture, Fisheries, medical health officers, etc.
- Encourages public support and commitment to the public involvement program by allowing public participation in the design of the program.
- Endures public concerns and integrated into the planing process and are given the same weight as technical advice.

5.2 Organization of Planning Studies

The planning process is divided into three stages

STAGE 1

- Develop concepts of waste management options
- Includes provisions for public input
- Culminates with a report on a set of realistic options
- Results in a detailed list of waste management options
- Identifies types of facilities requiring operational certificates

STAGE 2

- Examine options and associated costs in detail
- Includes provisions for public input
- Results in a draft waste management plan
- Identifies requirements to be included in operational certificates for specific facilities

STAGE 3

- Select a final option, complete with discharge standards, implementation schedule, cost estimates and proposed financing
- Includes provision for further public plan
- Results in a waste management plan
- Preparation of draft Operational Certificates

SECTION 6.0: IMPLEMENTATION

Following approval of the Liquid Waste Management Plan, the Authority responsible will issue Operational Certificate for each treatment facility, and can proceed with implementation measures contained in the plan

By approving the Minister conform that in case of any existing discharge permits are automatically cancelled upon the plan becomes operational.

WASTES CONSIDERED HAZARDOUS

The following wastes shall be considered hazardous wastes; wastes that do not fall in any or below the following categories should be considered as non-hazardous wastes.

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| <p>Y0 All wastes containing or contaminated by radio-nuclides the concentration or properties of which result from human activity.</p> <p>Y1 Wastes generated from medical care and/or medical examination in hospitals, clinics, elderly medical care centers and maternity wards and in medical care centres and wastes from medical examination in medical examination laboratories.</p> <p>Y2 a) Wastes generated from production and import of pharmaceutical products.</p> <p>a) Wastes generated from preparation of pharmaceutical products for sale and grant.</p> <p>Y3. Waste pharmaceutical, drugs and medicines</p> <p>Y4. a) Wastes generated from the production and import of the chemicals including germicides, fungicides, bactericides, insecticides, ratcides, herbicides and other chemicals for prevention of the breeding and extermination of animals, plants and viruses; and growth promoting chemicals, germination control and other chemicals for the promotion and suppression of physiological activities of plants (hereafter referred to as "biocides etc.").</p> | <p>b) Wastes generated from formulation of biocides etc. for sales and grant.</p> <p>c) Wastes generated from sales and use of biocides etc.</p> <p>Y5. a) Wastes generated from the production and import of decay-preventing agents, insect control agents and other chemicals for wood preservation (hereafter referred to as "wood preserving chemicals")</p> <p>b) Wastes generated from formulation of wood preserving chemicals for sale and grant.</p> <p>c) Wastes generated from sales and use of wood preserving chemicals.</p> <p>Y6. a) Wastes generated from the production and import of organic solvents</p> <p>b) Wastes generated from formulation of organic solvents for sales and grant.</p> <p>c) Wastes generated from sales and use of organic solvents.</p> <p>Y7. Wastes from heat treatment and tempering operations containing cyanides.</p> <p>Y8. Waste mineral oils unfit for their originally intended use.</p> <p>Y9. Waste oils/water, hydrocarbons/water mixtures, emulsions.</p> <p>Y10 Waste Substances and articles containing or contaminated with Polychlorinated Biphenyls: (PCBs) and/or Polychlorinated triphenyls (PCTs) and/or Polybrominated Biphenyls (PBBs)</p> <p>Y11 Waste tarry residues arising from refining, distillation and any paralytic treatment.</p> <p>b) Wastes generated from formulation of inks, etc. for sales and grant</p> <p>Y12 a) Wastes generated from the production and import of inks, dyes, pigments, paints, lacquers and varnishes (hereafter referred to as "inks, etc.")</p> <p>b) Wastes generated from formulation on inks, etc. for sales and grant</p> |
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- Y13. a) Wastes generated from production and import of resins, latex, plasticizers, glues/adhesives (hereafter referred to as "resins, etc.")
- b) Wastes generated from formulation of resins, etc. for sales and grant
- c) Wastes generated from sales and use of resins, etc.
- Y14. Waste chemical materials arising from research and development or teaching activities, in the following facilities, which are not identified and/or are new and whose effects on man and/or the environment are not known.
- i) research and examination institutes owned by central and local governments;
- ii) universities, colleges, junior colleges, professional schools and their subsidiary research and study institutes, and;
- iii) institutes for research and development of products and technologies.
- Y15. Wastes of an explosive nature not subject to the Explosives Act, Cap 309.
- Y16. a) Wastes generated from the production and import of sensitive emulsion, developing solution, fixing solution, washing solution and other chemicals and materials for photographs (hereafter referred to as "photographic chemicals, etc.")
- b) Wastes generated from the formulation of photographic chemicals, etc. for sales and grant.
- c) Wastes generated from the sales and use of photographic chemicals, etc.
- Y17. Wastes resulting from the surface treatment of metals and plastics
- Y18. Residues arising from industrial waste disposal operations
- Y19. Wastes containing metal carbonyls listed as follows:
- a) Wastes containing 0.1% or more by weight of any of the following metal carbonyls:
- Iron-pentacarbonyl, Nickel-tetracarbonyl, Methyl cyclopentadienyl manganese-tricarbonyl
- b) Wastes containing other metal carbonyls
- Y20. Wastes containing beryllium and/or beryllium compounds listed as follows:
- a) Wastes containing 0.1% or more by weight of any of the following beryllium and/or beryllium compounds:
- Beryllium, Beryllium chloride, Beryllium oxide, Beryllium nitrate, Beryllium hydroxide, Beryllium fluoride, Beryllium sulfate
- b) Wastes containing other beryllium and/or beryllium compounds
- Y21. Wastes containing hexavalent chromium compounds listed as follows:
- a) Wastes containing 0.1% or more by weight of any of the following hexavalent chromium compounds:
- Chromium oxychloride, Chromic acid solution, Zinc chromate, Potassium zinc chromate, Potassium chromate, Calcium chromate, Silver chromate, Strontium chromate, Sodium chromate, Lead chromate, Barium chromate, Bismuth chromate, chromosulphuric acid, chromium trioxide, anhydrous, Ammonium dichromate, Potassium dichromate, Sodium dichromate, Lead chromate molybdate sulfate.
- b) Wastes containing other hexavalent chromium compounds
- c) Wastes to be exported for the purpose of D1 to D4 or R10 of Annex IV of the Convention which cannot meet the following criteria:
- i) Wastes in solid form, which cannot meet the Ambient Soil Quality Standards established under the National Environment Statute
- Y22. Wastes containing copper compounds listed as follows:
- a) Wastes containing 0.1% or more by weight of any of the following copper compounds:
- Copper acetoarsenite, Copper N, N'-Ethylenebis (saricylideneaminat), Cuprous chloride, Cupric chloride, Copper cyanide, Sodium cuprocyanide, Cupriethylenediamine solution, Copper arsenate, and Copper sulfate
- b) Wastes containing 1% or more by weight of any of the following copper compounds:

Copper (II) diammonium chloride dihydrate, Potassium cupric chloride, Copper acetate, Potassium cuprocyanide, Cupric nitrate, Cupric carbonate, Cuprous thiocyanate, Copper pyrophosphate, Cupric fluoride, and Cuprous iodide

- c) Wastes containing copper compounds other than those listed in a) and b) above.
- d) Wastes in solid form to be exported for the purpose of R10 of Annex IV of the Convention, which cannot meet the Ambient Soil Quality Standards in terms of copper compounds.

Y23. Wastes containing zinc compounds listed as follows:

- a) Wastes containing 0.1% or more by weight of any of the following zinc compounds:

Zinc dithionite, Zinc arsenite, Zinc chloride, Zinc cyanide, Zinc arsenate

- b) Wastes containing 1% or more by weight of any of the following zinc compounds:

Zinc chlorate, Zinc peroxide, Zinc permanganate, Zinc chromate, Zinc fluorosilicate, Zinc acetate, Diethyl zinc, 2, 5-Diethoxy-4-morpholinobenzenediazonium zinc chloride, Dimethyl zinc, 4-Dimethylamino-6-(2-dimethylaminoethoxy) toluene-2-diazonium zinc chloride, zinc oxalate, Zinc bromate, Zinc nitrate, Zinc thiocyanate, 3-(2-Hydroxyethoxy)-4-pyrrolidin-1-ylbenzenediazonium zinc chloride, Zinc pyrophosphate, Zinc Fluoride, 4-[Benzyl(ethyl) amino]-3-ethoxybenzenediazonium zinc chloride 4- [Benzyl (methyl) amino]-3-ethoxybenzenediazonium zinc chloride, Zinc methylthiocarbamate, Zinc sulfate, Zinc phosphide, Zinc phosphate

- c) Wastes containing zinc compounds other than those listed in a) and b) above

Y24. Wastes containing arsenic and/or arsenic compounds listed as follows:

- a) Wastes containing 0.1% or more by weight of any of the following arsenic and/or arsenic compounds:

Arsenic, Copper acetoarsenite, Zinc arsenite, Calcium arsenite, Silver arsenite, Strontium arsenite, Ferric arsenite, Copper arsenite, Sodium arsenite, Lead arsenite, Alkylarsenic compounds, Ethyldichloroarsine, Cacodylic acid, Sodium cacodylate, Diarsenic pentoxide, Arsenic pentafluoride, Arsenic trichloride, Arsenous trioxide, Arsenic tribromide, Acid manganese arsenate, Arsenic trifluoride, Diphenylamine

chloroarsine, Diphenylchloroarsine, Tetraarsenic tetrasulfide, Vinyzene, Arsenic acid, Zinc arsenate, Ammonium arsenate, Potassium arsenate, Calcium arsenate, Sodium arsenate dibasic, Calcium arsenate, Ferrous arsenate, Mercuric Ferric arsenate, Copper arsenate, Sodium arsenate, Lead arsenate, magnesium arsenate, Calcium arsenate fluoride, benzenearsonic acid, Potassium Metaarsenite, Sodium metaarsenite, Calcium methanearsonate, Ferric methanearsonate, Arsenic disulfide, Arsenic trisulfide.

- b) Wastes containing arsenic and/or arsenic compounds other than those listed in the above a)

- c) Wastes to be exported for the purpose of DI to D4 or R10 of Annex IV of the Convention, which cannot meet the following criteria:

- i) Wastes in solid form, which cannot meet the Ambient Soil Quality Standards in terms of arsenic and/or arsenic compounds

- ii) Wastes in liquid form, which cannot meet the waste water discharge standards to solid in terms of arsenic and/or arsenic compounds

- d) Wastes to be exported for the purposes other than those listed in c) above, and which cannot meet the following criteria;

- i) Wastes in solid form, which cannot meet the standards in Attached Table 1 of the verification standards for hazardous wastes in terms of arsenic and/or arsenic compounds

- ii) Wastes in liquid form, which cannot meet the standards in Attached Table No.1 of the effluent quality standards in terms of arsenic and/or arsenic compounds.

Y25. Wastes containing selenium and/or selenium compounds listed as follows:

- a) Wastes containing 0.1% or more by weight of any of the following selenium and/or selenium compounds:

Selenium, Sodium selenite, Selenium oxychloride, Selenium chloride, Selenic acid, Sodium selenite, Selenium dioxide, Selenium disulphide, cadmium red

- b) Wastes containing 1% or more by weight of any of the following selenium and/or selenium compounds:

Selenious acid, Barium selenite, Ferrous selenide

- c) Wastes containing selenium and/or selenium compounds other than those listed in a) and b) above
- hexahydroxoantimonate (V), Antimony trifluoride, Potassiumantimonyl tartrate, Antimony lactate, Sodiummetaantimonate
- Y26. Wastes containing cadmium and/or cadmium compounds listed as follows:
- a) Wastes containing 0.1% or more by weight of any of the following cadmium and/or cadmium compounds:
- Cadmium, Cadmium Chloride, Cadmium acetate, dihydrate, Cadmium oxide, Cadmium cyanide, Dimethylcadmium, Cadmium bromide, Cadmium nitrate, Cadmium hydroxide, Cadmium stearate, Cadmium carbonate, Cadmium iodide, Cadmium laurate, Cadmium sulfate, Cadmium yellow, Cadmium red
- b) Wastes containing cadmium and/or cadmium compounds other than those listed in the above a)
- c) Wastes to be exported for the purpose of D1 to D4 or R10 of Annex IV of the Convention, which cannot meet the following criteria:
- i) Wastes in solid form, which cannot meet the Ambient Soil Quality Standards in terms of cadmium and/or cadmium compounds;
- ii) Wastes in liquid form, which cannot meet waste water discharge standards to soil in terms of cadmium and/or cadmium compounds.
- d) Wastes to be exported for purposes other than those listed in the above c), which cannot meet the following criteria;
- i) Wastes in solid form, which cannot meet the standards in Attached Table 1 of the verification standards for hazardous wastes in terms of cadmium and/or cadmium compounds;
- ii) Wastes in liquid form, which cannot meet the standards in Attached Table 1 of the effluent quality standards in terms of cadmium and/or cadmium compounds.
- Y27. Wastes containing antimony and/or antimony compounds listed as follows:
- a) Wastes containing 0.1% or more by weight of any of the following antimony and/or antimony compounds:
- Sodium antimonate, Lead antimonate, Antimony pentachloride, Antimonypentoxide, Antimonypentafluoride, Antimony trichloride, Antimony trioxide, Potassium
- b) Wastes containing 1% or more by weight of antimony:
- c) Wastes containing antimony and/or antimony compounds other than those listed in the above a) and b)
- Y28. Wastes containing tellurium and/or tellurium compounds listed as follows:
- a) Wastes containing 1% or more by weight of any of the following tellurium and/or tellurium compounds:
- Tellurium, Diethyl tellurium, Dimethyl tellurium.
- (b) Wastes containing tellurium and/or tellurium compounds other than those listed in the above a,
- Y29. Wastes containing mercury and/or mercury compounds listed as follows:
- a) Wastes containing 0.1% or more by weight of any of the following mercury and/or mercury compounds:
- Mercury, Mercury benzoate, Ethylmercury chloride, Mercurous chloride, Mercuric chloride, Mercury ammonium chloride, Methylmercuric chloride, Mercuric oxycyanide, Mercury oleate, Mercury gluconate, Mercury acetate, Mercury salicylate, Mercuric oxide, Mercury cyanide, Mercuric potassium cyanide, Diethyl mercury, Dimethyl mercury, Mercury (II) bromide, Mercurous nitrate, Mercuric nitrate, phenyl mercuric hydroxide, Mercuric thiocyanate, Mercuricarsenate, mercury (II) iodide, Mercury potassium iodide, Mercury fulminate, Mercury sulphide, Mercurous sulfate, Mercuric sulfate
- b) Wastes containing 1% or more by weight of any of the following mercury and/or mercury compounds:
- Mercury nucleate, Mercurous acetate, Phenylmercury acetate, Phenylmercuric nitrate, Thimerosal;
- c) Wastes containing mercury and/or mercury compounds other than those listed in a) and b) above
- d) Wastes to be exported for the purpose of D1 to D4 or R 10 of Annex IV of the Convention, which cannot meet the following criteria:

- i) Wastes in solid form, which cannot meet the Ambient Soil Quality Standards in terms of mercury and/or mercury compounds;
 - ii) Wastes in liquid form, which cannot meet the waste water discharge standards to soil in terms of mercury and/or Mercury compounds.
- e) Wastes to be exported for purposes other than those listed in the above d), which cannot meet the following criteria;
- i) Wastes in solid form, which cannot meet the standards in Attached Table 1 of the verification standards for hazardous wastes in terms of mercury and/or mercury compounds;
 - ii) Wastes in liquid form, which cannot meet the standards in Attached Table 1 of the effluent quality standards in terms of mercury and/or mercury compounds.

Y30. Wastes containing thallium and/or thallium compounds listed as follows:

- a) Wastes containing 0.1% or more by weight of any of the following thallium and/or thallium compounds:

Thallium chlorate, Thallium acetate, Thallic oxide, Thallium bromide, Thallous nitrate, Thallium iodide, Thallium sulfate

- b) Wastes containing 1% or more by weight of thallium
- c) Wastes containing thallium and/or thallium compounds other than those listed in a) and b) above

Y31. Wastes containing lead and/or lead compounds listed as follows:

- a) Wastes containing 0.1% or more by weight of any of the following lead and/or lead compounds:

Lead, Lead azide, Lead arsenite, Lead monoxide, Lead chloride, Basic lead silicate, Lead perchlorate, Lead chromate, Lead silicate, lead acetate, Tribasic lead sulfate, lead cyanamide, Tetraalkyllead, Lead cyanide, Lead tetroxide, lead nitrate, Lead hydroxide, lead styphnate, Lead stearate, Lead carbonate, Lead naphtenate, Calcium plumbate, dibasic lead sulfite, Dibasic lead phosphite, Lead stearate dibasic, basic lead phthalate, Lead dioxide, Lead fluoroborate solution, Lead phosphite dibasic, Lead arsenate, Lead fluoride, Lead metaborate, Lead methanesulphonate, Lead iodide, Lead sulfate, Lead chromate molybdate sulfate

- b) Wastes containing lead and/or lead compounds other than those listed in (a) above
- c) Wastes to be exported for the purpose of D1 to D4 or R10 of Annex IV of the Convention, which cannot meet the following criteria;

- (i) Wastes in solid form, which cannot meet the Ambient Soil Quality Standards in terms of lead and/or lead compounds;
- ii) Wastes in liquid form, which cannot meet the waste water discharge standards to soil in terms of lead and/or lead compounds;

- d) Wastes to be exported or imported for purposes other than those listed in c) above, which can not meet the following criteria.

- (i) Wastes in solid form, which can not meet the standards Attached Table 1 of the verification standards for hazardous wastes in terms of Lead and/or lead compounds.
- (ii) Wastes in liquid form, which can not meet the standards in Attached Table 2 of the effluent quality standards in terms of Lead and or Lead compounds

Y32. Wastes containing inorganic fluorine compounds excluding calcium fluoride listed as follows:

- a) Wastes containing 0.1% or more by weight of any of the following inorganic fluorine compounds:

Fluorosilicic acid, Bromine pentafluoride, Bromine trifluoride, Boron trifluoride dihydrate, Potassium bifluoride, Difluorophosphoric acid, Ammonium fluoride, Potassium fluoride (spray dide), Chromic fluoride, Hydrofluoride, Ammonium hydrogenfluoride, Hydrofluoric acid, Sodium fluoride, Fluorosulphonic acid, Fluorophosphoric acid anhydrous, hexafluorophosphoric acid, Fluobolic acid

- b) Wastes containing 1% or more by weight of any of the following inorganic fluorine compounds:

Ammonium fluoroborate, Ammonium fluorosilicate, Barium fluoride, Barium fluorosilicate, Iodine pentafluoride, Lithium borofluoride, magnesium borofluoride, Magnesium fluorosilicate, manganese fluorosilicate, Potassium fluoroborate, Potassium fluorosilicate, Potassium hydrogen fluoride, Sodium fluorosilicate, sodium hydrogen fluoride, stannous fluoride, Sodium fluoroborate, zinc fluorosilicate,

- c) Wastes containing inorganic fluorine compounds other than those listed in a) and b) above

Y33. Wastes containing inorganic cyanides listed as follows:

- a) Wastes containing 0.1% or more by weight of any of the following inorganic cyanides:

Cyanogen bromide, Hydrogen cyanide, hydrocyanic acid aqueous, leadcyanide, mercurycyanide, mercuric potassium cyanide, nickel cyanide, Potassium cyanide, Silver cyanide, sodiumcuprocyanide, Sodiumcyanide, Zinc cyanide

- b) Wastes containing 1% or more by weight of any of the following inorganic cyanides:

Barium cyanide, Barium platinum cyanide, Calcium cyanide, Copper cyanide, Potassium cobalt cyanide, Potassium cuprocyanide, Potassium gold cyanide, Potassium nickel cyanide

- c) Wastes containing inorganic cyanide other than those listed in a) and b) above

- d) Wastes to be exported or imported for the purpose of D1 to D4 or R10 which cannot meet the following criteria:

- i) Wastes in solid form, which cannot meet the Ambient Soil Quality Standards in terms of inorganic cyanide
- ii) Wastes in liquid form, which cannot meet the waste water discharge standards to soil in terms of inorganic cyanide

- e) Wastes to be exported or imported for the purposes other than those listed in d) above, which cannot meet the following criteria;

- (i) Wastes in solid form, which cannot meet the standards in attached table I of the verification standards for hazardous wastes in terms of inorganic cyanide;
- (ii) Wastes in Liquid form, which cannot meet the standards in Attached Table 1 of the effluent quality standards ins terms of inorganic cyanide.

Y34. Acidic solutions or acid in solid form with Ph value of 2.0 or less, or basic solutions or bases in solid form with Ph value of 11.5 or more by weight (in case of substances in solid form, Ph value of the solution of water-substance has a ratio 1:3 in weight)

Y35 Basic solutions or bases in solid form.

Y36. Wastes containing asbestos in the form of dust or fibers

Y37. Wastes containing organic phosphorus compounds listed as follows:

- a) Wastes containing 0.1% or more by weight of any of the following organic phosphorus compounds:

Azinphos-ethyl, Azinphos-methyl, Butyl phosphorotrithionate, Carbophenothion, Chlorfenvinphos (ISO), Chlormephos, S-[(6-Chloro-2-oxo-3-brenzoxyazoly) methyl] O, O-diethyl phospholodithioate, Chlorthiophos, Camaphos, Cresyldiphenyl phosphote, Crotoxyphos, Crufomate, Demephion, Demeton-O-methyl, Demeton-S-methyl, Dialifos, Dichlofenthion, Dichloromethylphosphine, Dicrotophos, O, O-Diethyl-s-2-(ethylthio) ethyl phosphorodithioate, Diethyl=4-nitrobenzylaphosphonate, O, O-Diethyl-O- (5-phenyl-3-isoxazoly)phosphorothioate, O, O-Diethyl-O-3,5,6-trichloro-2-pyriylnphosphorothioate, Dimefox, O, O-Dimethyl-S- (1, 2-etylthioethyl phosphorodithioate, Dimethyl 2,2-dichlorovinylphospate, Dimethyl etylthicethyl dithiophosphate, Dimethylhydrogen phosphite, Dimethyl-methylcarbamoylethylthioethyl thiophosphate, O, O-Dimethyl-N-methylcarbamoyl-methyl dithiophosphate, - Dimethyl -S- (N-methyl-N- formoylcarbamoylmethyl) dithiophosphate O, O-Dimethyl-O- [3-methyl-4- (methylthio) phenyl] thiophosphate, O, O-Dimethyl-O- (3-methyl-4-nitrophenyl) thiophosphate, O, O-Dimethyl-S- (phenylaceticacidethylester) dithiophosphate, O, O-Dimethyl phtaloimid methylthiophosphate, Dimethylthiophosphory chloride, Dimethyl 2, 2, 2-trichloro-1-hydroxyethyl phosphorate, Dioxathion, Diphenyl-2, 4, 6-trimethylbenzoylphosphine-oxide, Edifenphos, Endothion, Ethion, Ethoatemethyl, Ethoprophos, O-Ethyl-O-2-isopropoxycarbonylphenyl= isopropylphosph Oloamidthioate O-Ethyl=O-p-nitrophenylthionobenzenephosphate, Fenamiphos, Fensulfothion, Fonofos, Hexaethyl tetraphosphate, Hexamethylphosphoric triamide, Heptenophos, Isodecyl diphenylphosphate, 2-Isopropyl-4-methylpyrimidyl- 6-diethylthiophosphate, Isothioate, Mecarbam, Menazon, Mephosfolan, Methamidophos, 2-Methoxy-4H-1, 3, 2-benzodioxaphosphorin-2-sulfide, S-[5Methoxy-2-oxo-2, 3-dihydro-1, 3, 4-thiadiazoly]- (3) -methyl]dimethyl-phospholothiolothionate, Methyl parathion, Methyltrithion, Mevinphos, Naled, Omethoate, Oxydisulfoton, Oxydemetonmethyl, Paraoxon, Parathion, Pirimiphosethyl, Phenkapton, Phorate, Phosfolan, Phosphamidon, Prothoate, Propaphos, Pyrazophos, Pyrazoxon, Quinalphos, Schradan, Sulprofos, Tetraethyl dithiopyrophosphate, Thionazin, Temephos, Terbfos, Tris (1-aziridinyl) phosphine oxide, Triamiphos, Triazophos, Trichloronate, Triethylphosphate Tris(1-aziridinyl) phosphine sulphide, Tris (4-methoxy-3, 5-dimethylphenyl) phosphine, Trixyly phosphate, Tributyl phosphates's 3-(Dimethoxyphosphinyloxy)-N-methyl-cis-crotonamide, Di-(2-ethylhexyl) phospholic acid, Di-

(ethylhexyl) phosphoric acid, Triallyl phosphate, Tricresyl phosphate, Tris(isopropylphenyl) phosphate, Tris(2,3-dibromopropyl) phosphate

b) Wastes Containing 1% or more by weight of any of the following organic phosphorus compounds:

Amidothiazate, Bialaphos, O-4-Bromo-2-chlorophenyl O-ethyl-S-propyl phosphorothioate, Bromophosethyl, Butamifos, O-Buthyl-S-benzyl-S-ethyl phosphorodithioate, 2-Chloro-1-(2,4-dichlorophenyl) vinyl dimethyl phosphate, DEF, Demeton, Demeton-O, Dialkyl phosphodithioate, O-2, 4-Dichlorophenyl-O-ethyl-S-propylphosphorodithioate, Diethyl-S-benzyl thiophosphate, Diethyl-4-chlorophenylmercaptopethyl dithiophosphate, Diethyl-(1,3-dithiocyclopentylidene) -thiophosphoramidate, Diethyl-4-methylsulfinylphenyl-thiophosphate, O,O-Diethyl-O-(3-oxo-2-phenyl-2H-pyridazin-6-yl) phosphorothionate Diethyl-paradimethylamino sulfonylphenylthio phosphate Diethylthiophosphorylchloride, O,O-Diisopropyl-S-benzylthiophosphate, Diisopropyl-S-(ethylsulfinylmethyl) -dithiophosphate, Dimethyl-S-p-chlorophenylthiophosphate, O,O-Dimethyl-O-4-cyanophenyl phosphorothioate, 2,3-(Dimethyldithiophosphoro)-paradoxan, O,O-dimethyl-S-2-(ethylsulfinyl)- isopropyl-thiophosphate, Dimethyl-[2-(1'-methylbenzoyloxycarbonyl)-1-methyl eth ylen]-phosphate O,O-Dimethyl-O-(3,5,6-trichloro-2-pyridinyl) phosphorothioate, Ethyl-2,4-dichlorophenylthionobenzene phosphorate, O-6-Ethoxy-2-ethylpyrimidin-4-yl=O, O-dimethyl=phosph orothioate, Fosthiazate, Leptophos, Mesulfenfos, Meythylcyclohexyl-4-chlorophenylthiophosphate, Octyldiphenyl phosphate, Phenylphosphonic dichloride Phenylphosphorous thiodichloride, Piperophos, Propetamphos, Pyraclofos, Sulfotep, Tetraethylpyrophosphate, Temivinphos, Tributoxyethyl phosphate, Tri-n-butyl phosphine, S,S,S-Tributyl phosphorotrithioate, Triethyl phosphite, Trimethyl phosphate, Trimethyl phosphite, Trioctyl phosphate, Tris(chloroethyl) phosphate, Tris (B-chloropropyl) phosphate, Tris (dichloropropyl) phosphate

c) Wastes containing organic phosphorus compounds other than those listed in a) and b) above

d) Wastes to be exported for the purpose of D1 to D4 or R10 of Annex IV the Convention, which cannot meet the following criteria:

- i) Wastes in solid form, which cannot meet the Ambient Soil Quality Standards in terms of organic phosphorus compounds;
- ii) Wastes in liquid form, which cannot meet the waste water discharge standards to soil in terms of organic phosphorus compounds

e) Wastes to be exported for the purposes other than those listed in the above d), which cannot meet the following criteria;

- i) Wastes in solid form, which cannot meet the standards in Attached Table 1 of the verification standards for hazardous wastes in terms of organic phosphorus compounds;
- ii) Wastes in liquid form, which cannot meet the effluent quality standards in terms of organic phosphorus compounds

Y38. Wastes containing organic cyanides listed as follows:

a) Wastes containing 0.1% or more by weight of any of the following organic cyanides:

Acetone cyanhydrin, Acrylonitrile, Adiponitrile, 2-Amino-5-(2-chloro-4-nitrophenylazo) -4-methyl-3-thiophenecarbonitrile 2,2' -Azobis-[2- (hydroxymethyl) propionitrile], 2,2' -Azobis-(methylbutyronitrile), Benzonitrile, Bromobenzylcyanides, Bromoxynil, 3-Chloro-4-methylphenyl isocyanate, Cyanazine, a-Cyano-3-phenoxybenzyl=bis(trifluoromethyl) methyl -1-(3,4-isopropylidene) butene-1, 4-decarboxylate, Cyclohexyl isocyanate, 2,6-Dichlorobenzonitrile, Dichlorophenylisocyanate, 3, 3' -Dimethyl-4, 4' - biphenylenediisocyanate, Diphenylmethane-4, 4' - diisocyanate, Ethylene Cyanhydrin, Fenpropathrin, Ioxynil, Isophorone diisocyanate, lactonitrile, Malononitrile, Methacrylonitrile, methyl isocyanate, Phenylacetoneitrile, Phenyl isocyanate, O-Phthalodinitrile, Propionitrile, Trimethylhexamethylene diisocyanate, Tolylenediisocyanate

b) Wastes containing 1% or more by weight of any of the following organic cyanides:

Acetonitrile, 2,2' -Azobis isobutyronitrile, 2,2' -Azobis-(2,4-dimethylvaleronitrile), 2,2' -Azobis-(2,4-dimethyl-4-methoxyvaleronitrile), 1,1' -Azobis-(hexahydrobenzonitrile), Butyronitrile, N-cyanoethyl monochloroacetoamide, Cyanofenphos (CYP), (RS)-a-cyano-3-phenoxybenzyl, Cyhalothrin, Cyphenothrin, Cyfluthrin, 2,3-Dibromopropionitrile, 2-Dimethylaminoacetonyl, Ethyl cyanoacetate, Ethyl isocyanate, Fluvalinate, Hexamethylene diisocyanate, Isobutyl isocyanate, Isobutyronitrile, Isocyanatobenzotrifluoride, Isopropyl isocyanate, Methoxymethyl isocyanate, Methyl isothiocyanate, 3-(N-Nitrosomethylamino) propionitrile, n-Propyl isocyanate, Terephthalonitrile, Tralomethrin, 1,2,5-Trithiocycloheptadiene-3,4,6,7-tatranitrile (TCH),

- c) Wastes containing organic cyanides other than those listed in a) and b) above

Y39. Wastes containing phenols and/or phenol compounds

- a) Wastes containing 0.1% or more by weight of any of the following phenol and/or phenol compounds:

2-Aminoanthraquinon, 7-Amino-4-hydroxy-2-naphthalene sulfonic acid, p-t-Butylphenol, Carbolic oil, Chlorophenol, Coal tar, Cresols, Cyclohexylaminophenol, Dichlorophenols, 2,4-Dichloro-3-methylphenol, 1,4-Dihydro-9,10-dihydroxyanthracene, 2,4-Dinitro-6-sec-buthylphenoldimethyl acrylate, 4,6-Dinitro-o-cresol, 2,4-Dinitrophenol, Dinoseb, Dinosebacetate, Dinoterb, Dinoterbacetate, Dodecylphenol, o-Ethylpheno Heptyl-1[2,5-dimethyl-4 (2-methylphenylazo)] phenylazo-2-naphthol, Hydroxybenzene, isoamyl salicylate, Medinoterb, Methyl salicylate, Nitrocresols, Nitrophenols, Nonylphenol, Nonylphenol poly (4-12) ethoxylates, Pentachlorophenol, 4-Phenoxyphenol, Picric acid, Sodium pentachlorophenate, Trichlorophenols, 2-(thiocyanatomethylthio) benzothiasol, Xylenols

- b) Wastes containing 1% or more by weight of any of the following phenol and/or phenol compounds:

2-Amino-4-chlorophenol, Aminophenols, Ammonium dinitro-o-cresolate, Ammonium picrate, Chlorocresols, Diazodinitrophenol, 2, 4-Dinitro-6-cyclohexylphenol, 2, 4-Dinitro-6-(1-methylpropyl) -phenol, Dinitrophenolate, alkali metals, Dinitroresorcinol, Dyes, Hydroquinone, 4-Hydroxysulfonic acid, N-Methylcarbaryl-2-chlorophenol (CPMC), B-Naphthol, Resorcinol, sodium-2, 4-dichloro-6-nitrophenolate (DNCP), Sodiumdinitro-o-cresolate, 2,4,6-Tri(dimethyl-aminomethyl) hydroxbenzene, 2,4,6-Trinitro-m-cresol, 2,4,6-Trinitroresolcinol

- c) Wastes containing phenol and/or phenol compounds other than those listed in a) and b) above.

Y40. Wastes containing ethers listed as follows:

- a) Wastes containing 0.1% or more by weight of any of the following ethers:

o-Anisidine, 2-(2-aminoethoxy) ethanol, 2-Amino-dimethoxypyrimidine, a-[1-[(Allyloxy) methyl] -2-(nonylphenoxy) ethyl] -w-hydroxypoli (n=1-100) (oxyethylene), Allylglycidylether, Alkaryl polyether (C9-C20 Alcohol (C6-C17) sec-poly (3-12) thoxylates, alcohol (C12-C15) poly (1-11) ethoxylates, Alcohol (C13-C1 5) lyethoxylates, 1,2-Butylene oxide, Butyl glycidyl ether, Butyl hydroxy anisol, 2-t-Butyl-6-nitro-5-[p-(1,1,3,3-tetramethylbutyl) phenoxy] benzoxazole, Carbofran, 4-

Chlorobenzyl-4-ethoxyphenyl ether, p-(2-Chloroethyl) anisol, m-Chloromethylanisol, Coumafuryl, p-Cresidine, Endothal sodium, 2, 3-Epoxy-1-propanol, 2,3-Epoxypropyl-acetate, 2-(2,3-Epoxypropyl)-6-methoxyphenyl-acetate, a-2, 3-Epoxypropoxyphenyl-w-hydropoli (n=17) [2-(2,3-epoxypropoxy) benzylidene-2,3-epoxypropoxyphenylene], Ethyleneglycol isopropyl ether, Ethyleneglycol phenyl ether, Ethyleneglycol methylbutyl ether, Ethyleneglycol monoacrylate, Ethyleneglycol monobutyl ether, Ethyleneglycol monobutyl ether acetate, Ethyleneglycol monoethyl ether, Ethyleneglycol monoethyl ether acetate, Ethyleneglycol monomethyl ether, Ethyleneglycol monomethyl ether acetate, Ethyleneglycol mono-n-propyl ether, Ethyl 3-ethoxypropionate, Safrole, Propylene oxide, Di-(2-chloro-iso-propyl) ether, B, B '-Dichloroethyl ether, 3,3' -Dichloro-4 4' -diaminodiphenyl ether, 1,3-Dichloro-2-methoxy-5-nitrobenzene, Disodium=6-(4-amino-2,5-dimethoxyphenylazo)-3-[4-(4-amino-sulfonatephenylazo)-2, 5-dimethoxyphenylazo]-4-hydroxy-2-naphthalenesulfonate, Diphenyl ether, Dipropyleneglycol monobutyl ether, Dipropyleneglycol monomethyl ether, Din-pentyl ether, Styreneoxide, Petroleum ether, Tetrahydrofuran, Dodecylphenoxybenzene disulphonate (solns.), Drazoxolan, Triethyleneglycol monoethyl ether, Triethyleneglycol monomethyl ether, 2, 4, 6-Tris(chloromethyl)-1, 3, 5-trioxane, 3, 3, 3-Trifluoro-1, 2-epoxypropane,

Tripropyleneglycol monomethyl ether, Trimethylolpropane polyethoxylate, 5-[N,N-Bis(2-acetoxyethyl)amino]-2-(2-bromo-4,6-dinitrophenylazo)-4-methoxyacetanillide, 1,6-Bis(2,3-epoxypropoxy) naphthalene, 4,4' -Bis (,3-epoxypropoxy) biphenyl, 1,1-Bis[p-(2,3-epoxypropoxy) phenyl] ethane, 1,1-Bis[p-(3-chloro-2-hydroxypropoxy) phenyl] ethane, Bis(chloromethyl) ether,4,6-Bis(difluoromethoxy)-2-methylthiopyrimidine, Tributyltin oxide, Bisphenol A diglycidyl ether, Diglycidyl ether of Bisphenol F, Ethyl vinyl ether, Phenylglycidylether (RS)-1-(4-Phenoxyphenoxy)-2-propanol, Dihydro-2 (3H) - furanone, Butoxyl, Brucine, Furfural, Furfurylalcol, B-Propiolactone, 2,3-Epoxypropyl-propionate, Propyleneglycol monoalkyl ether, Propyleneglycol monomethyl ether acetate, ropoxur, 1-Bromo-4-(2,2 dimethoxyethoxy)-2,3-dimethylbenzene, 1,1' -[Oxybis(methylene)bis(benzene)] Polyethyleneglicol monoalkyl ether, Methylchloromethyl ether, 2-Methoxy-2-methylpropane, 4-Methoxy-2,2', 4' -trimethyldiphenylamine, 1-(4-Methoxyphenoxy)-2-(2-methylphenoxy) ethane, Morpholine, Resorcinol diglycidyl ether, Rotenone

- b) Wastes containing 1% or more by weight of any of the following ethers:

Acetal, Anisol, N-Aminopropylmorpholine, Allilethylether, Ethylpropyl ether, Ethyleneglycol diethyl ether, Ethyleneglycol diglycidyl ether, Ethyleneglycol dimethyl ether, 3-

Ethoxypropylamine, 1,2-Epoxy-3-ethoxypropane, Glycidol, Chloroethyl vinyl ether, Chloromethyl ethyl ether, Diethyl ether, Diethyleneglycol dimethyl ether, Diethyleneglyco 1 monobutyl ether, Di-2-ethoxyethyl peroxydicarbonate, 3, 3 Diethoxypropene, Diethoxymethane 2,5-Diethoxy-4-morpholino benzenediazonium zinc chloride, 1,3-Dioxane, Dioxolan, 2,3 -Dihydropyridine, Diphenylsulfide, Dibutyl ether, Dipropyl ether, 4-Dimethylamino-6 (2-dimethylaminoethoxy) toluene-2-diazonium zinc chloride, Dimethyldiethoxysilane, Dimethyldioxane, Dimethoxyisopropylperoxydicarbonate, 1,1- Dimethoxyethane, Di-methoxybutyl peroxydicarbonate, 2,2-Dimethoxypropane, Tetrahydrofurfurylamine, Triglycol dichloride, Trinitroanisole, Trinitrophenetole, Nitroanisole, Neopentylglycol diglycidyl ether, 3-(2-Hydroxyethoxy)-4-pyrrolidin-1-ylbenzenediazonium zinc chloride, Isobutyl vinyl ether, Phenetidines, Phenetole, Phenoxyethylacrylate, Ethylbutyl ether, n-Butyl methyl ether, Furan, Furfurylamine, Furfurylmercaptan, 2-Bromoethylethylether, 4-[Benzyl (ethyl) amino] -3-ethoxybenzenediazonium zinc chloride-[Benzyl(methyl) amino]-3-ethoxybenzenediazonium zinc chloride, benfuracarb, Tetrahydrofurfuryl methacrylate, methylal, Methyltetrahydrofuran, 2-Methylfuran, Methylpropyl ether, Methyl-3-methoxybutanol, N-Methylmorpholine, 4-Methoxy-4-methylpentane-2-one

c) Wastes containing ethers other than those listed in a) and b) above

Y41. Wastes containing halogenated organic solvents listed as follows:

a) Wastes containing 0.1% or more by weight of any of the following halogenated organic solvents:

Chloropropanes, Chloropropenes, Chlorobenzene, Chloroform, Carbon tetrachloride, Dichloroethanes, Dichloroethylenes, Dichloropropanes, Dichloropropenes, Dichlorobenzene, Methylene chloride, Dibromoethanes, Tetrachloroethane, Tetrachloroethylene, Tetrabromoethane, Tetrabromomethane, Trichloroethanes, Trichloroethylene, Trichloro-trifluoroethane, 1,2,3-Trichloropropane, 1,2,4-Trichlorobenzene, Pentachloroethane

b) Wastes containing 1% or more by weight of any of the following halogenated organic solvents:

1,1-Dichloro-1-nitroethane, 1,4-Dichlorobutane, Dichloropentanes, Bromoform

c) Wastes containing halogenated organic solvents other than those listed in a) and b) above

d) Wastes in liquid form to be exported for the purpose of D1 to D4 or R10 of Annex VI of the Convention, which cannot meet the waste water discharge standards to soil in terms of tetra-chloro-ethylene and/or tri-chloro-ethylene

e) Wastes to be exported for the purposes other than those listed in the above d), which cannot meet the following criteria;

i) Wastes in solid form, which cannot meet the standards in Attached Table 1 of the verification standards for hazardous wastes in terms of tetra-chloro-ethylene and/or tri-chloro-ethylene;

ii) Wastes in liquid form, which cannot meet the standards in Attached Table 1 of the effluent quality standards in terms of tetra-chloro-ethylene and/or tri-chloro-ethylene

Y42. Wastes containing organic solvents excluding halogenated solvents

a) Wastes containing 0.1% or more by weight of any of the following organic solvents:

Acrolein, Diisononyl adipate, Acetaldehyde, Ethyl acetoacetate, Methyl acetoacetate, Acetophenone, Acetone, Aniline, Allyl alcohol, Alkylbenzenes, benzyl benzoate, Methyl benzoate, Isoamyl alcohol, Isooctanol, Isooctane, isononyl alcohol, Isobutanol, Iso Butylamine, 4-Methyl-2-pentanone, Isopropylamine, Isopropyl alcohol, Isopropyl cyclohexane, isopropyl toluene, 3-Methyl-2-butanone, Isopentane, Isopentene, Isobutyric acid, Ethanolamine, Ethylanilines, Ethylamine, Ethylcyclohexane, N-Ethyl cyclohexylamine, 2-Ethylbutanol, N Ethylbutylamine, Ethyl-butylketone, 2-Ethyl-3-propyl acrolein, Ethyl-n-propyl ketone, 2-Ethylhexanol, 2-Ethylhexylamine, Ethyl n-pentyl ketone, 2-Butanone, Ethyleneglycol diacetate, Ethylene glycol, Ethylenediamine, Octanol, Octane, Octanes, Formic acid, Isobutyl formate, n-Butyl formate, Methyl formate, Quinoline, Dimethyl succinate, Acetic acid, Isobutyl acetate, isopropyl acetate, isopentyl acetate, Ethyl acetate, Ethylbutyl acetate, n-Octyl acetate, Cyclohexyl acetate, n-Decyl acetate, n-Nonyl acetate, Vinyl acetate, 2-Phenyl ethyl acetate, Butyl acetate, sec-Butyl acetate, n-Propyl acetate, n-Hexyl acetate, sec-Hexyl acetate, Heptyl acetate, Benzyl acetate, pentyl acetate, sec-Pentyl acetate, methyl acetate, Methylpentyl acetate, Mesityl oxide, Diisobutylamine, Diisobutyl ketone, Diisopropanolamine, Diisopropylamine, N, N e, Diethylaminoethanol, Diethylamine, Diethylenetriamine, Cyclohexanol, Cyclohexanone, Cyclohexane, Cyclohexylamine, Cycloheptane, Cyclopentane, Cyclopentene, Dicyclohexylamine, Di-n-butylamine, Dipropylamine, Dipentene, N, N-Dimethylacetamide, N, N-Dimethylaniline, Dimethylamino

azobenzene, 2-dimethylaminoethanol, 2,6-Dimethyl-4-heptanol, N, N-Dimethyl formamide, Diethyl oxalate, Camphor oil, Styrene, Butyl stearate, Tetrahydrothiophene-1, 1-dioxide, Petroleum naphtha, Petroleum benzine, Dimethyl sebacate, Solvent naphtha, Diethyl carbonate, Dimethyl carbonate, Decanol, Decene, Tetraethylenepentamine, Tetrahydronaphthalene, Turpentine oil, Dodecanol, 1-Dodecylamine, Triethanolamine, Triethylamine, Tricyclenetetramine, Tributylamine, Tripropylamine, Toluidine, Naphthalene, Nitroethane, Nitroxylenes, O-Nitrotruenene, Nitropropanes, Nitrobenzene, Nitromethane, Ethyl lactate, Butyl lactate, Carbon disulfide, Nonanol, Nonane, Nonene, Paraldehyde, Methyl palmitate, Picolines, 4-Hydroxy-4-methyl-2-pentanone, Pinenes, Pyridine, Phenyl ethyl alkyl, 1-Phenyl-1-xylyethane, n-Butanol, 2-Butanol, Dialkyl phthalates, Bis (diethyleneglycol) phthalate, Butyl benzylphthalate, Butanediols, n-Butylamine, sec-Butylamine, tert-Butylamine, 1,3-Propane sultone, Propionic acid, n-Amyl propionate, Ethyl propionate, n-Butyl propionate, Methylpropionate, Propylamine, Hexanol, Hexane, Hexenes, Heptanols, Heptane, n-Heptene, Benzyl alcohol, Benzene, 1,3-Pentadiene, Pentanols, n-Pentane, Pentenes, Formamide, White spirit, Di-n-butyl maleate, Methyl myristate, Methanol, Methyl alcohol, Methylamine, Methyl iso-amylketone, 7-Methyl-1, 6-octadiene, 2-Methylcyclohexanol, Methylcyclohexanone, Methylcyclohexane, Methylcyclopentane, 1-Methyl naphthalene, Methyl n-pentyl ketone, Methyl butanol Metju; nitu; letame, Methyl butanol, 2-Methyl hexane, Methyl n-hexylketone, Methyl heptyl ketone, Methylpentanol, 2-Methyl pentane, 2-Methyl-1-pentane, 4-Methyl-1-pentane, Ethyleneglycol monoacetate, Methyl laurate, Butyric acid, Ethyl butyrate, Vinyl butyrate, n-Butyl butyrate, Methyl butyrate, Ligroin, Dimethylsulfide, Dimethylsulfate

b) Wastes containing 1% or more by weight of any of the following organic solvents:

Allylamine, Methyl valerate, Methyl isopropenyl ketone, Isobutyl isobutyrate, Isopropyl isobutyrate, Ethyl isobutyrate, N-Undecane, Ethyl alcohol, N-ethyltoluidine, Allyl formate, Ethyl formate, Propyl formate, Pentyl formate, Allyl acetate, Isopropenyl acetate, tert-Butyl acetate, Diethylamine, Diisopropyl ketone, Diethyl ketone, Diethyleneglycol, Cyclohexene, Cycloheptene, Cyclopentanol, Cyclopentanone, Dipropyl ketone, Dimethylcyclohexane, Dimethyl sulfoxide, 2,3-Dimethylbutane, 1,3-Dimethylbutylamine, Dioctyl sebacate, Dibutyl sebacate, Thiophene, n-Decane, Tetrahydrothiophene, Terpinolene, Triallylamine, Trimethylene glycol, Methyl lactate, Dimethyl disulphide, Acetyl methyl carbinol, Vinyltoluene, Piperidine, 3-Butanol, Butylmercaptan, 1,4-Butynediol, n-Propanol, Isopropyl propionate, Isobutyl propionate, 4-Methyl-1,3-dioxacyclopentan-2-one, 1,2-Propylenediamine, 2-Methyl-2,4-pentanediol, Pentamethylheptane, Pentane-2,4-dione,

Triisopropyl borate, Ethyl borate, Trimethyl borate, Butyric anhydride, N-methylaniline, Methyl vinyl ketone, N-Methylpiperidine, Methyl propyl ketone, 5-Methylhexan-2-one, Isopropyl butyrate, Isopentyl butyrate, Pentyl butyrate

c) Wastes containing organic solvents other than those listed in a) and b) above

Y43. Any congener of Polychlorinated debenzo-foran.

Y44. Any congener of Polychlorinated dibenza-p-dioxin.

Y45. Wastes containing organohalogen compounds other than substances referred to in this Schedule, listed as follows:

a) Wastes containing 0.1% or more by weight of any of the following organohalogen compounds:

1-(Acetylamino)-4-bromoanthraquinone, Atrazine, 2-Amino-2-chloro-5-nitrobenzophenone, (6R, 7R)-7-Amino-3-chloromethyl-8-oxo-thia-1-azabicyclo(4,2,0)octa-2-ene-2-carboxylic acid-4-methoxybenzyl, Methyl aminodithio-2-chloropropionate hydrochloride, A-Amino-3-, 5-dibromothiobenzamide, 2-Chloro-2', 6'-diethyl-N-(methoxymethyl) acetanilide, Aldochlor, Aldrin, Isodrin, Imazalil, Ethyl-3, 5-dichloro-4-hydroxybenzoate, Ethyl-3, 5-dichloro-4-hexaacyloxy-carboxyloxybenzoate Ethylene chlorohydrine, Epichlorohydrin, Acetyl chloride, Anisole chloride, Allyl chloride, Choline chloride, Chlorinated paraffins (C10-13), Pyrolytic chloride, Benzylidene chloride, Benzyl chloride, Benzoyl chloride, Endrin, Captafol, Canphechlor, Coumachlor, Crimiine, Chloral, Chlordimeform, Chlordane, Chlorenic acid, Chloroacetaldehyde, Chloroacetone, Chloroanilines, 4-Chloro-2-aminotoluene hydrochloride, 1-Chlorooctane, 1-Chloroethylchloroformate, 1-Chloro-3-(4-Chlorophenyl) hydrazone-z-propanol Monochloroacetic acid, Chlorodinitrobenzene, 3-Chloro-1, 2-dibromopropane, 1-Chloro-3, 3-dimethyl-2-butanol, Ethylchlorohydroformate, 2-chloro-5-trifluoromethylnitrobenzene, Chlorotoluenes, Chlorotoluenes, 2-Chloronicotinic acid, Chloronitroanilines, 4-Chloro-2-nitrotoluene, N-(2-Chloro-3-nitro-6-pyridyl) acetamide, 4-(2-Chloro-4-nitrophenylazo)-N-(2-cyanoethyl)-N-phenetyl aniline, Chloronitrobenzenes, Chloropicrin, Chlorohydrins, Chlorophacinone, 4-Chloro-ortho-phenylenediamine, 3-Chloro-2-fluoronitrobenzene 3-Chloro-4-fluoronitrobenzene, Chloroprene, 2-Chloropropionic acid, 3-Chloropropionic acid, 1-chlorohexane, 1-chloroheptane, p-Chlorobenzylchloride, p-Chlorobenzotrithloride, Chloromethyl-p-toyl-ketone, 2-(4-Chloromethyl-4-hydroxy-2-thiazoline-2-yl guanidine) chloride, Methyl 2-[(chloromethyl) phenyl] propionate, (2S)-3-Chloro-2-methylpropionic acid, (Z)-4-Chloro-2-(methoxycarbonylmethyl)oxyimino-3-oxobutyric acid, 2-Chlorobutyric acid, kepone, Kelevan, 1-

Chloroformyl-1-methylethyl acetate, 1-Bromoformyl-1-methylethyl acetate, Benzotrithloride, 3,5-Diaminobenzene, Diallate, Silicon tetrachloride, Diglycol chlorohydrin, Cyclohexenyltrichlorosilane, 3-4-Dichloroaniline, 4,5-Dichloro-p-n-octylisothiazole-3-one, Dichloroacetic acid, Methylchloroacetate, 3,3"-Dichloro-4,4' -diaminodiphenylmethane, 3,5-Dichloro-4-(1,1,2,2-tetrafluoroethoxy) aniline, 1,4-Dichloro-2-trichlorosilyl-2-butene, 2,4-Dichloro-5-trifluoromethylnitrobenzene, 1,4-Dichloro-2-nitrobenzene, 2,2-Dichloro-5-nitrobenzophenon, 2,4-dichlorophenoxyacetic acid diethanolamine, 2,4-Dichlorophenoxyacetic acid, 2,4-Dichlorophenoxyacetic acid triisopropanolamine, 2,4-Dichloro-3-fluorence trobenzene, 1,3-Dichloro-4-fluorobenzene, 2,3-Dichloro-1-propanol, 2,2-Dichloropropionic acid, Methyl 2,3-dichloropropionate, Dichlorobromomethane, 1,5-Dichlorohexane, 2,6-Dichloro-3-perchloromethyltoluene, 4,5-Dichloro-2-perchloromethyltoluene, Dichlorobenzidine, 2,2-Dichloro-3-pentanone, 2,4-Dichloro-pentanone, 2,6-Difluoroaniline, 3,4-Difluoronitrobenzene, 2-Dibromomethylene 2'-(2,6-Dibromo-4-nitrophenylazo)-5"-diethylaminoacetanilide, 2,3-Dibromopropionate, Dibromomethane, Simazine, Acetyl bromide, Allyl bromide, Sulfalax, Cyclohexyl-1-iodoethyl carbonate, DT (chlorophenothane), 2,4-DB(2,4-dichlorophenoxy) butyric acid, Dieldrin, 2,2,6,6-Tetrachlorocyclohexanone 2,2', 4,4'-Tetrachlorobenzophenone, Tetrahydro-5,5-dimethyl-2(H)-pyrimidinone [p-trifluoromethyl]-a-[p-(trifluoromethyl)styryl]Cynamilien] hydrazone, 2,2,3,3-Tetrafluorozetane, Diuron, Telodrin, Toxaphene, 1-(4-Chlorophenoxy)-3,3-dimethyl-1-(1H-1, 2,4-triazol-1-yl)-2-butanone Trichloroacetylchloride, 2,2,6-Trichloro-6-(1-chloroisobutyl) cyclohexanone, Trichloroacetic acid, 2,4,6-Trichloro-1,3,5-triazine, 2,2,3-Trichloro-3-phenyl-1,1-propanediol, 2,4,5-Trichlorophenoxyacetic acid, Trichlorobutene, Perchloromethylmercaptan, 2-Trichloromethyl-5-(4-hydroxystyryl)-1,3,4-oxiazole, sodium trifluoroacetate, 2,3,4-Trifluoronitrobenzene, Nitrobenzotrifluoride, Trimethylacetylchloride, Trimethylchlorosilane, Sodium 4-(2,4-dichloro-m-toluo)-1,3-dimethylpyrazole-5-oleate, Nitrofen, Paaquat, 5'-tBis(2-acetoxyethyl) amino]-2'-(2-chloro-4-nitrophenylazo)acetanilide 4-(p-Bis(2-chloroethyl) aminophenyl) butyric acid, odomethylpivalate 2-t-Butyl-5-chloro-6-nitrobenzoxazole, 3-t-Butylphenyl -chlorothioformate, 2-Chloro-1-propanol, 4-Bromo-3-oxobutyroanilide, 1-Bromo-2-chloroethane, Ethylbromoacetate, 3-Bromopropionic acid, Ethyl 3-bromopropionate, (E)-3-[p-(Bromomethyl) phenyl] acrylic acid, Ethyl (E)-3-[p-(bromomethyl) phenyl] acrylate, 3-Bromo-2-methylpropionic acid 4-Bromo-methoxyimino-3-p-x-p-butyl-chloride, Hexachlorocyclohexane, hexachloro-1,3-butadiene, Hexachlorobenzene, Heptachlor, Perfluoropropoxy-1,1,2-

trifluoroethylene, 1-Benzyl-2-(chloromethyl) imidazole-chloride, Hexachloro-hexanedra-methano-dioxathiepine oxide, N-[B-(benzol) furan-2-yl] acryloyl-N'-trichloroacetohydrazid, Pentachloronaphthalene, Pentafluoroiodoethane, Mirex, 2-Methyl-4-chlorophenoxyacetic acid, Methyltrichlorosilane, 2-Methyl-3-trifluoromethylaniline, Methylphenyldichlorosilane, Methrchlor, 2-Mercaptobenzothazol, Monofluoroacetic amide, Acetyl iodide, Allyl iodide, Methyl iodide, 3-Iodopropionic acid.

b) Wastes containing 1% or more by weight of any of the following organohalogen compounds:

Isopropyl-N-(3-chlorophenyl) carbamate (IPC), Imidacloprid, Echlomezole, Ethychlozate, Epimodrydin, (4-Chloro-2-methylphenoxy) acetic acid, Isobutyryl chloride, Butyryl chloride Propionyl chloride, Pentyl chloride N=(2-Methyl-4-chlorophenyl)-N,N-dimethylformazine chloride, Oxadiazon, 2-Chloro-4,, 5-dimethylphenyl-N-methylcarbamate, Chlorophenamidin-3, 5-Dichloro-4-(3-chloro-5-trifluoromethyl-2-pyridyloxy) phenyl]-3-(2,, 6-difluorobenzoyl) urea, Chloromequat, Chloroacetonyl, Chloroacetophenone, Chroaniidine, Allyl chloroformate, Lobutyl chloroformate, Isopropyl chloroformate, Ethyl chloroformate, 2-Ethylhexyl chloroformate, 2-Ethoxyethyl chloroformate, Chloromethyl chloroformate, Cyclobutyl chloroformate, Phenyl chloroformate, n-Butyl chloroformate, sec-Butylchloroformate, t-Butylcyclohexyl chloroformate, 2-Butoxyethyl chloroformate, n-Propyl chloroformate, Benzyl chloroformate, Methyl chloroformate, Isopropyl chloroacetate, Ethyl chloroacetate, Sodium chloroacetate, Vinyl chloroacetate, Methyl monochloroacetate, 1-Chloro-1,2-dibromoethane, 2-Chloropridine, Chlorobutanes, 3-Chloro-1-propanol, Glycerol a-monochlorohydrin, Isopropyl 2-chloropropionate, Ethyl 2-chloropropionate, Methyl 2-chloropropionate, 1-Chloro-3-bromopropane, Dichlorobenzylacid ethyl ester, p-Chlorobenzoyl chloride, Chlorobenzotrifluorides, 1,1-Bis(p-chlorophenyl)-2,2-dichloroethanol, 2,4,6-Trichlorophenyl-4'-nitrophenyl ether, 1,4,5,6,7,7-Hexachlorobicyclo(2,2,1)hept-5-ene-2,3-dicarboxylic acid di-2-propenylester, Dichlorodinitromethane, Dichlorobutene, 1,3-Dichloroacetone, 2,5-Dichloroaniline, B, B=Dichloroethyl formal 1,1'-Ethylene-2,2'-dipyridiliumdibromide, Dibromochloropropane 3,5-Dibromo-4-hydroxy-4'-nitroazobenzene (BAB), 1,2-Dibromobutan-3-one, m-Dibromobenzene, Bromoacetone, Isopropyl bromide, Ethyl bromide, Xyl bromide, Diphenylmethyl bromide, Phenacyl bromide, n-Butyl bromide, 2-Bromoutane, Benzil bromide, Thiocloromethyl, 1,1,2,2-Tetrachloronitroethane, Methyl trichloroacetate, Trichloronitroethylene, 2,3,5-Trichlorophenoxyacetic acid butoxyethylester, 2,4,5-Trichlorophenoxyacetic acid methoxyethylester, 2,4,6-Trinitrochlorobenzene, Trinitrofluorenone, Trifluoroacetate acid,

Trifluoroethanesulfonic acid, 2-Trifluoromethylaniline, 3-Trifluoromethylaniline, N,N-[1,4-Piperazinediylbis(2,2,2-trichloroethylidene)] bisformamide, Nitrobenzene, n-Valerylchloride, Halofuginone, Isopropyl p,p'-dibromobenzilate, Fluoroaniline, Fluoroacetic acid, Fluorotoluene, Fluorobenzene, Fulsufamide, Methyl bromoacetate, 3-Breompropyne, Bromobenzene, 2-Bromopentane, 1-Bromo-3-methylbutane, Bromomethylpropane, Hexachloroacetone, Hexachloro-1, 3-cyclopentadiene, Hexachlorophene, Hexythiazox, Permethrin, Benzotrifluoride, Benzoate Pentyltrichlorosilane, Methallyl chloride, Methyl bromoacetone, Sodium fluoroacetate, Monofluoroacetamine, n-Butyl iodide, Benzyl iodide, 2-Iodobutane, Iodopropanes, Iodomethylpropane, Hexafluoroacetone.

- c) Wastes containing or contaminated with polychlorinated biphenyls (PCBs) and/or polychlorinated triphenyls (PCTs) and/or polybrominated biphenyls (PBBs) of 50 ppm or more by weight.
- d) Wastes other than the organic halogen compounds given in a), b) and c) (excluding wastes listed in other items).
- e) Wastes to be exported for the purpose of D1 to D4 or R10 of Annex IV of the Convention, which cannot meet the following criteria:
 - i) wastes in solid form, which cannot meet the Ambient Soil Quality Standards in terms of PCB;
 - ii) wastes in liquid form, which cannot meet the waste water discharge standards to soil in terms of PCB.
- f) Wastes to be exported or imported for purposes other than those in e) above, which cannot meet the following criteria:
 - i) Wastes in solid form, which cannot meet the standards in Attached Table 1 of the standards for hazardous wastes in terms of PCB;
 - ii) Wastes in liquid form, which cannot meet the standards in Attached Table 1 of the effluent quality standards in terms of PCB.

TEST ANALYSIS

The following annexes contain test analysis of waste to be used as method to determine type of waste.

ANNEX 1

The thermal analysis test with 2, 4-dinitrotoluene and dibenzoyl peroxides as standard substances uses the apparatus specified in item 1 to measure the starting heating

temperature and the heating value of the waste in question and the standard substances when heated according to the testing methods specified in item 2.

1. APPARATUS

The apparatus shall be a differential scanning calorimetry (DSC) or a differential thermal analysis (DTA) apparatus using aluminium oxide(x) as standard substance.

2. TESTING METHODS

- 1) Testing methods for 2, 4-dinitrotoluene
 - i) Encapsulate 1 mg of 2, 4-dinitrotoluene and 1 mg of the standard substance in a pressure-proof stainless steel cell with a burst pressure of 50 kfg/cm² or more, and load it on the apparatus. Then, heat it so that the temperature of the 2, 4-dinitrotoluene and the standard substance rises at a rate of 10C in 60 seconds.
 - ii) Determine the initiation temperature of heat generation and calorific value from the chart obtained.
- 2) Test procedure for dibenzoyl peroxide

Carry out the procedure from (1) (i) to (ii), using 2 mg each of dibenzoyl peroxide and the standard substance.

3) Testing methods for test substance

Carry out the procedure(1) (i) to (iii), using 2 mg each of the test substance and the standard substance.

ANNEX 2

A. FLASH POINT TEST BY TAG CLOSED CUP APPARATUS

The flash point test by Tag Closed Cup Apparatus uses the apparatus specified in item 1. The flash point of the waste in question is measured in the laboratory specified in item 2 according to the testing methods specified in item 3.

1. Apparatus

The Apparatus shall be a tag closed cup apparatus.

2. Laboratory

The laboratory shall be in a place under atmospheric pressure in almost windless conditions.

3. *Testing Methods*

- (1) Put 50 cm³ of a test substance in a test cup and then put the lid in place.
- (2) Produce a test flame and adjust its size to a diameter in 4mm
- (3) Adjust the heating condition of the bath so that the temperature of the test substance will rise by °C per 60 second. When the temperature of the test substance reaches a value of 5°C below the expected flash point (the temperature at which the test substance flash is to be confirmed, the same applying hereafter), open the shutter to make the test flame apply to the vapour space of the test cup for about one second and return it to the original position. In this case, do not rapidly adjust the test flame up and down.
- (4) Where the test substance does not flash in (3), open the shutter every time the temperature of the test substance rises by 0.5°C, make the test flame apply to the vapour space of the cup for one second, and return it to the original position. Repeat this operation until the flash is observed.
- (5) Where the test substance flashes at a temperature lower than 60°C in (4), and in additions, the difference between that temperature and the expected flash point does not exceed 2°C, the temperature at which the test substance flashes shall be deemed the flash point of the test substance.
- (6) When the test substance flashes in (3) or when there is a difference between the temperature at which the test substance flashes in (4) and the expected flash point exceeds 2°C, repeat the procedures from (1) to (4).
- (7) Where the temperature at which the test substance flashes in (4) or (6) is not less than 60°C, carry out the following procedure.
- (8) Carry out the procedure described in (1) and (2) .
- (9) Adjust the heating condition of the bath so that the temperature of the test substance rises by 3°C within 60 seconds. When the temperature of the test substance reaches a value 5°C below the expected flash point, open the shutter to make the test flame apply to the vapour space of the cup for about one second and then return it to the original position . In this case, do not rapidly adjust the test flame up and down.

(10) Where the substance does not flash in (9), open the shutter every time the temperature of the test substance rises 1°C to make the test flame apply to the vapour space of the cup, and then return it to the original position. Repeat this operation until the test substance catches fire.

(11) Where the difference between the temperature at which the test substance flashes in (10) and the expected flash point does not exceed 2°C, the temperature at which the test substance flashes shall be deemed the flash point of that test substance.

(12) When the test substance flashes in (9) and/or when there is a difference between the temperature at which the test substance flashes in (1) and the expected flash point exceeds 2°C, repeat the procedure from (8) to (10).

B. *FLASH POINT TEST BY SETA CLOSED CUP APPARATUS*

The flash point test by Seta closed cup apparatus shall measure the flash point of the waste in question by using the apparatus specified in item 1 at the laboratory specified in item 2 and according to the testing methods specified in item 3.

1. Apparatus

The apparatus shall be a Seta flash closed cup apparatus.

2. Laboratory

The laboratory shall be in a place under atmospheric pressure in almost windless conditions.

3. Testing methods

(1) Heat or cool a sample cup to the expected flash point, keep the sample cup at that temperature, pour 2 cm³ of the test substance (when the expected flash point is lower than the room temperature of the laboratory, the sample shall be cooled down to the expected flash point) in the cup, and then immediately place the lid and close the shutter.

(2) Retain the temperature of the sample cup at the expected flash point for one minute.

(3) Produce a test flame and adjust it to a diameter of 4 mm.

(4) After one minute, open the shutter to make the test flame apply to the sample cup for about 2.5 second, and then

return it to the original position. In this case, do not rapidly adjust the test flame up and down.

- (5) Where the sample flashes in (4), lower the expected flash point step wise and perform the procedure from (1) to (4) until it does not flash anymore. Where the sample does not flash in (4), raise the expected flash point step-wise and perform the procedure from (1) to (4) until it flashes.

ANNEX 3

A. SMALL GAS FLASH IGNITION TEST

The small gas flame ignition test measures the duration of time from when the waste in question makes contact with the flame to when a flame is ignited and observes whether burning continues or not. This test is conducted at the laboratory specified in item 1 and according to the testing methods specified in item 2.

1. Laboratory

The laboratory shall be in a place under atmospheric pressure at a temperature of 20°C and humidity of 50% in almost windless conditions.

2. Testing Methods

- (1) Put 3 cm³ of the test substance (conditioned for 24 hours or more at a temperature of 20°C in a desiccator containing silica gel for drying) on an impervious low-heat conducting base plate with a thickness of 10 mm or more. In this case, a powdery or granular substance shall be put on the impervious low-heat conducting base plate in a hemispherical shape.
- (2) Keep a flame of liquefied petroleum gas (a diffusion flame from an ignition device with a rod-like nozzle, and the flame length adjusted to 70 mm with the nozzle of the said ignition device held upward) in touch with the test specimen for 10 second. (The contact area of the flame and test substance shall be 2 cm² and the angle of contact shall be approx. 30 degrees).
- (3) Measure the time after the flame makes contact with the test substance until it is ignited. Determine whether burning (including burning with no flame) continues. A test substance shall be judged to have undergone continuous burning in the case where it burns out completely during its contact with the flame, where it burns out completely within 10 seconds after the flame

is detached, or where it continues to burn for 10 seconds or more after the flame is detached.

B. FLASH POINT TEST BY SETA CLOSED CUP APPARATUS

The flash point test by Seta closed cup apparatus measures the flash point of the waste in question using the apparatus specified in item 1 at the laboratory specified in item 2 and according to the testing methods specified in item 3.

1. Apparatus

The apparatus shall be a Seta flash closed cup apparatus.

2. Laboratory

The laboratory shall be in a place under atmospheric pressure in almost windless conditions.

3. Testing Methods

- (1) Heat or cool a sample cup to the expected flash point, and while keeping the sample cup at that temperature, put 2g of the test substance in the cup (where the expected flash point is lower than the room temperature in the laboratory, the sample shall be cooled down to the expected flash point), and immediately place the lid and close the shutter.
- (2) Retain the temperature of the sample cup at the expected flash point for five minutes.
- (3) Produce a test flame and adjust its diameter to 4 mm.
- (4) After five minutes, open the shutter to make the test flame apply to the vapour space of the sample cup for about 2.5 seconds and then return it to the original position. In this case, do not rapidly adjust the test flame up and down.
- (5) Where the sample flashes in (4), lower the expected flash point stepwise and perform the procedure from (1) to (4) until it does not flash anymore. Where the sample does not flash in (4), raise the expected flash point stepwise and perform the procedure from (1) to (4) until it flashes.

ANNEX 4

The spontaneous combustion test is conducted at the laboratory specified in item 1 and according to the testing

methods specified in item 2. This test examines whether or not the wastes in question combusts and whether or not the filter paper becomes scorched when exposed to air.

1. Laboratory

The laboratory shall be in a place under atmospheric pressure at a temperature of 20°C and a humidity of 50% in almost windless conditions.

2. Testing Methods

(1) Testing methods for solid substance

- (i) Drop 2 cm³ of the test substance onto an impervious low-heat conducting base plate (with a heat transfer coefficient 86 cal/(m.lir.C) or less) from a height of 1m, and determine whether spontaneous combustion occurs during the fall or within 5 minutes after falling. In this case, when the test substance does not pass through a 0.3 mm sieve, the test substance should be pulverized to pass through the same sieve.
- (ii) Where spontaneous combustion does not occur, repeat the same procedure six times, and determine whether spontaneous combustion occurs once or more.

(2) Testing method for liquid substance

- (i) Fill a porcelain cup with a diameter of approx. 70 mm with diatomaceous earth or silica gel to a height of 5 mm).
- (ii) Drop the entire 5 cm³ of the test substance onto the porcelain cup from a height of 20 mm for 30 seconds at a constant speed using a syringe, and determine whether spontaneous combustion may occur within 5 minutes from first drop.
- (iii) Where spontaneous combustion does not occur in (ii), repeat this operation six times using new samples of the wastes in question. If spontaneous combustion does not occur for any of the six trials, conduct the test shown in (iv).
- (iv) Drop the entire 0.5 cm³ of the test substance onto filter paper and conditioned for 24 hours or more at a temperature of 20°C in a desiccator containing silica gel for drying) with a diameter of 90 mm placed on a porcelain with a diameter of approx. 70 mm from a height of 20 mm for 30 seconds at a constant speed using a syringe.

Determine whether spontaneous combustion or scorching of the filter paper occurs within 5 minutes.

ANNEX 5

The reaction to water test is conducted at the laboratory specified in item 1 and according to the testing methods specified in item 2. This test examines whether or not the gas generated by the reaction of the waste in question to demineralized water combust or whether or not the generated gas ignites when in proximity to flames; measures the amount of gas generated when the waste in question is added to demineralized water; and analyses the composition of the generated gas.

1. Laboratory

The laboratory shall be in a place under atmospheric pressure at a temperature of 20°C and a humidity of 50% in almost windless conditions.

2. Testing Methods

- (1) Pour 20°C demineralized water into a beaker or an evaporating dish and put a 2 mm diameter of test substance (5 millimetres for liquid substances) into the waster, and then determine whether any gas is generated and whether the generated gas is auto-ignited. Where the generated gas is auto-ignited, the following procedures do not need to be implemented.
- (2) Make the test substance into a pile 20 mm high and 30 mm in diameter with a hollow in the top. Drop a few drops of 20°C demineralized water in the hollow and determine whether any gas is generated and whether the generated gas is auto-ignited. Where the generated gas is auto-ignited, the following procedures do not need to be implemented.
- (3) Put a filter paper supporting stand at the bottom of a beaker with a capacity of 500 cm³, pour 20°C of demineralized water up to the top face of that stand, and put a piece of filter paper with a diameter of 70 mm on it. After adjusting the water volume so that the filter paper floats on the water surface, put 50 mm³ of the test substance at the center of the filter paper, determine whether the generated gas is auto-ignited. Where spontaneous combustion of the generated gas occurs, the following procedures need not be implemented.
- (4) Where the generated gas is not auto-ignited in (3) apply a flame to the said gas and determine whether the said gas catches fire.

- (5) Where the generated gas is not auto-ignited or generation of gas is not recognized in test (3) or where the generated gas does not catch fire in test (4), put 2g of the test substance in a round-bottomed flask with a capacity of 100 cm³, immerse it in a basin with a temperature kept at 40°C, and promptly pour in 50 cm³ of demineralized water of 40°C. Shaking the contents of the flask with an agitating ball of 12 mm in diameter and a stirrer agitator, measure the volume of generated gases or one hour.
- (6) The maximum value of the generated gas measurement made every hour (converted into the generation volume per kilogram of test substance) shall be deemed the generated gas volume for one operation.
- (7) Use a detecting tube, gas chromatography, etc., to determine whether the generated gas contains a flammable component.

ANNEX 6

A. **BURNING TEST USING AMMONIUM PERSULFATE AS THE STANDARD SUBSTANCE**

In a burning test using ammonium persulfate as the standard substance, the burning time shall be measured for a mixture of a standard substance as specified in item 1, and wood powder as specified in item 2., and a mixture of a test substance and wood powder as specified in item 2., burned in a laboratory as specified in item 3., according to the test procedure for confirmation test specified in item 4.

1. *Standard Substance*

The particle size of standard substance shall be such that it can pass through a 300 µm (approx. 50 mesh) sieve but cannot pass through a 150 µm (approx. 100 mesh) sieve.

2. *Wood Powder*

- (1) The wood powder shall be prepared from sapwood of Japanese cedar.
- (2) Wood Powder
 - (i) The wood powder shall be prepared from sapwood of Japanese cedar.
 - (ii) The particle size of wood powder shall be such that it can pass through a 500 µm (approx. 30 mesh) sieve but cannot pass through a 250 µm (approx. 60 mesh) sieve.

3. *Laboratory*

The laboratory shall be in a room under atmospheric pressure at a temperature of 20°C and a humidity of 50% in almost windless conditions.

4. *Testing Methods*

- (1) Testing methods for standard substance
 - (i) Make a uniform mix of the standard substance (conditioned for 24 hours or more at a temperature of 20°C in a desiccator containing silica gel for drying) and the wood powder (dried for 4 hours at a temperature 105°C, and then conditioned for 24 hours or more at a temperature of 20°C in a desiccator containing silica gel for drying, the same applying to paragraph (2) (1), 11.1 (1) and 11.2 (1) (1) to provide a 30g mixture with a weight ratio of 1:1.
 - (ii) Put the mixture of (i) in a conical cup with a height to bottom diameter ratio of 1:1.75, then put it upside down on an impervious low-heat conducting base plate with a thickness of 10 mm or more (the heat transfer coefficient at a temperature of 0°C shall be 86 cal/(m.hr.C) or less, the same applying hereafter) to provide a conical pile, followed by shaping and conditioning for one hour.
 - (iii) Gently press an ignition source (Nichrome wire in the form of a circular loop with a diameter of 2 mm heated to a temperature of approx. 1,000°C applying electricity) around the base part of the conical pile prepared in (ii) above until the entire circumference of the base part is ignited. In this case, the duration for which the ignition source is kept in contact with the base part shall be up to 10 seconds.
 - (iv) Measure the time required for burning (from the time when the entire circumference of the base part of the pile described in (1) is ignited to the time when no flame is observed or, where flaming occurs intermittently, to the time when the final flame is extinguished).
- (2) Testing method for test substance
 - (i) Uniformly mix up the test substance (which can pass through a 1.18 mm sieve and has been conditioned for 24 hours or more at a temperature of 10°C in a desiccator containing silica gel for drying) and the wood powder to provide 30g mixtures with a weight ratio of 1:1 and 4:1. In this

case, if the test substance does not contain components that can pass through a 1.18 mm sieve, the test substance shall be pulverized to become able to pass through the sieve for the purpose of this test.

- (ii) Carry out the same procedure as described in (i), (ii), (iii) and (iv) for each of the mixture with a weight ratio of 1:1 and 4:1.
- (iii) The shorter one of the burning time measures in (ii) shall be taken as the burning time of the mixture of the test substance and wood powder.

B. BURNING TEST USING 90% NITRIC ACID SOLUTION AS THE STANDARD SUBSTANCE

In a burning test using nitric acid solution as the standard substance, the burning time shall be measured for a mixture of 90% nitric acid solution and wood powder and a mixture of a test substance and wood powder, which are burned in a laboratory as specified in item 1.3 according to the testing methods specified in item 1.

1. Testing Methods

(1) Testing methods for 90% aqueous solution of nitric acid.

- (i) Put 15g of the wood powder in a conical cup with a height to bottom diameter ratio of 1:1.75, and then put it upside down on a flat-bottom evaporating dish with a diameter of 120 mm to provide a conical pile, followed by shaping and conditioning for one hour.
- (ii) Pour 15g of the 90% aqueous solution of nitric acid uniformly over the conical pile prepared in (i) using a syringe to ensure its mixing with the wood powder.
- (iii) Keep an ignition source (Nichrome wire in the form of a circular loop with a diameter of 2 mm heated to a temperature of approx. 1,000°C by applying electricity) in contact with the base part of the conical pile prepared in (ii) above until the entire circumference of the base part is ignited. In this case, the duration for which the ignition source is kept in contact with the base part shall be up to 10 seconds.
- (iv) Measure the time required for burning.

(2) Test procedure for test substance

- (i) Put 15g and 6g of the wood powder in a conical cup with a height to bottom diameter ratio of 1:1.75, then put them upside down on flat-

bottomed evaporating dishes with an outer diameter of 20 mm and 80 mm respectively to form a conical pile, followed by shaping and conditioning for one hour.

- (ii) Pour 15g and 24g of the test substance uniformly over the 15g and 6g conical piles prepared in (i) using a syringe to ensure their mixing with the wood powder.
- (iii) Carry out the procedure described in (1) (iii) to (iv) for each of the mixtures prepared in (ii).
- (iv) The shorter one of the burning time measured in (iii) shall be taken as the burning time of the mixture of the test substance and wood.

ANNEX 7

A. ORAL TOXICITY TEST

The oral toxicity test measures the amount of substance orally administered to induce mortality in half of the laboratory animals. This test is conducted according to the testing methods specified in item 2 using animal species specified in item 1.

1. Selection of Animal Species Employed

The animal employed for testing is a rat of commonly used laboratory strains with an age of approx. 6 weeks. Ten rats (5 male and 5 female) should be used for each dose group. Healthy rats should be selected and acclimatized to the laboratory conditions in the testing cage for at least 5 days. The weight variation in rats used in testing should not exceed +20% of the mean weight.

2. Test Methods

- (1) The test substance should be conditioned for the use in testing. Where the test substance is in solid form, the test substance should be dissolved in water or suspended in a suitable vehicle. When some agent for suspending the test substance is utilized, there should be reference dose group which is dosed only with such an agent. The same procedure should be applied for test substances in liquid form with high kinematics viscosity.
- (2) The test substance is administered in a single dose to the rats by gavage using a stomach tube. Dose levels should have three levels or more and be selected so that it would produce evident toxicity and mortality.
- (3) Rats should be observed for 14 days after dosing and the mortality of rats should be observed.

- (4) By using statistical methods on the basis of the number of dead rats within 14 days after dosing, LD₅₀ should be calculated.

B. DERMAL TOXICITY TEST

The dermal toxicity test measures the amount of substance administered to induce mortality in half of the laboratory animals. This test is conducted according to the testing methods specified in item 2 using the animal species specified in item 1.

1. Selection of Animal Species Employed

The animal employed for testing is a rat of commonly used laboratory strains with an age of approx. 6 weeks. Ten rats (5 male and 5 female) should be used for each dose group.

Healthy rats should be selected and acclimatized to the laboratory conditions in the testing cage for at least 5 days. The weight variation in rats used in testing should not exceed +20% of the mean weight.

2. Test procedures

- (1) The test substance should be conditioned for use in testing. Where the test substance is in solid form, the test substance should be pulverized and moistened with water or other appropriate solvent etc., in order to ensure good contact with the skin. When some solvent is utilized, there should be a reference dose group which is dosed only with such a solvent.
- (2) Approximately 24 hours before the test, fur should be removed by close-clipping from the dorsal area of the trunk of rats. Care should be taken to avoid abrading the skin. Area for removal should be more than 10% of total area of the surface of the body.
- (3) The test substance should be uniformly applied to the area, where fur has been removed, and should be kept in contact for 24 hours. Dose levels should have three levels or more and should be selected so that it produces evident toxicity and mortality. In this case, the part applied should be covered by a gauze patch which is to be held in place with non-irritating tape, or by other appropriate methods, in order to prevent the rats from coming in contact with it.
- (4) Rats should be observed for 14 days after dosing and the mortality of rats should be observed.

- (5) LD₅₀ should be calculated by using statistical method on the basis of the number of dead rats within 14 days after dosing.

C. INHALATION TOXICITY TEST

The inhalation toxicity test measures the amount of substance administered to introduce the mortality in half of the laboratory animals. This test is conducted according to testing methods specified in item 3 using the animal species specified in item 1 and the apparatus specified in item 2.

1. Selection of Animal Species Employed

The animal employed for testing is a rat of commonly used laboratory strains with an age of approx. 6 weeks. Ten rats (5 male and 5 female) should be used for each dose group. Healthy rats should be selected and acclimatized to the laboratory conditions in the testing cage for at least 5 days. The weight variation in rats used in testing should not exceed +20% of the mean weight.

2. Apparatus

The apparatus should be the inhalation toxicity testing apparatus which is composed of (1) a device for conditioning the test substance in specific concentration and for supplying the conditioned test substance, (2) an inhalation room where the rats are kept, (3) a device which can measure continuously the concentration of the test substance, and other devices.

3. Testing Methods

- (1) Rats should be kept in the inhalation room for one hour, where the concentration of the test substance is conditioned and kept at specified concentration. Dose levels should be selected so that it produces evident toxicity and mortality.
- (2) Rats should be moved to the feeding cage and observed for 14 days after dosing and the mortality of rats should be observed.
- (3) LD₅₀ should be calculated by using statistical methods on the basis of the number of dead rats within 14 days after dosing.

D. FIXED DOSE TOXICITY TEST

The fixed dose toxicity test is conducted according to the testing methods specified in item 2 using the animal species

specified in item 1 and examines the presence of mortality among the species tested.

1. Selection of Animal Species Employed

The animals employed for testing include 3 males and 3 females each of rats and mice of commonly used laboratory strains with an age of approx. 6 weeks.

2. Testing Methods

- (1) The test substance is administered in a single dose to the rats by gavage using a stomach tube. When the test substance is in a solid form, the test substance should be dissolved in water or suspended in a suitable vehicle.

When some agent for suspending the test substance is utilized, there should be a reference doe group which is dosed only with such an agent. The same procedures should be applied for a test substance in liquid form with high kinematics viscosity. The dose level of the test substance administered should be 2,000mg/1 kilogram body weight. In case that the test substance is in the form of dust or mists, the animal employed should be kept for one hour in the inhalation room where the concentration should be conditioned and kept at 10 mg/litre.

- (2) Rats should be observed for 14 days after dosing and the mortality of rats should be observed.

Remarks

Half-death weight refers to the value in milligrams for one kilogram by weight of test species when the mortality of half of the species number has been confirmed.

ANNEX 8

The corrosion test for metals uses the apparatuses specified in item 1 and according to the testing methods specified in item 2, soaks the test metal chip into the test substance and measures the decrease in mass after soaking.

APPARATUS

(1) Soaking devices

A flat-bottom glass triangular flask with a capacity of 1,000 cm³ which is attached with a glass vertical reverse condenser with enough capacity for cooling.

(2) Heating device

A pyrostat and other necessary devices which can keep the test substance at 55°C (hereafter referred to as heating devices).

(3) Chemical balance

A chemical balance which can measure at the level of 1 milligram.

(4) Polishing paper

Polishing paper No. 600 specified by the JISR 6252 A Polishing Paper@ (1976).

Testing Methods

- (1) Polish a test metal chip of 10 cm long, 1 cm wide and 1 cm thick, which is specified in JISG 3101 (1987) with the polishing paper. After washing the polished chip by water, remove oil component with an appropriate solvent such as ethanol.
- (2) Measure the weight of the test chip by using a chemical balance.
- (3) Pour the test substance in liquid form into the soaking device and keep the test metal chip with an appropriate holder so that one half of the test metal chip in the distance of length will be in the test substance.
- (4) Use the heating device to heat the test substance and the test metal chip up to 55°C and keep the temperature for 120 hours.
- (5) After 120 hours soaking, take out the test metal chip and wash it by water. Then remove the oil components as described in (1). Measure the weight by using a chemical balance.
- (6) Calculate the corrosion rate by using the following formula:

$$X = \frac{W \times 10 \times 365}{d \times S \times T}$$

X: Corrosion rate (unit: mm/year)

W: Weight reduction after soaking (unit: grams)

d: Density of the test metal chip (unit: g/cm³)

S: Surface area of the test metal chip soaked into the test Substance (unit: cm²)

T: Time length for soaking (unit: days)

Remarks

The condition of the soaked portion and unsoaked portion (part in contact with the steam of the test chip should be observed and recorded in as much detail as possible.

UGANDA COUNTRY REPORT

MANAGING WASTES IN UGANDA: FINDING NEW LEGAL APPROACHES TO THE CHALLENGE

1.0 INTRODUCTION

1.1 METHOD OF PREPARATION OF REPORT

This study for this report was conducted through the following methods:

- (a) Study of existing Ugandan legislation relevant to waste management as well as previous studies. The studies conducted during the National Environment Action Plan were especially instructive.
- (b) Comparative review of legislation both existing and proposed of other jurisdictions. Of particular importance were legislation from England, Nigeria, Bangladesh, Canada and Japan.
- (c) Consultations with key stake-holders in NEMA and the lead agencies.
- (d) A national workshop was held at which the initial draft was discussed. The recommendations of the workshop were incorporated in the draft attached to this report.
- (e) A regional workshop held in Kisumu, Kenya in which recommendations were duly incorporated in the report.
- (f) Review by the Basel Secretariat, Geneva for technical guidance.

2.0 REVIEW OF EXISTING LEGISLATION ON WASTE MANAGEMENT

During the process leading to the adoption of the National Environment Action Plan (NEAP), the Task Force on Mining Industry Hazardous Materials and Toxic Chemicals in its topic paper, made a review of the state of affairs and the legal and institutional framework on the topics it was assigned. That "Topic Paper" is still relevant to the situation in Uganda. It is not necessary to repeat the contents of that Topic Paper Verbatim. It is, however, necessary to recapture some of the key findings of the Task Force and how they have been addressed since 1992.

The NEAP Task Force identified the following types of wastes in Uganda:

- (i) **Solid Wastes** from the following sources:
 - (a) Industry: ranging from metals to chemicals and foodstuffs.
 - (b) Domestic: composed of paper, plastics, textiles glass, ferrous metal, aluminium, kitchen refuse, dusts and other miscellaneous wastes such as batteries and medicines.
 - (c) Hospitals and clinics: including expired drugs dressing materials, body parts and organs, disused and soiled linen, paper, plastics, laboratory chemicals (reagents) and glass.
 - (d) Faecal waste: especially in areas where there is no sewage system or where pit-latrines are non-existent.
 - (ii) **Liquid Wastes** including those from:
 - (a) Sewage: mainly from households and those industries connected to the sewer system.
 - (b) Industry: especially chemicals which are discharged into the environment.
 - (c) Hospitals: discharge of chemicals, blood, and other solutions.
 - (iii) **Gases:** emitted from factories as well as dusts and other fine particulate matter.
- The Key findings of the Task Force:
1. Until the enactment of the National Environment Statute, there was no law providing for a comprehensive approach to waste management. A number of statutes, however, provide for certain aspects of waste management. These include:
 - (a) The Public Health Act, Cap. 269, which provides for the need to ensure sanitation and drainage in public areas and buildings as well as the treatment of sewerage and disposal faecal matter. While this Act has extensive provisions. It only deals with waste within the context of health without taking into account the other aspects of the environment.
 - (b) Under the authority of Public Health Act, various local governments and authorities have made bye-laws to deal with the issue of management or garbage or domestic wastes. These bye-laws are, however, limited in geographical and material scope.

- (c) The Mining Act Cap. 248, does not contain any substantial provisions relating to the management of solid wastes which are likely to result from mining activities. The only provision which relates to pollution is S. 59 which prohibits any person involved in prospecting for minerals or in other mining activities from polluting natural water sources.
 - (d) The Factories Act (Cap 198): provides principally for the health and safety of workers. While it provides for issues such as the emplacement of machinery, precautions in the operation of factories, ventilation, and ensuring adequate supplies of drinking water, for workers, it does not contain any focused provisions on waste management. A few provisions such as those relating to the removal of dust, and fumes (Section 51) relate to this subject; however, even those provisions do not state how the waste should be treated after removal from the factory.
 - (e) The National Water and Sewerage Corporation Decree of 1972 (Decree No. 34 of 1972), established the National Water and Sewerage Corporation whose principal mandate is to supply water and treat effluent in major towns. The Decree has now been repealed and replaced by National Water and Sewerage Corporation Statute of 1995.
2. Since the enactment of the National Environment Statute 1995, the major legislative development in relation to waste management has been the enactment of the Water Statute, 1995. The Water Statute provides the Directorate of Water Development with the power to provide facilities for waste management and to regulate the management of waste effluent especially to discharge into the environment.

The Statute provides the Director with power to issue waste discharge permits (Sections 29-30). The Statute also empowers the Minister to prohibit certain wastes from being discharged, as well as to regulate trades which may not discharge wastes and to define classes of premises or particular premises from which wastes may not be discharged from except with a permit.

These obligations of the Minister have now been discharged through the making of the Water (Waste Discharges) Regulations, 1998. Under the Statute and these Regulations, vigorous measures have been put in place including measures for the determination of discharges from point sources of certain types of waste. In addition to the above, the Statute in its Section 37, puts in place a stringent prohibition of pollution which is supported by the polluter-pays principle. The polluter must not only clean but he may also be subject to punishment.

In the making of the Water (waste Discharge) Regulations, care has been taken to ensure conformity with the standards set under the Environment Statute and the Wastes regulated under the proposed regulations attached to this report. This has been done by including a list of chemicals controlled under the Regulations which is not similar to the list contained in the Regulations proposed in this report.

3.0 DESCRIPTION OF THE PROPOSED REGULATIONS

3.1 LEGISLATIVE AUTHORITY

The Regulations are made under Sections 53, 54 and 108 of the National Environment Statute. Section 53 imposes a duty on all persons in Uganda to manage wastes generated by their activities in a manner that does not cause injury to human health or the environment. Waste is required to be disposed of in accordance with regulations made under that section. The section also imposes a duty on each person to minimise waste and to treat waste as well as employ methods of reclaiming and recycling the waste.

Section 54, provides for the classification of hazardous wastes by the National Environment Management Authority (NEMA) through the making of regulations. The provision further requires that NEMA makes regulations and guidelines for the management of the various categories of hazardous waste. The discharge of hazardous wastes into the environment without a licence is prohibited.

Section 55 prohibits the import of any hazardous wastes into Uganda. Non-hazardous wastes may be imported subject to a licence issued by NEMA. The Statute does not impose any limitations on the export of wastes from Uganda.

It was therefore, necessary to address this matter in the regulations taking into account the international legal requirements.

Section 57 prohibits the discharge of any hazardous substances, chemicals or oil into the environment except in accordance with guidelines issued by NEMA.

It lays down the penalty for conduct contrary to the provisions and lays down the necessary notification and precautionary procedures in case of such a discharge. This provision is detailed enough without regulations. The necessary guidelines should be developed when enough practice has been attained to inform their development.

Part VIII of the Statute provides for pollution control through licensing. Pollution licensing is also relevant to hazardous wastes management especially where a person intends to

exceed standards under the Statute, parts VI and VII. Part VIII lays down an elaborate procedure for the granting pollution licences. These provisions are sufficient to guide the Committee on Licensing of Pollution, established under the Statute, in those rare cases when a person applies for a licence under that part.

The regulations have been developed taking into account the above provisions. They seek to elaborate those provisions. They also take into account various obligations arising from international conventions to which Uganda is a party or intends to be a party, and general international law.

4.0 INTERNATIONAL LEGAL CONSIDERATIONS

The Statute, in its provisions, attempts to implement the following International treaties:

- (i) The Basel Convention on the Control of the Transboundary Movements of Hazardous Wastes and their Disposal, adopted at Basel, on 22nd March, 1989.
- (ii) The Bamako Convention on the Ban of the Import into Africa and the Control of the Trans-boundary Movements of Hazardous Wastes Within Africa, adopted at Bamako, on 30th January, 1991.

The London Guidelines for the Exchange of Information on Chemical on International Trade (amended version, 1989), were found not relevant to wastes management and are therefore, not covered in the proposed Regulations.

4.1 PRINCIPAL PROVISIONS OF THE CONVENTIONS

The aims of the two Conventions are principally the control of trans-boundary movements of hazardous wastes (see Bamako Article 6 and Basel, Article 4). In addition, the Bamako Convention provides for the ban on the importation into Africa of any hazardous waste from any extra-continental sources; however, movements of hazardous wastes between African countries is permitted.

Trans-boundary movement of waste has been defined as any movement of waste from one state to or through another state (Bamako article 1, Basel Article 2). It also includes movement of wastes through or to an area beyond the limits of national jurisdiction of states (see Basel Art 2). In order to comprehensively cover this concept, national legislation must therefore, cover import, export and transit operations.

The Conventions also control the dumping of wastes into internal waters and water-ways and seek to promote generally

the environmentally sound management of waste (See Bamako, Article 4).

In order to ensure the sound management of hazardous waste the two conventions require states to make national legislation to adequately define hazardous waste and control its movement and disposal operations (Bamako; Articles 3, 4 and 9 Basel; Article 3, 6 and 9). Principally the two Conventions advocate for the adoption of the precautionary principle in legislation as the most appropriate approach to management. This precautionary principle entails the adoption of appropriate pre-cautionary measures such as environmental planning, environmental impact assessment, environmental risk assessment, environmental audits, and continuous monitoring of operations and effects. (See the Bamako Convention Article 4(3)).

The control of illegal traffic in hazardous wastes is one of the cardinal concerns of both the Basel Convention and the Bamako Convention. They require States, party to them, to put in place measures to ensure that such movements are controlled and that those involved in such transactions are subject to sanctions. (See the Bamako Convention Art. 9, Basel Art. 9)

One of the principal control measures built into the Conventional regimes is the requirement that, before a shipment of wastes is made to or through a Party (or non-Party as well in the case of the Bamako Convention, Article 7), such a State must give its prior informed consent. The State of export has a duty to inform the state of import or transit of the nature of the shipment, its actual contents, their likely environmental effects, and the available remedial measures. On the basis of understanding the risk faced by the state of transit or export, may then proceed to permit the proposed transaction.

While the export of wastes is normally carried out by individuals, the two Conventions make it the duty of the State from which the waste is being exported to inform the transit States and the importing States (See Art 6(1) of Bamako Convention and Art. 6 Basel Convention.)

Where the transit State or the importing State refuses to accept a shipment of hazardous waste, the exporting State is under a duty to re-import the waste (See Article 8 Bamako Convention and Art. 8 Basel Convention). The duty is, re-import exists whether the wastes were shipped within the provisions of the Convention or as a consequence of illegal traffic.

In addition to the above provisions which create obligations amenable to national legislation, there are also issues of a

purely international character, which the Uganda Government should take into account in fulfilling its international obligations. These include:

- exchange of information (See Art. 10 Basel Convention Art. Bamako Convention);
- initiation and participation in joint monitoring of effects;
- exchange of information about accidents involving wastes (See Basel Convention Art. 10 and 13);
- development of further legal instruments (Art 12, Bamako, and Articles 11 and 12 Basel Convention);
- transmission of information between the Secretariat and States (See Basel Convention Art. 10 and 13, Bamako Convention Art.);
- the establishment of institutional arrangements such as the conference of the Parties and the Secretariat.

It is also necessary to address, the following issues which require the development of national policies and the amendment of other existing laws to implement:

- the development of clean technologies;
- the transfer of technology from North to South;
- the development of guidelines and codes of practice to ensure environmentally sound management of wastes.

5.0 DEFINING WASTES

The National Environment Statute defines waste as including:

Any matter prescribed to be waste and any matter, whether liquid, solid, gaseous, or radioactive, which is discharged, emitted or deposited into the environment in such volume, composition, or manner as to cause an alteration of the environment". (See Section 2)@

This definition of wastes is very wide and inclusive and lacks exactitude and therefore, left a lot to be desired. The same position can be seen in the definition of hazardous wastes which means:

"any waste which has been determined by the Authority to be a hazardous waste or to belong to any other category of waste provided for in section 54". (See Section 2)

Section 54, requires the NEMA in consultation with lead agencies to adopt standard criteria for classification of hazardous waste with regard to determining the various categories of waste including extremely hazardous waste, corrosive waste carcinogenic waste, flammable waste, persistent wastes, toxic waste, explosive waste, radioactive waste, and other categories not specifically defined.

The above provisions of the Statute only provide pointers to the concept of waste under Ugandan law which was to be developed fully in the regulations. In defining hazardous wastes, the regulations take the following approaches which are informed by the approach of the Basel and Bamako Convention.

(a) Definition of hazardous characteristics

This is done in the Third Schedule of the Regulations and closely follows the standard definitions laid down in Annex - III of the Basel Convention and Annex- II - of the Bamako Convention. These definitions are themselves derived from the United Nations hazard classification system included in the United Nations Recommendations on the Transport of Dangerous Goods. (ST/SG/AC.10/1/Rev. 5 United Nations, New York, 1988).

The only modification, however, found in the inclusion of carcinogenic waste in the Schedule which are left out of the conventions but are included in Section 54 of the Statute. It should be noted that while radioactive wastes are not included in the Basel Convention, they are included in the Bamako Convention and Section 54 of the Statute and are, therefore covered by the Regulations.

(b) Identification of Specific Hazardous Substances

The Sixth Schedule to the Regulations lays down in detail the substances which are considered hazardous. This list closely follows the list laid down in Annex I of the Bamako Convention. The list in the Bamako Convention was preferred over Annex I of the Basel Convention because it includes radioactive substances which are also covered by Section 54 of the Statute.

After all the Bamako Convention list covers all the substances in the Basel Convention list.

Both approaches are integrated in Regulation 3. This combination of approaches enables a comprehensive coverage. Besides, the Statute enables the development of new regulations to cover any new situation which may arise.

6.0 MANAGEMENT OF WASTES WITHIN UGANDA

While the terms of reference originally referred to the issue of hazardous wastes, the review of existing legislation revealed its inadequacy in addressing the issue of waste management in general. It therefore, became necessary to address certain salient aspects of waste management in general as a starting point to initiate a successful scheme on hazardous waste

management in general. These basic issues which are addressed in regulations include those outlined below:

(i) Sorting of waste:

The regulations require that generators of waste should sort their waste according to whether they are hazardous or not. This is expected to be done on the basis of a list published by the Authority identifying products by their trade names and stating whether they are or are not hazardous.

(ii) Disposal of Domestic non-hazardous Waste:

The regulation permit individuals to dispose of such waste. Local authorities and other large-scale waste generators, must follow the rules relating to disposal and are prohibited from otherwise disposing of waste.

(iii) Internal Movements of Waste:

Movements of waste across district boundaries are to be subject to the consent of the District Environment Officers of the districts concerned.

Persons involved in the business of transporting wastes are required to be licensed by the NEMA under the Regulations. The Regulations stipulate stringent conditions to be observed in the movement of wastes to ensure the sound management of the environment.

(iv) Storage of Wastes:

A licence is required for any person who carries out the storage of wastes. These wastes would be packaged in containers and packages which ensure safety. Such containers are required to be labelled indicating the nature of the contents and the hazards they pose. (See Regulations 5, 6, 7 and 8).

(v) Pre-treatment of Wastes:

The regulations prohibit the discharge of hazardous wastes into water bodies unless they have been treated in a manner approved by the lead agency in consultation with the Authority. For existing industries a time table for complying with the prior treatment of the waste is required.

(vi) Waste disposal Sites:

The regulations require any person who operates a waste disposal business or treatment site to be licensed by the

Authority. The establishment of waste disposal sites requires satisfaction of the pre-condition of an environmental impact assessment (E.I.A). Waste disposal sites are subject to rigorous conditions to ensure safety against contamination of the environment and to promote the health and safety of the persons working at the site or living near the site (see Regulations)

Where the disposal site treats hazardous waste, NEMA is expected to pay more attention to the methods of disposal and how the management of effects is to be undertaken (See Regulations 11, 12, 13 and 14).

The disposer is required to take measures to prevent pollution from the sites and treatment plants by making appropriate designs and taking necessary mitigation measures.

7.0 TRANSBOUNDARY MOVEMENTS OF WASTES

The Regulations follow the lead provided by the Statute. Import of hazardous wastes is prohibited; however, a person desiring to import or export any wastes must apply for a licence by completing the movement document (which conforms with both the Basel and Bamako Conventions.) The Authority is expected to notify other States concerned in order to seek their informed consent in cases of transit and export. In case of imports, the Authority is required to give its informed consent, before the process of importing of non-hazardous waste commences.

7.1 PORTS OF ENTRY

In order to ensure tight control on possible illegal hazardous waste imports into the country, only a few points have been designated entry ports for hazardous waste (See Regulation 18.)

7.2 MOVEMENT OF WASTES ON WATER

The movement of wastes on water is prohibited. Movement of wastes from the Ugandan islands to the mainland for disposal is permitted but not vice-versa. This prohibition takes into account the fragile nature of the aquatic environment.

7.3 OTHER PROVISIONS

The Regulations provide for the establishment of a register of licence, granted under the regulations, the duty to keep records, the issuance of improvement notices, procedures for cancellation of licences and offences.

APPENDIX

THE REPUBLIC OF UGANDA

STATUTORY INSTRUMENTS NO.....

THE NATIONAL ENVIRONMENT STATUTE NO 4 of 1995

The Draft Wastes Management Regulations, 1998

IN EXERCISE of the powers contained in section 53, 54 and Section 108 of the National Environment Statute, 1995 these Regulations are hereby made:

1. *Title*

These Regulations may be cited as the Wastes Management Regulations, 1998.

2. *Interpretation*

In these Regulations unless the context otherwise requires

“carrier” means any person who carries out the transportation of hazardous wastes and other wastes and includes his agents and assignees.

“competent local authority” means a local authority established under the Local Government Act, 1997;

“disposal site” includes the land area on which waste disposal facilities are physically located and the final discharge point.

“disposer” means the person licensed to dispose of wastes under these regulations.

“domestic waste” means waste generated from residences.

“environmentally sound management of hazardous waste” means taking all practical steps to ensure that hazardous wastes or other wastes are managed in a manner which will protect human health and the environment against the adverse effects which may result from such waste.

“exporter” means any person under the jurisdiction of the state of export who arranges for hazardous wastes or other wastes to be exported.

“generator of waste” means any person whose activity produces hazardous waste or other waste or, if that person is not known, the person who is in possession and/or control of those wastes.

“hazardous waste” means any waste which has been identified in the Sixth Schedule or any waste having the characteristics defined in the Third Schedule determined in accordance with the guidelines set out in the Fourth Schedule.

“importer” means any person under the jurisdiction of the state of import who arranges for hazardous wastes or other wastes to be imported.

“inspector” means an Inspector designated as such under section 80 of the Statute.

“internal movement of waste” means the movement of waste from the jurisdiction of one district authority to another.

“person” means any natural or legal person.

“Technical Committee” means the Technical Committee on the Licensing of Pollution established under section 11 of the Statute;

Atransboundary movement@ means any movement of waste into, from or through Uganda from to or through any area under the jurisdiction of any other state.

“transit” means the passage from one border to another border through the national territory of Uganda including storage in transit bonds.

Uganda Revenue Authority@ means the Uganda Revenue Authority established under Statute No. 6 of 1991.

“wastes” subject to regulation 3 includes hazardous wastes and shall have the meanings assigned to them in the Statute.

3. *Application of these regulations:*

- (1) These regulations shall apply -
 - (a) to all categories of hazardous and non-hazardous wastes;
 - (b) to the movement, storage and disposal of hazardous wastes into and outside Uganda;
 - (c) to all waste disposal facilities, land fills, sanitary fills and incinerators.

4. *Sorting of waste and disposal of domestic waste*

- (1) The Authority shall from time to time publish a list of waste products and by-products from domestic sources which fit in categories identified under the Sixth Schedule or having the characteristics identified in the Third Schedule.
- (2) The list under sub-regulation (1) shall identify the product or by-product by its trade name.
- (3) Any person who generates waste shall be required to sort that waste by separating hazardous waste in accordance with the directives contained in the list issued pursuant to sub-regulation 1.
- (4) A generator of domestic waste may without licence under these regulations dispose of non hazardous waste in an environmentally sound manner in accordance with by-laws made by competent local authorities provided that this shall not apply to the disposal of significant amounts of domestic wastes.

5. *Cleaner production methods and recycling*

- (1) Any person who controls any facility or premises which generates wastes shall adopt cleaner production methods to minimize the waste generated.
- (2) Without prejudice to the generality of the foregoing, such a person mentioned in sub-regulation (1) shall employ the following methods:-

- (a) improvement of production processes through:-
 - (i) conserving raw materials and energy;
 - (ii) eliminating the use of toxic raw materials;
 - (iii) reducing toxic emissions and wastes;
- (b) monitoring the product cycle from cradle to grave by -
 - (i) identifying and eliminating potential negative impacts of the product;
 - (ii) enabling the recovery and reuse of the product where possible;
 - (iii) reclamation and recycling.
- (c) incorporating environmental concerns in the design and disposal of a product.

- (3) The Executive Director may from time to time give specific directions in writing to any person or class of person requiring them to apply specifically stated methods to achieve goals of cleaner production, stated in such written communication.

6. *Internal Movement of wastes*

- (1) Any person desiring to move wastes from one district for disposal in another district, shall before applying for any licence issued under these regulations, notify in writing the District Environment Officers of the district from which he intends to move the waste and the district to which he intends to move the waste.
- (2) The District Environment Officer notified under sub-regulation 1 shall when satisfied that the intended location of the waste and the proposed methods of disposal or storage are in accordance with sound environmental criteria and that the requirements of the Statute and these Regulations have been complied with, he shall recommend the applicant to the Authority for consideration to the grant of a licence under these Regulations.

7. *Application for licence for transportation of or Storage of Wastes.*

- (1) A person intending to transport significant amount of wastes shall apply for a licence to the Authority in Form WM I and the person intending to store wastes on his premises shall apply for a licence in Form WM V of the First Schedule and shall be accompanied by the appropriate fee set out in the Seventh Schedule.
- (2) A person who is carrying on the business of transporting or storage of wastes before the commencement of these Regulations shall apply to the Authority for a licence

within ninety days from the commencement of these Regulations.

- (3) A person who transports wastes or stores wastes on his premises without a licence commits an offence contrary to Sections 53 and 54 of the Statute.

8. **Licence for transportation or storage of wastes**

- (1) The Authority shall issue a licence for transportation of wastes in Form WM III and for storage on Form WM VI of the First Schedule and shall be accompanied by the appropriate fee set out in the Seventh Schedule, if the Authority is-

- (a) satisfied that the applicant has adequate and appropriate facilities and equipment to transport wastes or to store wastes on his premises without causing significant damage to public health and the environment;
- (b) satisfied with collection schedule of wastes of the applicant and in the case of storage of wastes that the premises are adequate for storing such a category of waste as applied for; and
- (c) the Authority has published its intention to issue the licence by notice in the *Gazette*, and in local newspapers of daily circulation sixty days before the issue of the licence.

- (2) A licence to transport wastes shall be subject to the following conditions:

- (a) The collection and transportation of wastes shall be conducted in a manner that would not cause scattering of the waste.
- (b) The vehicles, pipelines and equipment for the transportation of waste shall be in such a state as not to cause the scattering of or the flowing out of the wastes or the emitting of bad smells from the wastes.
- (c) The vehicles for the transportation and other means for the conveyance of wastes shall follow the approved scheduled routes from the point of collection to the disposal site or plant.

- (3) The following conditions shall attach to licences for transportation of wastes and storage of wastes:

- (a) The personnel involved in the collection, transportation or storage of wastes shall be provided with-
 - i) adequate protective and safety clothing;

- ii) adequate appropriate equipment or facilities for loading wastes; and
- iii) safe and secure sitting facilities in the vehicles for transporting wastes;
- iv) proper training and information.

- (b) The licensee shall ensure that and enable the personnel involved in the collection, transportation or storage of wastes to undergo such medical check-up as may be commensurate to the risks faced by the employees and the medical report of fitness shall be submitted to the Authority.

- (c) An inspector may at any time subject the personnel involved in collection, transportation or storage of wastes to a medical check up and the costs of such examination shall be borne by the licensee.

- (d) The vehicles for transportation or other means of conveyance and premises for storage of wastes shall be labeled in such a manner as may be directed by the Authority.

- (e) Any other condition which the Authority shall consider relevant for the transportation and storage of wastes.

- (4) Subject to these Regulations a licence for transportation or storage of wastes shall be valid for such a period as the Authority shall determine and may be renewed for a further period:

Provided that the Authority may limit the validity of the licence to a specific number of transactions when necessary.

- (5) In addition to the powers contained in section 81 of the Statute, an inspector may at any reasonable time stop and inspect any vehicle used for the transportation of wastes and enter upon any premises where waste is stored.

9. **Packaging of Wastes**

- (1) Upon application for a licence for storage of waste under regulation 7, the applicant shall provide a sample of the containers or packaging material in which the waste shall be stored.

- (2) The container or packaging material provided in sub-regulation (1) shall be suitable for the storage of the waste for which the application for storage has been made and shall:-

- (a) not be reactive to the waste in question.
- (b) be free from the possibility of leakage
- (c) be capable of protecting the health of persons involved in handling the waste, the neighbouring community and the environment in general.

- (3) Every container which is used in the storage of hazardous wastes shall be labeled in accordance with Regulation 9 and shall be disposed of in a manner prescribed by Regulation 14.
- (4) A person who sells or offers for sale a container which has been used for the storage of waste to be used for any other purpose other than the storage of waste commits an offence.
- (4) a) The label shall contain no warranties, guarantees or liability exclusion clauses inconsistent with the provisions of the Statute or these Regulations.
- b) Any such warranties, guarantees, and liability exclusion clauses shall be void to the extent of their inconsistency with the Statute or these Regulations.

10. **Labelling of Wastes**

- (1) Each container or package of hazardous wastes shall have a label written in English and such other relevant local languages attached to it which shall at a minimum contain the following:

- a) Identity of the hazardous waste;
- b) Name and address of generator of waste ;
- c) Net contents;
- d) Normal storage stability and methods for safe storage;
- e) Name and percentage by weight of active ingredient and names and percentages by weight of other ingredients or half-life of radio-active material;
- f) Warning or caution statements which may include all, some, or either of following as appropriate:
 - i) the words "warning" or "caution",
 - ii) the words "danger ! All unauthorized persons keep away",
 - iii) the word "poison" (marked indelibly in red on contrasting background),
 - iv) a pictogram of skull and crossbones.
- g) a statement of first aid measures including the antidote when inhaled or ingested and a direction that a physician must be contacted immediately.
- h) adequate directions for handling should be included in accompanying leaflet including safety precautions in transporting storage and disposal of hazardous wastes and measures for cleaning any equipment used,
- i) directions for the disposal of the container and the hazardous wastes in accordance with the Statute and the regulations,
- j) any other information that the Authority may deem necessary.

- (2) The label shall be written in characters that are easily legible.

- (3) Vehicles or other conveyances carrying hazardous wastes shall be labeled in accordance with sub-regulation 1(f)

11. **Duty to treat waste from industries.**

- (1) No industry shall discharge or dispose of any waste in any state into the environment unless such waste has been treated in a treatment facility and in a manner approved by the lead agency in consultation with the Authority.
- (2) For the avoidance of doubt, any person who operates a factory which discharges or disposes waste into the environment at the date of entry into force of these Regulations, shall within six months submit a written proposal specifying the time schedule within which compliance with these regulations will be achieved.
- (3) It shall be an offence for any person operating a factory to discharge or disposes of any waste whether treated or not into a disposal site or plant unless such disposal site or plant has been approved and licensed in accordance with and upon the conditions set out in these Regulations.

12. **Application for a licence to operate a treatment plant or waste disposal site or plant**

- (1) A person intending to operate a waste treatment or disposal site or plant shall apply to the Authority for a licence in Form WM II of the First Schedule and shall be accompanied by the appropriate fee set out in the Seventh Schedule.
- (2) A person who is carrying on the business of operating a waste treatment or disposal site or plant before the commencement of these Regulations shall apply for a licence within ninety days.
- (3) A person who operates a waste disposal site or plant without a licence issued in accordance with Regulation 12 commits an offence.

13. **Licence to own or operate a waste disposal site or plant**

- (1) The Technical Committee shall issue a licence in Form WM IV of the First Schedule to own or operate a waste disposal site or plant which shall be accompanied by the appropriate fee set out in the Seventh Schedule, if:

- (a) a written approval has been obtained by the disposer from the local environment committee and district environment committee within whose jurisdiction the waste disposal site or plant is located;
 - (b) the Technical Committee is satisfied that the owner or operator of the waste disposal site or plant has the ability and the appropriate facilities to manage the waste disposal site or plant without causing any damage to public health and the environment; taking into account the findings of the environmental impact assessment submitted by the owner or operator, and
 - (c) notice has been given by the operator in the *Gazette* and such local newspapers of daily circulation as the Authority shall deem fit on the proposed waste disposal site or plant, sixty days before the issue of the licence.
- (2) A licence to own or operate a waste disposal site or plant shall be subject to the following conditions;
- (a) The waste disposal site or plant shall be at least outside a radius of one thousand metres away from a residential or commercial area and water sources.
 - (b) The waste disposal site or plant shall be enclosed and secure from scavenging.
 - (c) The waste disposal site or plant shall have hazard and safety signs displayed at appropriate places indicating the disposal site or plant and the nature of operations it carries out in accordance with the Fifth Schedule to these Regulations.
 - (d) The waste disposal site or plant shall be operated in a way which would;
 - (i) avoid polluting surface and underground water;
 - (ii) avoid the emission of bad smells from the site or plant to levels beyond any standard established under section 28 of the Statute.
 - (iii) prevent the breeding of rats, mosquitoes or other vermin at the site or plant.
 - (e) The wastes deemed not to be hazardous under these regulations at the disposal site or plant shall be compacted to a thickness of approximately three meters or less for each layer of waste and each layer shall be covered with thirty centimeters of soil.
 - (f) Hazardous wastes shall be disposed off and/or treated in accordance with conditions laid down in the licence or in accordance with any general guidelines issued by the Authority in consultation with the lead agency.
 - (g) Means of ventilation shall be provided at the disposal site or plant to remove bio-gas generated from the disposal site or plant and the smell from the disposal site or plant shall be controlled.
- (h) The personnel working at the waste disposal site or plant shall be provided withC
 - (i) adequate protective and safety clothing;
 - (ii) adequate water and appropriate equipment or facilities for the operations of the disposal site or plant;
 - (iii) first aid facilities and training.
 - (i) The personnel working at the waste disposal site or plant shall undergo an annual medical check up.
 - (j) Human waste or sewage shall be treated at a waste disposal site or plant before disposal.
 - (k) Measures to control and prevent scattering of papers or other light waste materials shall be installed at the waste disposal site or plant.
 - (l) Any other conditions which the Technical Committee shall consider relevant for the operation of the waste disposal site or plant.
- (3) A licence to own or operate a waste disposal site or plant shall be valid for one year and may be renewed for a like period:
- Provided that the Technical Committee may limit the validity of the license for any period less than one year, but not less than six months when necessary.
- (4) The Authority may where it deems it necessary issue a licence to any applicant under regulation 8 for the temporary storage of any waste pending final disposal provided that such temporary storage meets the standards required of the disposal of such a category of waste set under these regulations.
 - (5) Any person who-
 - (a) operates or owns a waste management disposal site without a licence;
 - (b) discharges waste onto a site or plant which is unlicensed; shall be guilty of an offence.
- 14. Environmental Impact Assessment**
- (1) No disposal site or treatment plant for wastes shall be licenced under these Regulations unless an environmental impact assessment has been carried out in accordance with the provisions of sections 20, 21 and 22 of the Statute.
 - (2) An operator of a disposal site or treatments plant shall carry out annual audits of the environmental

performance of his site or plant and shall submit his reports to the Authority.

15. Disposal of Waste

- (1) Where the disposer intends to dispose of or treat wastes, the disposer shall, in addition to the matters required under Regulations 11 and 12, indicate in his application for a licence the disposal operations he intends to carry out in accordance with the categories identified in the Fifth Schedule and shall enclose;
 - (a) a detailed description of the process he intends to employ and its possible effects.
 - (b) a detailed description of the soil structure and geology of the area.
 - (c) a plan for managing the leachate and other by-products from the waste.
 - (d) a detailed drawing indicating the structure, construction and surroundings of the waste disposal site or plant.
 - (e) a plan of the surrounding areas including water bodies and residential homes.
 - (f) any other matter that may be required by the Authority.
- (2) In issuing a licence for the disposal of wastes the Authority shall clearly indicate the disposal operation permitted and identified in accordance with the categories in the Fifth Schedule.
- (3) Any person who disposes of waste contrary to this provision commits an offence.

15 Prevention of Pollution from disposal sites and treatment plants

- (1) Every person who operates a waste disposal site or treatment plant shall take all necessary measures to prevent pollution from waste disposal sites and treatment plants including the erection of necessary works and instituting of mitigation measures.
- (2) In taking measures to prevent pollution, the operation of such waste disposal site or treatment plant shall comply with any directions given by an inspector under Section 81 of the Statute.

17. Transboundary movement of wastes

- (1) A person desiring to export waste from Uganda or import wastes into Uganda shall complete a movement document in the form set out in Form WM VII of the

Second Schedule which shall be submitted to the Authority and a copy of which shall be submitted to the Uganda Revenue Authority.

- (2) The Authority shall issue an export licence in accordance with Form WM VIII of the Second Schedule after considering the movement document submitted under sub-regulation (1) and taking into account the provisions of regulation 18.
- (3) The Authority shall issue an import licence in accordance with Form WM IX of the Second Schedule after such waste has been determined as non-hazardous waste under section 55 of the Statute.
- (4) The movement document, export and import licences mentioned in (1) , (2), (3) above shall be accompanied by the appropriate fees set out in the Seventh Schedule
- (5) Where a licence is issued under the provisions of this Regulation, a copy of such licence shall be sent to the Uganda Revenue Authority for the necessary customs verifications and control.

18. Duties of the Authority in relation to Transboundary Movement of Hazardous Wastes.

- (1) The Authority is hereby designated as the national authority for the operation of the prior informed consent procedure for the import, export, transit or any other transboundary movement of hazardous wastes.
- (2) The Authority shall closely liaise with the designated national authorities of other states under any international conventions or arrangements to which Uganda is a party and international organizations with competence in the field of the management of transboundary movements of hazardous wastes under any convention or arrangement to which Uganda is a party for the purpose of monitoring and controlling the movements of hazardous wastes in Ugandan territory.
- (3) The Authority shall disseminate information on wastes management to the public.

19. Notification Procedures and Prior Informed Consent

- (1) A licence for export of waste shall not be issued by the Authority unless accompanied by the appropriate fee set out in Seventh Schedule and:

- (a) the Authority has notified the designated national authority of the state of import of waste by sending a copy of the movement document (Form WM VII of the Second Schedule) and the notification document for transboundary movement of waste (Form WM X of the Second Schedule) and the comments that the Authority may have made on the documents and has the necessary consents received from such authorities.
 - (b) the Authority has transmitted the documents provided for in sub-regulation (1) to the international body designated under any agreement or arrangement to which Uganda is a party or participant and has received favourable comments from such a body.
- (2) The Authority shall not grant a licence to any person desiring to import any waste into Uganda which is not hazardous in accordance with the categories identified in the Sixth Schedule unless:
- (a) the Authority has received from the designated national authority of the state in which the waste is generated a movement document conforming with the provisions of the Form WM VII of Second Schedule and the notification document conforming with the provisions of Form WM X of the Second Schedule.
 - (b) the applicant has submitted a valid licence or letter of authority from the designated authority of the state where the waste is generated permitting the export of the waste.
 - (c) the Authority has received comments from the international body designated under any agreement or arrangement to which Uganda is a party or participant.
- 20. Ports of entry and routes for wastes**
- (1) A licence issued under these regulations shall only entitle the licensee to transport wastes through the customs points of entry designated under the Eighth Schedule.
 - (2) No hazardous wastes shall be transported by water except for hazardous wastes generated from islands within the territorial jurisdiction of Uganda.
- 21. Insuring against risks**
- (1) An applicant for a licence under regulations 6, 10 and 15 shall satisfy the Authority that such applicant has subscribed to an insurance policy covering the risks likely to arise of the activity for which the licence has been applied for.
- 22. Reporting procedures**
- (1) Any person who is licensed to carry out any activities under these regulations shall submit bi-annual reports on the conduct of the licensed activities.
 - (2) Where special reporting procedures are made the condition of any licence under these regulations, such procedures shall take precedence over the provisions of sub-regulation (1).
- 23. Duty to keep records**
- (1) The holder of a licence under these Regulations shall:-
 - (a) keep a record of the licensed activities and all transactions related thereto; and
 - (b) submit the record referred to in paragraph (a) to the Authority every six months from the commencement of the licensed activities.
 - (2) The Authority may order the holder of a licence under these Regulations to install, at the expense of the holder of the licence, metering devices and to take samples and analyze them as the Authority may direct.
- 24. Register of licences**
- The Authority shall maintain a register of holders of licences to transport wastes, for storage of waste or for operating waste disposal sites or plants.
- 25. Communication of decision on licences**
- Where a person applies for a licence under these Regulations, the Authority shall communicate its decision to the applicant within a reasonable period.
- 26. Improvement Notice**
- Where an inspector has reasonable cause to believe that any person is violating these regulations, he may issue against such a person an improvement notice in accordance with Section 81;

- (1) or take any other measures provided for under section 81 of the Statute.
 - (2) An improvement notice issued under sub-regulation (1) shall not prejudice criminal proceedings which may be taken under any of the provisions of the Statute.
- (a) may have the licence revoked; and
 - (b) shall be guilty of an offence and shall be liable upon conviction to a fine or sentence of imprisonment as set out in section 100 of the Statute.

27. Cancellation of Licence

The Authority may on the advice of the Technical Committee suspend or revoke a licence issued under these Regulations if it is satisfied that the conditions of the grant of the licence have not been complied with or the Authority is satisfied that the continued operation of the plant will be injurious to the health of the neighbouring community or to the environment in general.

28. Offences and Penalties

- (1) Any person who contravenes any of the provisions of these Regulations or the Statute or a condition of a licence after an improvement notice has been issued under Regulation 25C

- (2) A person who contravenes the provisions of these Regulations may in addition to the provisions of sub-regulation 1 subject to other punishment as provided for in the Statute.

29. Fees

The fees prescribed in the Seventh Schedule shall be paid for the various applications and licences under these regulations.

30. Operation of these regulations

These regulations shall operate without prejudice in addition to any regulations or standards made under any other law.

ANNEX 1

The thermal analysis test with 2, 4-dinitrotoluene and dibenzoyl peroxides as standard substances uses the apparatus specified in item 1 to measure the starting heating temperature and the heating value of the waste in question and the standard substances when heated according to the testing methods specified in item 2.

1. APPARATUS

The apparatus shall be a differential scanning calorimetry (DSC) or a differential thermal analysis (DTA) apparatus using aluminum oxide (%) as standard substance.

2. TESTING METHODS

(1) Testing methods for 2, 4-dinitrotoluene

- (i) Encapsulate 1 mg of 2,4-dinitrotoluene and 1 mg of the standard substance in a pressure-proof

stainless steel cell with a burst pressure of 50 kgf/cm² or more, and load it on the apparatus. Then, heat it so that the temperature of the 2,4-dinitrotoluene and the standard substance rises at a rate of 10 °C in 60 seconds.

- (ii) Determine the initiation temperature of heat generation and calorific value from the chart obtained.

(2) Test procedure for dibenzoyl peroxide

Carry out the procedure from (1) (i) to (ii), using 2 mg each of dibenzoyl peroxide and the standard substance.

(3) Testing methods for test substance

Carry out the procedure (1) (i) to (iii), using 2 mg each of the test substance and the standard substance

ANNEX 2

A. FLASH POINT TEST BY TAG CLOSED CUP APPARATUS

The flash point test by Tag Closed Cup Apparatus uses the apparatus specified in item 1. The flash point of the waste in question is measured in the laboratory specified in item 2 according to the testing methods specified in item 3.

1. APPARATUS

The Apparatus shall be a tag closed cup apparatus

2. LABORATORY

The laboratory shall be in a place under atmospheric pressure in almost windless conditions.

3 TESTING METHODS

- (1) Put 50 cm³ of a test substance in a test cup and then put the lid in place.
- (2) Produce a test flame and adjust its size to a diameter of 4 mm.
- (3) Adjust the heating condition of the bath so that the temperature of the test substance will rise by 1°C per 60 seconds. When the temperature of the test substance reaches a value of 5°C below the expected flash point (the temperature at which the test substance flash is to be confirmed, the same applying hereafter), open the shutter to make the test flame apply to the vapor space of the test cup for about one second and return it to the original position. In this case, do not rapidly adjust the test flame up and down.
- (4) Where the test substance does not flash in (3), open the shutter every time the temperature of the test substance rises by 0.5°C, make the test flame apply to the vapor space of the cup for one second, and return it to the original position. Repeat this operation until the flash is observed.
- (5) Where the test substance flashes at a temperature lower than 60 °C in (4), and in addition, the difference between that temperature and the expected flash point does not exceed 2°C, the temperature at which the test substance flashes shall be deemed the flash point of the test substance.
- (6) When the test substance flashes in (3) or when there is a difference between the temperature at which the test substance flashes in (4) and the expected flash point exceeds 2°C, repeat the procedures from (1) to (4).
- (7) Where the temperature at which the test substance flashes in (4) or (6) is not less than 60 °C, carry out the following procedure.
- (8) Carry out the procedure described in (1) and (2)
- (9) Adjust the heating condition of the bath so that the temperature of the test substance rises by 3°C within 60 seconds. When the temperature of the test substance reaches a value 5°C below the expected flash point, open the shutter to make the test flame apply to the vapor space of the cup for about one second and then return it to the original position. In this case, do not rapidly adjust the test flame up and down.
- (10) Where the test substance does not flash in (9), open the shutter every time the temperature of the test substance rises 1°C to make the test flame apply to the vapor space of the cup, and then return it to the original position. Repeat this operation until the test substance catches fire.
- (11) Where the difference between the temperature at which the test substance flashes in (10) and the expected flash point does not exceed 2°C, the temperature at which the test substance flashes shall be deemed the flash point of that test substance.
- (12) When the test substance flashes in (9) and/or when there is a difference between the temperature at which the test substance flashes in (10) and the expected flash point exceeds 2°C, repeat the procedure from (8) to (10).

B. FLASH POINT TEST BY SETA CLOSED CUP APPARATUS

The flash point test by Seta closed cup apparatus shall measure the flash point of the waste in question by using the apparatus specified in item 1 at the laboratory specified in item 2 and according to the testing methods specified in item 3.

1. APPARATUS

The apparatus shall be a Seta flash closed cup apparatus.

2. LABORATORY

The laboratory shall be in a place under atmospheric pressure in almost windless conditions.

3. TESTING METHODS

(1) Heat or cool a sample cup to the expected flash point, keep the sample cup at that temperature, pour 2 cm³ of the test substance (when the expected flash point is lower than the room temperature of the laboratory, the sample shall be cooled down to the expected flash point) in the cup, and then immediately place the lid and close the shutter.

(2) Retain the temperature of the sample cup at the expected flash point for one minute.

(3) Produce a test flame and adjust it to a diameter of 4 mm.

(4) After one minute, open the shutter to make the test flame apply to the sample cup for about 2.5 seconds, and then return it to the original position. In this case, do not rapidly adjust the test flame up and down.

(5) Where the sample flashes in (4), lower the expected flash point step-wise and perform the procedure from (1) to (4) until it does not flash anymore. Where the sample does not flash in (4), raise the expected flash point step-wise and perform the procedure from (1) to (4) until it flashes.

ANNEX 3

A. SMALL GAS FLASH IGNITION TEST

The small gas flame ignition test measures the duration of time from when the waste in question makes contact with the flame to when a flame is ignited and observes whether burning continues or not. This test is conducted at the laboratory specified in item 1 and according to the testing methods specified in item 2.

1. LABORATORY

The laboratory shall be in a place under atmospheric pressure at a temperature of 20 °C and a humidity of 50% in almost windless conditions

2. TESTING METHODS

- (1) Put 3 cm³ of the test substance (conditioned for 24 hours or more at a temperature of 20 °C in a desiccator containing silica gel for drying) on an impervious low-heat conducting base plate with a thickness of 10 mm or more. In this case, a powdery or granular substance shall be put on the impervious low-heat conducting base plate in a hemispherical shape.
- (2) Keep a flame of liquefied petroleum gas (a diffusion flame from an ignition device with a rod-like nozzle, and the flame length adjusted to 70 mm with the nozzle of the said ignition device held upward) in touch with the test specimen for 10 seconds. (The contact area of the flame and test substance shall be 2 cm² and the angle of contact shall be approx. 30 degrees.)
- (3) Measure the time after the flame makes contact with the test substance until it is ignited. Determine whether burning including burning with no flame) continues. A test substance shall be judged to have undergone continuous burning in the case where it burns out completely during its contact with the flame, where it burns out completely within 10 seconds after the flame is detached, or where it continues to burn for 10 seconds or more after the flame is detached.

B FLASH POINT TEST BY SETA CLOSED CUP APPARATUS

The flash point test by Seta closed cup apparatus measures the flash point of the waste in question using the apparatus specified in item 1 at the laboratory specified in item 2 and according to the testing methods specified in item 3.

1. APPARATUS

The apparatus shall be a Seta flash closed cup apparatus.

2. LABORATORY

The laboratory shall be in a place under atmospheric pressure in almost windless conditions.

3. TESTING METHODS

- (1) Heat or cool a sample cup to the expected flash point, and while keeping the sample cup at that temperature, put 2 g of the test substance in the cup (where the expected flash point is lower than the room temperature in the laboratory, the sample shall be cooled down to the expected flash point), and immediately place the lid and close the shutter.
- (2) Retain the temperature of the sample cup at the expected flash point for five minutes.
- (3) Produce a test flame and adjust its diameter to 4 mm.
- (4) After five minutes, open the shutter to make the test flame apply to the vapor space of the sample cup for about 2.5 seconds and then return it to the original position. In this case, do not rapidly adjust the test flame up and down.
- (5) Where the sample flashes in (4), lower the expected flash point stepwise and perform the procedure from (1) to (4) until it does not flash anymore. Where the sample does not flash in (4), raise the expected flash point stepwise and perform the procedure from (1) to (4) until it flashes.

ANNEX 4

The spontaneous combustion test is conducted at the laboratory specified in item 1 and according to the testing methods specified in item 2. This test examines whether or not the waste in question combusts and whether or not the filter paper becomes scorched when exposed to air.

1. LABORATORY

The laboratory shall be in a place under atmospheric pressure at a temperature of 20°C and a humidity of 50% in almost windless conditions.

2. TESTING METHODS

(1) Testing methods for solid substance

- (i) Drop 2 cm³ of the test substance onto an impervious low-heat conducting base plate (with a heat transfer coefficient 86 cal/(m.hr.C) or less) from a height of 1 m, and determine whether spontaneous combustion occurs during the fall or within 5 minutes after falling. In this case, when the test substance does not pass through a 0.3 mm sieve, the test substance should be pulverized to pass through the same sieve.
- (ii) Where spontaneous combustion does not occur, repeat the same procedure six times, and

determine whether spontaneous combustion occurs once or more.

(2) Testing methods for liquid substance.

- (i) Fill a porcelain cup with a diameter of approx. 70 mm with diatomaceous earth or silica gel to a height of 5 mm.)
- (ii) Drop the entire 5 cm³ of the test substance onto the porcelain cup from a height of 20 mm for 30 seconds at a constant speed using a syringe, and determine whether spontaneous combustion may occur within 5 minutes from first drop.
- (iii) Where spontaneous combustion does not occur in (ii), repeat this operation six times using new samples of the wastes in question. If spontaneous combustion does not occur for any of the six trials, conduct the test shown in (iv).
- (iv) Drop the entire 0.5 cm³ of the test substance onto filter paper and conditioned for 24 hours or more at a temperature of 20°C in a desiccator containing silica gel for drying) with a diameter of 90 mm placed on a porcelain with a diameter of approx. 70 mm from a height of 20 mm for 30 seconds at a constant speed using a syringe. Determine whether spontaneous combustion or scorching of the filter paper occurs within 5 minutes.

ANNEX 5

The reaction to water test is conducted at the laboratory specified in item 1 and according to the testing methods specified in item 2. This test examines whether or not the gas generated by the reaction of the waste in question to demineralized water combusts or whether or not the generated gas ignites when in proximity to flames; measures the amount of gas generated when the waste in question is added to demineralized water; and analyzes the composition of the generated gas.

1. Laboratory

The laboratory shall be in a place under atmospheric pressure at a temperature of 20 °C and a humidity of 50% in almost windless conditions.

2. Testing Methods

- (1) Pour 20 °C demineralized water into a beaker or an evaporating dish and put a 2 mm diameter of test substance (5 millimeters for liquid substances) into the water, and then determine whether any gas is generated and whether the generated gas is auto-ignited. Where the generated gas is auto-ignited, the following procedures do not need to be implemented.
- (2) Make the test substance into a pile 20 mm high and 30 mm in diameter with a hollow in the top. Drop a few drops of 20 °C demineralized water in the hollow and determine whether any gas is generated and whether the generated gas is auto-ignited. Where the generated gas is auto-ignited, the following procedures do not need to be implemented.
- (3) Put a filter paper supporting stand at the bottom of a beaker with a capacity of 500 cm³, pour 20 °C of demineralized water up to the top face of that stand, and put a piece of filter paper with a diameter of 70 mm on it. After adjusting the water volume so that the filter paper floats on the water surface, put 50 mm³ of the test substance at the center of the filter paper), determine whether the generated gas is auto-ignited. Where spontaneous combustion of the generated gas occurs, the following procedures need not be implemented.
- (4) Where the generated gas is not auto-ignited in (3) apply a flame to the said gas and determine whether the said gas catches fire.
- (5) Where the generated gas is not auto-ignited or generation of gas is not recognized in test (3) or where the generated gas does not catch fire in test (4), put 2 g of the test substance in a round-bottomed flask with a capacity of 100 cm³, immerse it in a basin with a temperature kept at 40 °C, and promptly pour in 50 cm³ of demineralized water of 40 °C. Shaking the contents of the flask with an agitating ball of 12 mm in diameter and a stirrer agitator, measure the volume of generated gases for one hour.
- (6) The maximum value of the generated gas measurement made every hour (converted into the generation volume per kilogram of test substance) shall be deemed the generated gas volume for one operation.
- (7) Use a detecting tube, gas chromatography, etc., to determine whether the generated gas contains a flammable component.

ANNEX 6

A. BURNING TEST USING AMMONIUM PERSULFATE AS THE STANDARD SUBSTANCE

In a burning test using ammonium persulfate as the standard substance, the burning time shall be measured for a mixture of a standard substance as specified in item 1. and wood powder as specified in item 2., and a mixture of a test substance and wood powder as specified in item 2. burned in a laboratory as specified in item 3. according to the test procedure for confirmation test specified in item 4.

1. STANDARD SUBSTANCE

The particle size of standard substance shall be such that it can pass through a 300 Fm (approx. 50 mesh) sieve but cannot pass through a 150 Fm (approx. 100 mesh) sieve.

2. WOOD POWDER

(1) The wood powder shall be prepared from sapwood of Japanese cedar.

(2) Wood Powder

(1) The wood powder shall be prepared from sapwood of Japanese cedar.

(2) The particle size of wood powder shall be such that it can pass through a 500 Fm (approx. 30 mesh) sieve but cannot pass through a 250 Fm (approx. 60 mesh) sieve.

3. LABORATORY

The laboratory shall be in a room under atmospheric pressure at a temperature of 20°C and a humidity of 50% in almost windless conditions.

4. TESTING METHODS

(1) Testing methods for standard substance

(i) Make a uniform mix of the standard substance (conditioned for 24 hours or more at a temperature of 20°C in a desiccator containing silica gel for drying) and the wood powder (dried for 4 hours at a temperature 105°C, and then conditioned for 24 hours or more at a temperature of 20°C in a desiccator containing silica gel for

drying, the same applying to paragraph (2) (1), 11.1. (1) (1) and 11.2 (1) (1) to provide a 30 g mixture with a weight ratio of 1:1.

(ii) Put the mixture of (1) in a conical cup with a height to bottom diameter ratio of 1:1.75, then put it upside down on an impervious low-heat conducting base plate with a thickness of 10 mm or more (the heat transfer coefficient at a temperature of 0°C shall be 86 cal/ (m.hr. C) or less, the same applying hereafter) to provide a conical pile, followed by shaping and conditioning for one hour.

(iii) Gently press an ignition source (Nichrome wire in the form of a circular loop with a diameter of 2 mm heated to a temperature of approx. 1,000°C by applying electricity) around the base part of the conical pile prepared in (ii) above until the entire circumference of the base part is ignited. In this case, the duration for which the ignition source is kept in contact with the base part shall be up to 10 seconds.

(iv) Measure the time required for burning (from the time when the entire circumference of the base part of the pile described in (1) is ignited to the time when no flame is observed or, where flaming occurs intermittently, to the time when the final flame is extinguished).

(2) Testing methods for test substance

(i) Uniformly mix up the test substance (which can pass through a 1.18 mm sieve and has been conditioned for 24 hours or more at a temperature of 20°C in a desiccator containing silica gel for drying) and the wood powder to provide 30 g mixtures with a weight ratio of 1:1 and 4:1. In this case, if the test substance does not contain components that can pass through a 1.18 mm sieve, the test substance shall be pulverized to become able to pass through the sieve for the purpose of this test.

(ii) Carry out the same procedure as described in (1) (ii), (iii) and (vi) for each of the mixtures with a weight ratio of 1:1 and 4:1.

(iii) The shorter one of the burning time measures in (ii) shall be taken as the burning time of the mixture of the test substance and wood powder.

B. BURNING TEST USING 90% NITRIC ACID SOLUTION AS THE STANDARD SUBSTANCE

In a burning test using nitric acid solution as the standard substance, the burning time shall be measured for a mixture of 90% nitric acid solution and wood powder and a mixture of a test substance and wood powder, which are burned in a laboratory as specified in item 1.3 according to the testing methods specified in item 1.

1. TESTING METHODS

(1) Testing methods for 90% aqueous solution of nitric acid

- (i) Put 15 g of the wood powder in a conical cup with a height to bottom diameter ratio of 1:1.75, and then put it upside down on a flat-bottom evaporating dish with a diameter of 120 mm to provide a conical pile, followed by shaping and conditioning for one hour.
- (ii) Pour 15g of the 90% aqueous solution of nitric acid uniformly over the conical pile prepared in (i) using a syringe to ensure its mixing with the wood powder.
- (iii) Keep an ignition source (Nichrome wire in the form of a circular loop with a diameter of 2 mm heated to a temperature of approx. 1,000°C by

applying electricity) in contact with the base part of the conical pile prepared in (ii) above until the entire circumference of the base part is ignited. In this case, the duration for which the ignition source is kept in contact with the base part shall be up to 10 seconds.

- (iv) Measure the time required for burning

(2) Test procedure for test substance

- (i) Put 15 g and 6 g of the wood powder in a conical cup with a height to bottom diameter ratio of 1:1.75, then put them upside down on flat-bottomed evaporating dishes with an outer diameter of 20 mm and 80 mm respectively to form a conical pile, followed by shaping and conditioning for one hour.
- (ii) Pour 15 g and 24 g of the test substance uniformly over the 15 g and 6 g conical piles prepared in (i) using a syringe to ensure their mixing with the wood powder.
- (iii) Carry out the procedure described in (1) (iii) to (iv) for each of the mixtures prepared in (ii).
- (iv) The shorter one of the burning time measured in (iii) shall be taken as the burning time of the mixture of the test substance and wood.

ANNEX 7

A. ORAL TOXICITY TEST

The oral toxicity test measures the amount of substance orally administered to induce mortality in half of the laboratory animals. This test is conducted according to the testing methods specified in item 2 using the animal species specified in item 1.

1. SELECTION OF ANIMAL SPECIES EMPLOYED

The animal employed for testing is a rat of commonly used laboratory strains with an age of approx. 6 weeks. Ten rats (5 male and 5 female) should be used for each dose group. Healthy rats should be selected and acclimatized to the laboratory conditions in the testing cage for at least 5 days. The weight variation in rats used in testing should not exceed +20% of the mean weight.

2. TEST METHODS

- (1) The test substance should be conditioned for the use in testing. Where the test substance is in solid form, the test substance should be dissolved in water or suspended in a suitable vehicle. When some agent for suspending the test substance is utilized, there should be reference dose group which is dosed only with such an agent. The same procedure should be applied for test substances in liquid form with high kinematic viscosity.
- (2) The test substance is administered in a single dose to the rats by gavage using a stomach tube. Dose levels should have three levels or more and be selected so that it would produce evident toxicity and mortality.
- (3) Rats should be observed for 14 days after dosing and the mortality of rats should be observed.
- (4) By using statistical methods on the basis of the number of dead rats within 14 days after dosing, LD₅₀ should be calculated.

B. DERMAL TOXICITY TEST

The dermal toxicity test measures the amount of substance administered to induce mortality in half of the laboratory animals. This test is conducted according to the testing methods specified in item 2 using the animal species specified in item 1.

1. SELECTION ANIMAL SPECIES EMPLOYED

The animal employed for testing is a rat of commonly used laboratory strains with an age of approx. 6 weeks.

Ten rats (5 male and 5 female) should be used for each dose group. Healthy rats should be selected and acclimatized to the laboratory conditions in the testing cage for at least 5 days. The weight variation in rats used in testing should not exceed +20% of the mean weight.

2. TEST PROCEDURES

- (1) The test substance should be conditioned for use in testing. Where the test substance is in solid form, the test substance should be pulverized and moistened with water or other appropriate solvent etc. in order to ensure good contact with the skin. When some solvent is utilized, there should be a reference dose group which is dosed only with such a solvent.
- (2) Approximately 24 hours before the test, fur should be removed by close-clipping from the dorsal area of the trunk of rats. Care should be taken to avoid abrading the skin. Area for removal should be more than 10% of total area of the surface of the body.
- (3) The test substance should be uniformly applied to the area, where fur has been removed, and should be kept in contact for 24 hours. Dose levels should have three levels or more and should be selected so that it produces evident toxicity and mortality. In this case, the part applied should be covered by a gauze patch which is to be held in place with non-irritating tape, or by other appropriate methods, in order to prevent the rats from coming in contact with it.
- (4) Rats should be observed for 14 days after dosing and the mortality of rats should be observed.
- (5) LD₅₀ should be calculated by using statistical method on the basis of the number of dead rats within 14 days after dosing.

C. INHALATION TOXICITY TEST

The inhalation toxicity test measures the amount of substance administered to induce the mortality in half of the laboratory animals. This test is conducted according to testing methods

specified in Item 3 using the animal species specified in Item 1 and the apparatus specified in Item 2.

1. SELECTION OF ANIMAL SPECIES EMPLOYED

The animal employed for testing is a rat of commonly used laboratory strains with an age of approx. 6 weeks.

Ten rats (5 male and 5 female) should be used for each dose group. Healthy rats should be selected and acclimatized to the laboratory conditions in the testing cage for at least 5 days. The weight variation in rats used in testing should not exceed +20% of the mean weight.

2 APPARATUS

The apparatus should be the inhalation toxicity testing apparatus which is composed of (1) a device for conditioning the test substance in specific concentration and for supplying the conditioned test substance, (2) an inhalation room where the rats are kept, (3) a device which can measure continuously the concentration of the test substance, and other devices.

3. TESTING METHODS

- (1) Rats should be kept in the inhalation room for one hour, where the concentration of the test substance is conditioned and kept at specified concentration. Dose levels should have three levels or more and should be selected so that it produces evident toxicity and mortality.
- (2) Rats should be moved to the feeding cage and observed for 14 days after dosing and the mortality of rats should be observed.
- (3) LD_{50} should be calculated by using statistical methods on the basis of the number of dead rats within 14 days after dosing.

D. FIXED DOSE TOXICITY TEST

The fixed dose toxicity test is conducted according to the testing methods specified in item 2 using the animal species specified in item 1 and examines the presence of mortality among the species tested.

1. SELECTION OF ANIMAL SPECIES EMPLOYED

The animals employed for testing include 3 males and 3 females each of rats and mice of commonly used laboratory strains with an age of approx. 6 weeks.

2. TESTING METHODS

- (1) The test substance is administered in a single dose to the rats by gavage using a stomach tube. When the test substance is in a solid form, the test substance should be dissolved in water or suspended in a suitable vehicle.

When some agent for suspending the test substance is utilized, there should be a reference dose group which is dosed only with such an agent. The same procedures should be applied for a test substance in liquid form with high kinematic viscosity. The dose level of the test substance administered should be 2,000mg/1 kilogram body weight.

In case that the test substance is in the form of dust or mists, the animal employed should be kept for one hour in the inhalation room where the concentration should be conditioned and kept at 10 mg/litre.

- (2) Rats should be observed for 14 days after dosing and the mortality of rats should be observed.

Remarks

Half-death weight refers to the value in milligrams for one kilogram by weight of test species when the mortality of half of the species number has been confirmed.

ANNEX 8

The corrosion test for metals uses the apparatuses specified in item 1 and, according to the testing methods specified in item 2, soaks the test metal chip into the test substance and measures the decrease in mass after soaking.

1. APPARATA

(1) Soaking devices

A flat-bottom glass triangular flask with a capacity of 1,000 cm³ which is attached with a glass vertical reverse condenser with enough capacity for cooling.

(2) Heating device

A pyrostat and other necessary devices which can keep the test substance at 55°C (hereafter referred to as heating devices).

(3) Chemical balance

A chemical balance which can measure at the level of 1 milligram.

(4) Polishing paper

Polishing paper No. 600 specified by the JISR 6252 "Polishing Paper" (1976).

2. TESTING METHODS

- (1) Polish a test metal chip of 10 cm long, 1 cm wide and 1 cm thick, which is specified in JISG 3101 (1987) with the polishing paper. After washing the polished chip by water, remove oil component with an appropriate solvent such as ethanol.

- (2) Measure the weight of the test chip by using a chemical balance.

- (3) Pour the test substance in liquid form into the soaking device and keep the test metal chip with an appropriate holder so that one half of the test metal chip in the distance of length will be in the test substance.

- (4) Use the heating device to heat the test substance and the test metal chip up to 55°C and keep the temperature for 120 hours.

- (5) After 120 hours soaking, take out the test metal chip and wash it by water. Then remove the oil component as described in (1). Measure the weight by using a chemical balance.

- (6) Calculate the corrosion rate by using the following formula:

$$X = \frac{W \times 10^3}{d \times S \times T}$$

X: Corrosion rate (unit: mm/year)

W: Weight reduction after soaking (unit: grams)

d: Density of the test metal chip (unit: g/cm³)

S: Surface area of the test metal chip soaked into the test substance (unit: cm²)

T: Time length for soaking (unit: days)

Remark:

The conditions of the soaked portion and unsoaked portion (part in contact with the steam) of the test chip should be observed and recorded in as much detail as possible.

ANNEX 9
DISPOSAL OPERATIONS
(Regulations 11, 12 and 14)

- | | |
|---|--|
| D1 Deposit into or onto land, (eg, landfill, etc). | D12 Repackaging prior to submission to any of the operations in Annex III. |
| D2 Land treatment, (eg, biodegradation of liquid or sludgy discards in soils, etc). | D13 Storage pending any of the operations in Annex III. |
| D3 Deep injection, (eg, injection of pumpable discards into wells, salt domes or naturally occurring repositories, etc). | D14 Use as a fuel (other than in direct incineration) or other means to generate energy. |
| D4 Surface impoundment, (eg. placement of liquid or sludge) | D14 Solvent reclamation/regeneration of organic substances which are not used as solvents. |
| D5 Discards into pits, ponds, or lagoons, etc). | D16 Reclamation/recycling of organic substances which are not used as solvents. |
| D6 Biological treatment not specified elsewhere in this Annex which results in final compounds or mixtures which are discarded by means of any of the operations in Annex III. | D17 Reclamation/recycling of metals and metal compounds. |
| D7 Physics-chemical treatment not specified elsewhere in this Annex which results in final compounds or mixtures which are discarded by means of any of the operations in Annex III, (eg, evaporation, drying, calcination, neutralization, precipitation, etc.). | D18 Reclamation/recycling of other inorganic materials. |
| D8 Incineration on land. | D19 Regeneration of acids and bases. |
| D9 Incineration at sea. | D20 Recovery of components used for pollution abatement. |
| D10 Permanent storage, (e.g. emplacement of containers in a mine, etc). | D21 Recovery of components from catalysts. |
| D11 Blending or mixing prior to submission to any of the operations in Annex III. | D22 Used oil re-resulting in benefit to agriculture or ecological improvement. |
| | D23 Land treatment resulting in benefit to agriculture or ecological improvement. |
| | D24 Uses of residual materials obtained from any of the operations numbered D1-D25. |
| | D25 Exchange of wastes for submission to any of the operations numbered D1-D26. |
| | D26 Accumulation of material intended for any operation in Annex III. |

(To be completed in Triplicate)

First Schedule

FORM WM I

REPUBLIC OF UGANDA

THE NATIONAL ENVIRONMENT STATUTE, NO. 4 OF 1995

The Wastes Management Regulations, 1998

**APPLICATION FOR A LICENCE FOR TRANSPORTATION OF WASTES
(Regulation 6)**

I hereby apply for a Licence to transport waste, of which particulars are given below.

Name and address of applicant

.....

Location and District applied

Number and type of vehicles to transport waste

Quantity of wastes per vehicle to be transported

.....

Quantity of wastes to be disposed of (tonnes/kg per annum) and source.

.....

Licensed sites/plant to which wastes are to be transported.

.....

Collection schedule

.....

Any other information

.....

.....

Date

Signature

Designation/title:

FOR OFFICIAL USE ONLY

Application received by on 19

Fee paid Shs (in words)

.....

.....

**Chairman
Technical Committee on the Licensing Pollution
National Environmental Management Authority**

(To be completed in Triplicate)

First Schedule

FORM WM II

REPUBLIC OF UGANDA

THE NATIONAL ENVIRONMENT STATUTE, NO. 4 OF 1995

The Wastes Management Regulations, 1998

**APPLICATION FOR A LICENCE TO OWN/OPERATE A WASTE DISPOSAL
SITE/PLANT
(Regulation 11)**

I hereby apply for a Licence to own/operate a waste disposal site/plant, of which particulars are given below.

Name and address of applicant

.....

.....

Location and District of site/plant

.....

Approval of Town and Country Planning Authority

.....

Types of wastes to be disposed of at site/plant

.....

Quantity being disposed of/per annum tonnes/Kg

.....

Type of facilities/treatment to be carried on at site/plant

(a) Land fill

(b) Compost

(c) Incinerator

(d) Other (specify)

.....

Estimated life span of plant/site

.....

Proposed hectarage/area of site/plant (include site plan and design)

.....

Executive Summary of environmental impact statement (please attach)

.....

Any other information

.....

.....

Date:

Signature:

Designation/title:

FOR OFFICIAL USE ONLY

Application received by on 19

Fee paid Shs (in words)

.....

.....

Chairman
Technical Committee on the Licensing Pollution
National Environmental Management Authority

First Schedule

FORM WM III

REPUBLIC OF UGANDA

THE NATIONAL ENVIRONMENT STATUTE, NO. 4 OF 1995

The Wastes Management Regulations, 1998

**LICENCE TO TRANSPORT WASTES
(Regulation 7)**

Licence No TR/HW

Name

Address

You are hereby licensed to transport wastes to

.....
(location/district)

from

.....
(location/ district)

Number, type and registration number of vehicles licensed

.....

This licence is valid from 19 to 19

This licence is granted subject to the following conditions:

.....

.....

Date:

Signature:

**Chairman
Technical Committee on the Licensing Pollution
National Environmental Management Authority**

First Schedule

FORM WM IV

REPUBLIC OF UGANDA

THE NATIONAL ENVIRONMENT STATUTE, NO. 4 OF 1995

The Wastes Management Regulations, 1998

**LICENCE TO OWN/OPERATE A WASTE DISPOSAL SITE/PLANT
(Regulation 12)**

Licence No TR/HW

Name

Address

You are hereby licensed to own/operate a waste disposal site/plant at Plot No

.....
(Village, parish, sub-county, county, district)

This licence is valid from 19 to 19

This licence is granted subject to the following conditions:

.....

.....

Date:

Signature:

Chairman
Technical Committee on the Licensing Pollution
National Environmental Management Authority

(To be completed in Triplicate)

First Schedule

FORM WM V

REPUBLIC OF UGANDA

THE NATIONAL ENVIRONMENT STATUTE, NO. 4 OF 1995

The Wastes Management Regulations, 1998

**APPLICATION FOR A LICENCE FOR STORAGE OF HAZARDOUS WASTES
(Regulation 6)**

I hereby apply for a Licence to store hazardous wastes, of which particulars are given below.

Name and Address of Applicant:

.....

Address of Premises where storage will be done:

.....

(Plot no. Village, parish, sub-county, county district)

Type of wastes to be stored (indicate number in accordance with Sixth Schedule and describe) whether liquid, solid or gaseous and their possible impacts:

.....

.....

.....

.....

.....

Quantity of wastes to be stored in kg or tons for solids or in cm³ if liquids or gases:

.....

Type of containers in which the wastes are packaged

.....

.....

.....

Type of labels on the container (Describe and attach sample)

.....

.....

Are there any other materials stored in the premises ? (Describe)

.....
.....

Surroundings of the premises (Describe whether industrial, residential, commercial and whether it is near schools or recreational areas)

.....
.....
.....
.....
.....

Duration of storage applied for:

Final destination of the wastes

Specifications of the construction of the premises including ventilation of other measures and suitability for storage of the specific wastes. (Describe and attach building plans)

.....
.....
.....

12. Describe the safety measures at the premises

.....
.....
.....

13. Measures for containment and treatment of leachate if applicable

.....
.....
.....

Date: Signature of Applicant

FOR OFFICIAL USE ONLY

Date received

Fee paid shs (in words)

Comments of the lead agency

Comments of the Authority

Date

Name and signature of Responsible Officer

Decisions of the Technical Committee on the Licensing of Pollution and comments

Date

Signature
Chairman Technical Committee on Licensing of Pollution

Date when decision was communicated to Applicant (attach communication to this form)

Date

Signature

Name of Responsible Officer

First Schedule

FORM WM VI

REPUBLIC OF UGANDA

THE NATIONAL ENVIRONMENT STATUTE, NO. 4 OF 1995

The Wastes Management Regulations, 1998

**LICENCE FOR STORAGE OF HAZARDOUS /NON HAZARDOUS WASTES
(Regulation 7)**

Licence No. ST/HW

Name and Address

.....
(Plot no. Village, parish, sub-county, county, district)

You are hereby licensed to operate a storage facility for the following wastes (indicated by number in Sixth Schedule)

1.
2.
3.
4.
5.
6.
7.
8.

at the following address:

.....
(Plot no. Village, parish, sub-county, county, district)

This licence shall be valid from (date) 19 to (date) 19

This licence is subject to the following conditions:

.....
Date

Signature
Chairman Technical Committee on Licensing of Pollution

Second Schedule

FORM WM VII

REPUBLIC OF UGANDA

THE NATIONAL ENVIRONMENT STATUTE, NO. 4 OF 1995

The Wastes Management Regulations, 1998

**MOVEMENT DOCUMENT FOR TRANSBOUNDARY MOVEMENT WASTES
(Regulation 16)**

Notification for waste shipment was issued at:

Date of issuance __/__/__

9 Notification for a single shipment

9 Notification for multiple shipments for the period _____

This shipment is number. _____ of total shipments included in the general
notification number: _____

1. EXPORTER (NOTIFIER) (1)

Name: _____ Telephone: _____
Address: _____
- Telefax: - _____
E-mail: _____

Contact person (name, address, telefax)

2. GENERATOR(S) OF WASTE

Name: _____ Telephone: _____
Address: _____
Telefax: _____
E-mail: _____

Contact Person (name, address, telephone, telefax, e-mail):

Process by which the waste was generated:

Site of generation:

3. DISPOSER OF THE WASTE

Name: TO BE COMPLETED BY THE DISPOSER
 Address:
 Telephone: Telefax:
E-mail

Contact Person in case of emergency Certification of receipt of waste at designated
 (name, address, telephone, telefax, e-mail): disposal facility.

Approximate date of Disposal: Method of disposal (3)
D code R code.....

Actual Site of Disposal: Date __/__/__
Signature:
Actual date of disposal: __/__/__
Signature of disposer:

4. WASTE

Description of the waste:

Y number	H number	UN class	UN number
UN Shipping name		IWIC code	

Physical state at 20 °C:

powder solid paste/viscous sludge liquid gaseous
 other _____

Estimated quantity (kg or L) per shipment:

1st 2nd 3rd 4th 5th

Type of Packaging

Number of packages

State the special handling requirements, including emergency provisions in case of accidents:

5. ITINERARY

Country of export:

Point of exit (when designated):

Transit countries:

Point of entry (when designated)

1)

Point of exit (when designated):

2)

Point of entry (when designated):

Point of exit (when designated):

3)

Point of entry (when designated):

Point of exit (when designated):

4)

Point of entry (when designated):

Point of exit (when designated):

Country of import:

Point of entry (when designated):

6. CARRIER OF THE WASTE or his Agent

1)

Name:

Date of trans boundary movement

Address:

started: _/ _/ _

Telephone:

Telefax:

E-mail

Signature of the carrier(s) or agent:

Licence (when applicable):

Contact person (name, address, telephones)

Means of transportation:

sea air road rail

2)

Name:

Date of trans boundary movement

Started: _/ _/ _

Address:

Telephone:

Telefax:

E-mail

Signature of the carrier(s) or agent:

Licence (when applicable):

Contact Person (name, address, telephone, telefax, e-mail):

Means of transportation:

sea air road rail

3)

Name:

Date of trans boundary movement
started: _/ _/ _

Address:

Telephone: _____

Signature of the carrier(s) or agent:

Contact Person (name, address, telephone, telefax, e-mail):

Licence (when applicable):

Means of transportation:

sea air road rail

7. CONSENT OF THE COMPETENT LOCAL AUTHORITY

(to be completed by the generator/exporter/ importer)

I/we being the generator/exporter/
importer hereby declare/guarantee that the information
contained in this document is correct and true.

signed (generator/importer/exporter)

.....
Date:

I/we being the generator/exporter/
importer hereby declare/guarantee that there are no
objections from all the contracting parties to the Basel
Convention and local authorities through which the
wastes will be transported.

signed (generator/importer/exporter)

.....
Date:

(attach copies of no objections/consent)

Date of consent of Exporting

State: _/ _/ _

Date of consent of Transit

State: _/ _/ _

Date of consent of Transit

State: _/ _/ _

Date of consent of Transit

State: _/ _/ _

ANNEX to the Notification and Movement Document

1. The Notifier is:
- the person who wants to transit hazardous waste through Uganda.
2. "Designation of the waste" means a designation of the nature and the concentration of the most hazardous components, in term of toxicity and other dangers presented by the waste both in handling and in relation to the proposed disposal method.
3. As per Annex IV of the Basel Convention: D or R code.
4. This must include the point of entry and the point of exit of the waste, inside or outside the country.
5. In the case of a general notification covering several shipments, the expected dates of each shipment have to be specified. If this is not known, the expected frequency of the shipments.

Second Schedule

FORM WM VIII

REPUBLIC OF UGANDA

THE NATIONAL ENVIRONMENT STATUTE, NO. 4 OF 1995

The Wastes Management Regulations, 1998

LICENCE TO EXPORT WASTES
(Regulation 16)

Licence No. EX/HW

Name and Address

.....
(Plot no. Village, parish, sub-county, county, district)

You are hereby licensed to export the following wastes (indicated by number in Sixth Schedule)

.....
.....

To *(name and address)*

.....
.....

This export shall be made through border/custom control post

This licence shall be valid from *(date)* 19..... to *(date)* 19.....

This licence is subject to the following conditions:
(attach a copy of authorization by the state to which the export is to be made)

- 1
- 2
- 3
- 4
- 5
- 6

Date

Signature
Chairman Technical Committee on Licensing of Pollution Second Schedule

Second Schedule

FORM WM IX

REPUBLIC OF UGANDA

THE NATIONAL ENVIRONMENT STATUTE, NO. 4 OF 1995

The Wastes Management Regulations, 1998

**LICENCE TO IMPORT WASTES
(Regulation 18)**

Licence No. IM/HW

Name and Address of Importer

.....

Plot No. Village, parish, sub-county, county, District)

Purpose for which the imported wastes are licenced.

.....

You are hereby licensed to import the following wastes

.....

.....

.....

.....

.....

From (*name and address*)

.....

To (*name and address*)

.....

.....

This import shall be made through border/customs control post.

This licence shall be valid from (*date*) 19.... to (*date*) 19....

This licence is subject to the following conditions:

(attach a copy of authorization by the state from which the importation is to be made)

1

2

3

4

5

6

Date

Signature
Chairman Technical Committee on Licensing of Pollution Second Schedule

To be filled in triplicate

Second Schedule

FORM WM X

REPUBLIC OF UGANDA

THE NATIONAL ENVIRONMENT STATUTE, NO. 4 OF 1995

The Wastes Management Regulations, 1998

NOTIFICATION DOCUMENT FOR TRANSBOUNDARY MOVEMENT OF WASTES

(Regulation 17)

(for transit purposes only)

1. NOTIFIER*

Name

Telephone

Address

Telefax

E-mail

Contact Person (name, address, telefax, e-mail)

2. GENERATOR(S) OF WASTE

Name

Telephone

Address

Telefax

E-mail

Contact Person (name, address, telephone, telefax, e-mail.)

Process by which the waste was generated

Site of generation

** The Notifier is the exporter or importer of wastes*

3. REASON FOR WASTE EXPORT/IMPORT

Why the Waste can't be disposed in the country of origin

Why the waste has to be exported/imported through Uganda.

4. WASTE

Waste Description

Y Number

H number

UN class

UN number

shipping name

IWIC code

Physical state at 20° C

Powder

Solid

Paste/Viscous

sludge

liquid

gaseous

other (*specify*) _____

Estimated quantity (*kg or L*) of the shipment

Type of Packaging

Number of Packages

Special handling requirements including emergency provisions in case of accidents:

Method of disposal:

5. EXPORTER/IMPORTER OF THE WASTE

Competent Authority and details of approval

Exporter/Importer of the Waste in the country of origin/destination

Name

Telephone

Telefax

E-mail.

6. DISPOSER OF THE WASTE

Contact person in case of emergency

Name

Telephone

Telefax

E-mail.

Approximate Date of Disposal

Actual Site of Disposal

Signature and Official Stamp of Disposer

7. TRANSIT

Projected length of time the waste shipment shall be on transit on Uganda territory.

Expected date of Entry Expected date of exit

Means of Transport envisaged

Information relating to insurance

(Guarantee that the person responsible shall fully compensate any damage caused to human health, property or to the environment, or the environment by the waste in question during transit)

8. DECLARATION

I/we* being the exporter/importer* hereby declare that on I/we entered into a contract with the disposer and that I/we shall be bound by the terms of the said contract. *(attach a copy of contract)*

Signed
(Exporter/Importer)*

I/we* being the exporter/importer* hereby guarantee/declare that the above information is correct and true.

Signed
(Exporter/Importer)*

** delete whichever is inapplicable*

THIRD SCHEDULE (REGULATION 2)

LIST OF HAZARDOUS CHARACTERISTICS

UN	CODE	CHARACTERISTICS CLASS*
1.	H1.	<p>Explosive</p> <p>An explosive substance or waste is a solid or liquid substance or waste (or mixture of substances or wastes) which is in itself capable by chemical reaction or producing gas at such a temperature and pressure and at such a speed as to cause damage to the surroundings.</p>
3.	H3	<p>Flammable Liquids</p> <p>The word 'flammable' has the same meaning as 'inflammable'. Flammable liquids are liquids, or mixtures of liquids, or liquids containing solids in solution or suspension (for example paints, varnishes, lacquers, etc, but not including substances or wastes otherwise classified on account of their dangerous characteristics) which give off a flammable vapour at temperatures of not more than 60.5 °C, closed-cup test, or not more than 65.6 °C, open-cup test. (Since the results of open-cup tests and of closed-cup tests are not strictly comparable and even individual results by the same test are often variable, regulations varying from the above figures to make allowance for such difference would be within the spirit of this definition).</p>
4.1	H4.1	<p>Flammable solids</p> <p>Solids, or waste solids, other than those classed as explosives, which under conditions encountered in transport are readily combustible, or may cause or contribute to fire through friction.</p>
4.2	H4.2	<p>Substances or wastes liable to spontaneous combustion</p> <p>Substances or wastes which are liable to spontaneous heating under normal conditions encountered in transport, or to heating up on contact with air, and being then liable to catch fire.</p>
4.3	H4.3	<p>Substances or wastes which, in contact with water emit flammable gases</p> <p>Substances or wastes which, by interaction with water, are liable to become spontaneously flammable or to give off flammable gases in dangerous quantities.</p>
5.1	H5.1	<p>Oxidizing</p> <p>Substances or wastes which, while in themselves not necessarily combustible, may, generally by yielding oxygen, cause or contribute to the combustion of other materials.</p>
5.2	H5.2	<p>Organic peroxides</p> <p>Organic substances or wastes which contain the bivalent-O-O-structure are thermally unstable substances which may undergo exothermic self-accelerating decomposition.</p>
6.1	H6.1	<p>Toxic or Poisonous (Acute)</p> <p>Substances or wastes liable either to cause death or serious injury or to harm human health if swallowed or inhaled or by skin contact.</p>

6.2	H6.2	Infectious substances extremely hazardous to health. Substances or wastes containing viable micro-organisms or their toxins which are known or suspected to cause disease in animals or humans.
8.	H8	Corrosives Substances or wastes which, by chemical action, will cause severe damage when in contact with living tissue, or in the case of leakage will materially damage, or even destroy, other goods or the means of transport; they may also cause other hazards.
9.	H10	Liberation of toxic gases in contact with air or water Substances or wastes which, by interaction with air or water, are liable to give off toxic gases in dangerous quantities.
	H11	Toxic (delayed or chronic) Substances or wastes which, by intersection with air or water, are liable to give off toxic gases in dangerous quantities. Substances or wastes which, if they are inhaled or ingested or if they penetrate the skin, may involve delayed or chronic effects, including carcinogenicity.
	H12	Ecotoxic Substances or wastes which if released present or may present immediate or delayed adverse impacts to the environment by means of bio-accumulation and/or toxic effects upon biotic systems.
	H13	Capable, by any means, after disposal, of yielding another material, e.g. leachate, which possesses any of the characteristics listed above.
10.	H14	Radioactive waste
11.	H15	Persistent Waste; wastes which contaminate the environment for long periods of time.
12.	H 16	Carcinogenic wastes which may lead to development of cancer in human beings or animals.

*Corresponds to the hazardous classification system included in the United Nations Recommendations on the Transport of Dangerous Goods (ST/SG/AC.10/1/Rev.5. United Nations. New York, 1988).

FOURTH SCHEDULE

(Regulation 2)

GUIDELINES FOR THE DETERMINATION OF SOME HAZARDOUS CHARACTERISTICS

Testing Methods	Judging Criteria
1 Thermal analysis test using 2,4-dinitrotoluene and dibenzoyl peroxides as standard substances, as specified in Annex 1	The results of thermal analysis of test substance are placed on the rectangular coordinates, where the common logarithm of corrected initiation temperature (real-measured initiation temperature - 25°C) is on X axis (horizontal) and the common logarithm of calorific value is on Y axis (vertical). Then, a plot of the common logarithm of corrected initiation temperature and adjusted calorific value (real-measured calorific value multiplied by 0.7) of 2,4-dinitrotoluene and a plot of the common logarithms of corrected initiation temperature and adjusted calorific value (real-measured calorific value multiplied by 0.8) of dibenzoyl peroxide are placed in the same coordinate. The criterion is whether the plot of test substance in question is placed on or above the line to link the plots of 2,4-dinitrotoluene and dibenzoyl peroxides.
2 Flash point test by Tag closed cup apparatus, as specified in I of Annex 2 (Flash point test by Seta closed cup apparatus as specified in II of Annex 2 should be utilized instead, in case that, flash point measured by Tag closed cup apparatus be between 0°C and 80°C and also kinetic viscosity of test substance in question at that flash point is of 10 cent-stokes or more.)	Flash point of 60.5°C or less
3 Small gas flash ignition test, as specified in I of Annex 3, and flash point test by Seta closed cup apparatus, as specified in II of Annex 3	The criteria are a) whether test substance ignites within 10 seconds and burning continues by small gas flash ignition test, or b) whether flash point is less than 40°C by Seta closed cup flash point test.
4 Spontaneous combustion test as specified in Annex 4	The criteria are a) whether gas substance combusts, or b) whether the filter paper becomes scorched.
5 Reaction-to-water test, as specified in Annex 5	The criteria are a) whether gas generated by the reaction of test substance to water auto-ignites or catches fire, or b) whether gas generated per one kilogram of test substance is one liter or more and also that has flammable component.
6 Burning test using ammonium persulfate as standard substance, as specified in I of Annex 6 (<i>applicable only for test substance in solid form</i>)	The criterion is whether the burning time of test substance is equal to or shorter than that of standard substance.

7	Burning test using 90% nitric acid solution as standard substance, as specified in II of Annex 6 <i>(applicable only for test substance in liquid form)</i>	The criterion is whether the burning time of test substance is equal to or shorter than that of standard substance.
8	Oral toxicity test, as specified in I of Annex 7	a) LD ₅₀ of 200 mg/kg or less <i>(applicable for test substance in solid form)</i> b) LD ₅₀ of 500 mg/kg or less <i>(applicable for test substance in liquid form)</i>
9	Dermal toxicity test as specified in II of Annex 7	LD ₅₀ of 1,000 mg/kg or less
10	Inhalation toxicity test, as specified in III of Annex 7 <i>(applicable only for test substance in form of dust or mist.)</i>	LC ₅₀ of 10 mg/kg or less
11	Corrosion test for metals, as specified in Annex 8.	Corrosion rate of Metal chip of 6.25 mm/year

Remarks:

1. Test substances which are determined not to fall into the groups of class 1 (explosives) and class 5.1 (organic peroxides) based on the rules of the United Nations Recommendations on the Transport of Dangerous Goods (ST/SG/AC.10/1/Rev. 7) adopted in New York by the United Nations in 1990 (hereafter referred to as "United Nations Recommendations") shall be recognized as not possessing the properties given in the lower row of item 1 for corresponding test given in the relevant middle row of that item.
2. Test substances which are determined not to fall into the group of class 3 (flammable liquids) based on the rules of the United Nations Recommendations shall be recognized as not possessing the properties given in the lower row of item 2 for the corresponding test given in the relevant middle row of the same item.
3. Test substances which are determined not to fall into the group of class 4 (flammable solids) based on the rules of the United Nations Recommendations shall be recognized as not possessing the properties given in the lower row of item 3 for the corresponding test given in the relevant middle row of the same item.
4. Test substances which are determined not to fall into the group of class 5.1 (oxidizing substances) based on the rules of the United Nations Recommendations shall be recognized as not possessing the properties given in the lower row of item 4 for the corresponding test given in the relevant middle row of the same item.
5. Test substances for which no death of laboratory animals are observed as a result of fixed dose toxicity test specified in IV of Annex 7, shall be recognized as not possessing the properties given in the lower rows of item 7 for the corresponding tests given in the relevant middle rows of the same item.
7. Test substances which are determined not to fall into the group of class 8 (corrosive substances) based on the rules of the United Nations Recommendations shall be recognized as not possessing the properties given in the lower row of item 8 for the corresponding test given in the relevant middle row of the same item.

SIXTH SCHEDULE
(Regulations 2 and 3)

WASTES CONSIDERED HAZARDOUS

The following wastes shall be considered hazardous wastes:

- Y0 All wastes containing or contaminated by radio-nuclides the concentration or properties of which result from human activity.
- Y1 Wastes generated from medical care and/or medical examination in hospitals, clinics, elderly medical care centers and maternity wards and in medical care centres and wastes from medical examination in medical examination laboratories.
- Y2 a) Wastes generated from production and import of pharmaceutical products.
b) Wastes generated from preparation of pharmaceutical products for sale and grant.
- Y3. Waste pharmaceutical, drugs and medicines
- Y4. a) Wastes generated from the production and import of the chemicals including germicides, fungicides, bactericides, insecticides, ratcides, herbicides and other chemicals for prevention of the breeding and extermination of animals, plants and viruses; and growth promoting chemicals, germination control and other chemicals for the promotion and suppression of physiological activities of plants (hereafter referred to as "biocides etc.").
b) Wastes generated from formulation of biocides etc. for sales and grant.
c) Wastes generated from sales and use of biocides etc.
- Y5. a) Wastes generated from the production and import of decay-preventing agents, insect control agents and other chemicals for wood preservation (hereafter referred to as "wood preserving chemicals")
b) Wastes generated from formulation of wood preserving chemicals for sale and grant.
c) Wastes generated from sales and use of wood preserving chemicals.
- Y6. a) Wastes generated from the production and import of organic solvents
b) Wastes generated from formulation of organic solvents for sales and grant.
c) Wastes generated from sales and use of organic solvents.
- Y7. Wastes from heat treatment and tempering operations containing cyanides.
- Y8. Waste mineral oils unfit for their originally intended use.
- Y9. Waste oils/water, hydrocarbons/water mixtures, emulsions.
- Y10 Waste Substances and articles containing or contaminated with Polychlorinated Biphenyls:

(PCBs) and/or Polychlorinated triphenyls (PCTs) and/or Polybrominated Biphenyls (PBBs)

- Y11. Waste tarry residues arising from refining, distillation and any paralytic treatment.
- b) Wastes generated from formulation of inks, etc. for sales and grant
- Y12. a) Wastes generated from the production and import of inks, dyes, pigments, paints, lacquers and varnishes (hereafter referred to as "inks, etc.")
- b) Wastes generated from formulation on inks, etc. for sales and grant
- Y13. a) Wastes generated from production and import of resins, latex, plasticizers, glues/adhesives (hereafter referred to as "resins, etc.")
- b) Wastes generated from formulation of resins, etc. for sales and grant
- c) Wastes generated from sales and use of resins, etc.
- Y14. Waste chemical materials arising from research and development or teaching activities, in the following facilities, which are not identified and/or are new and whose effects on man and/or the environment are not known.
- i) research and examination institutes owned by central and local governments;
- ii) universities, colleges, junior colleges, professional schools and their subsidiary research and study institutes, and;
- iii) institutes for research and development of products and technologies.
- Y15. Wastes of an explosive nature not subject to the Explosives Act, Cap 309.
- Y16. a) Wastes generated from the production and import of sensitive emulsion, developing solution, fixing solution, washing solution and other chemicals and materials for photographs (hereafter referred to as "photographic chemicals, etc.")
- b) Wastes generated from the formulation of photographic chemicals, etc. for sales and grant.
- c) Wastes generated from the sales and use of photographic chemicals, etc.
- Y17. Wastes resulting from the surface treatment of metals and plastics
- Y18. Residues arising from industrial waste disposal operations
- Y19. Wastes containing metal carbonyls listed as follows:
- a) Wastes containing 0.1% or more by weight of any of the following metal carbonyls: Iron-pentacarbonyl, Nickel-tetracarbonyl, Methyl cyclopentadienyl manganese-tricarbonyl
- b) Wastes containing other metal carbonyls
- Y20. Wastes containing beryllium and/or beryllium compounds listed as follows:

a) Wastes containing 0.1% or more by weight of any of the following beryllium and/or beryllium compounds:
Beryllium, Beryllium chloride, Beryllium oxide, Beryllium nitrate, Beryllium hydroxide, Beryllium fluoride, Beryllium sulfate

b) Wastes containing other beryllium and/or beryllium compounds

Y21. Wastes containing hexavalent chromium compounds listed as follows:

a) Wastes containing 0.1% or more by weight of any of the following hexavalent chromium compounds:
Chromium oxychloride, Chromic acid solution, Zinc chromate, Potassium zinc chromate, Potassium chromate, Calcium chromate, Silver chromate, Strontium chromate, Sodium chromate, Lead chromate, Barium chromate, Bismuth chromate, chromosulphuric acid, chromium trioxide, anhydrous, Ammonium dichromate, Potassium dichromate, Sodium dichromate, Lead chromate molybdate sulfate.

b) Wastes containing other hexavalent chromium compounds

c) Wastes to be exported for the purpose of D1 to D4 or R10 of Annex IV of the Convention which cannot meet the following criteria:

i) Wastes in solid form, which cannot meet the Ambient Soil Quality Standards established under the National Environment Statute

Y22. Wastes containing copper compounds listed as follows:

a) Wastes containing 0.1% or more by weight of any of the following copper compounds:
Copper acetoarsenite, Copper N, N'-Ethylenebis (saricylideneaminat), Cuprous chloride, Cupric chloride, Copper cyanide, Sodium cuprocyanide, Cupriethylenediamine solution, Copper arsenate, and Copper sulfate

b) Wastes containing 1% or more by weight of any of the following copper compounds:
Copper (II) diammonium chloride dihydrate, Potassium cupric chloride, Copper acetate, Potassium cuprocyanide, Cupric nitrate, Cupric carbonate, Cuprous thiocyanate, Copper pyrophosphate, Cupric fluoride, and Cuprous iodide

c) Wastes containing copper compounds other than those listed in a) and b) above.

d) Wastes in solid form to be exported for the purpose of R10 of Annex IV of the Convention, which cannot meet the Ambient Soil Quality Standards in terms of copper compounds.

Y23. Wastes containing zinc compounds listed as follows:

a) Wastes containing 0.1% or more by weight of any of the following zinc compounds:
Zinc dithionite, Zinc arsenite, Zinc chloride, Zinc cyanide, Zinc arsenate

b) Wastes containing 1% or more by weight of any of the following zinc compounds:
Zinc chlorate, Zinc peroxide, Zinc permanganate, Zinc chromate, Zinc fluorosilicate, Zinc acetate, Diethyl zinc, 2, 5-Diethoxy-4-morpholinobenzenediazonium zinc chloride, Dimethyl zinc, 4-Dimethylamino-6-(2-dimethylaminoethoxy) toluene-2-diazonium zinc chloride, zinc oxalate, Zinc

bromate, Zinc nitrate, Zinc thiocyanate, 3-(2-Hydroxyethoxy)-4-pyrrolidin-1-ylbenzenediazonium zinc chloride, Zinc pyrophosphate, Zinc Fluoride, 4-[Benzyl(ethyl amino)-3-ethoxybenzenediazonium zinc chloride 4-[Benzyl (methyl amino)-3-ethoxybenzenediazonium zinc chloride, Zinc methylthiocarbamate, Zinc sulfate, Zinc phosphide, Zinc phosphate

c) Wastes containing zinc compounds other than those listed in a) and b) above

Y24. Wastes containing arsenic and/or arsenic compounds listed as follows:

a) Wastes containing 0.1% or more by weight of any of the following arsenic and/or arsenic compounds:

Arsenic, Copper acetoarsenite, Zinc arsenite, Calcium arsenite, Silver arsenite, Strontium arsenite, Ferric arsenite, Copper arsenite, Sodium arsenite, Lead arsenite, Alkylarsenic compounds, Ethyldichloroarsine, Cacodylic acid, Sodium cacodylate, Diarsenic pentoxide, Arsenic pentafluoride, Arsenic trichloride, Arsenous trioxide, Arsenic tribromide, Acid manganese arsenate, Arsenic trifluoride, Diphenylamine chloroarsine, Diphenylchloroarsine, Tetraarsenic tetrasulfide, Vinyzene, Arsenic acid, Zinc arsenate, Ammonium arsenate, Potassium arsenate, Calcium arsenate, Sodium arsenate dibasic, Calcium arsenate, Ferrous arsenate, Mercuric Ferric arsenate, Copper arsenate, Sodium arsenate, Lead arsenate, magnesium arsenate, Calcium arsenate fluoride, benzenearsonic acid, Potassium Metaarsenite, Sodium metaarsenite, Calcium methanearsonate, Ferric methanearsonate, Arsenic disulfide, Arsenic trisulfide.

b) Wastes containing arsenic and/or arsenic compounds other than those listed in the above a)

c) Wastes to be exported for the purpose of DI to D4 or R10 of Annex IV of the Convention, which cannot meet the following criteria:

i) Wastes in solid form, which cannot meet the Ambient Soil Quality Standards in terms of arsenic and/or arsenic compounds

ii) Wastes in liquid form, which cannot meet the waste water discharge standards to solid in terms of arsenic and/or arsenic compounds

d) Wastes to be exported for the purposes other than those listed in c) above, and which cannot meet the following criteria;

i) Wastes in solid form, which cannot meet the standards in Attached Table 1 of the verification standards for hazardous wastes in terms of arsenic and/or arsenic compounds

ii) Wastes in liquid form, which cannot meet the standards in Attached Table No.1 of the effluent quality standards in terms of arsenic and/or arsenic compounds.

Y25. Wastes containing selenium and/or selenium compounds listed as follows:

a) Wastes containing 0.1% or more by weight of any of the following selenium and/or selenium compounds:

Selenium, Sodium selenite, Selenium oxychloride, Selenium chloride, Selenic acid, Sodium selenite, Selenium dioxide, Selenium disulphide, cadmium red

b) Wastes containing 1% or more by weight of any of the following selenium and/or selenium compounds:

Selenious acid, Barium selenite, Ferrous selenide

c) Wastes containing selenium and/or selenium compounds other than those listed in a) and b) above

Y26. Wastes containing cadmium and/or cadmium compounds listed as follows:

a) Wastes containing 0.1% or more by weight of any of the following cadmium and/or cadmium compounds:

Cadmium, Cadmium Chloride, Cadmium acetate, dihydrate, Cadmium oxide, Cadmium cyanide, Dimethyl cadmium, Cadmium bromide, Cadmium nitrate, Cadmiumhydroxide, Cadmium stearate, Cadmium carbonate, Cadmium iodide, Cadmium laurate, Cadmium sulfate, Cadmium yellow, Cadmium red

b) Wastes containing cadmium and/or cadmium compounds other than those listed in the above a)

c) Wastes to be exported for the purpose of D1 to D4 or R10 of Annex IV of the Convention, which cannot meet the following criteria:

i) Wastes in solid form, which cannot meet the Ambient Soil Quality Standards in terms of cadmium and/or cadmium compounds;

ii) Wastes in liquid form, which cannot meet waste water discharge standards to soil in terms of cadmium and/or cadmium compounds.

d) Wastes to be exported for purposes other than those listed in the above c), which cannot meet the following criteria;

i) Wastes in solid form, which cannot meet the standards in Attached Table 1 of the verification standards for hazardous wastes in terms of cadmium and/or cadmium compounds;

ii) Wastes in liquid form, which cannot meet the standards in Attached Table 1 of the effluent quality standards in terms of cadmium and/or cadmium compounds.

Y27. Wastes containing antimony and/or antimony compounds listed as follows:

a) Wastes containing 0.1% or more by weight of any of the following antimony and/or antimony compounds:

Sodium antimonate, Lead antimonate, Antimony pentachloride, Antimonypentoxide, Antimonypentafluoride, Antimony trichloride, Antimony trioxide, Potassium hexahydroxoantimonate (V), Antimony trifluoride, Potassiumantimonyl tartrate, Antimony lactate, Sodiummetaantimonate

b) Wastes containing 1% or more by weight of antimony;

c) Wastes containing antimony and/or antimony compounds other than those listed in the above a) and b)

Y28. Wastes containing tellurium and/or tellurium compounds listed as follows:

a) Wastes containing 1% or more by weight of any of the following tellurium and/or tellurium compounds:

Tellurium, Diethyl tellurium, Dimethyl tellurium.

(b) Wastes containing tellurium and/or tellurium compounds other than those listed in the above a,
Y29. Wastes containing mercury and/or mercury compounds listed as follows:

a) Wastes containing 0.1% or more by weight of any of the following mercury and/or mercury compounds:

Mercury, Mercury benzoate, Ethylmercury chloride, Mercurous chloride, Mercuric chloride, Mercury ammonium chloride, Methylmercuric chloride, Mercuric oxycyanide, Mercury oleate, Mercury gluconate, Mercury acetate, Mercury salicylate, Mercuric oxide, Mercury cyanide, Mercuric potassium cyanide, Diethyl mercury, Dimethyl mercury, Mercury (II) bromide, Mercurous nitrate, Mercuric nitrate, phenyl mercuric hydroxide, Mercuric thiocyanate, Mercuricarsenate, mercury (II) iodide, Mercury potassium iodide, Mercury fulminate, Mercury sulphide, Mercurous sulfate, Mercuric sulfate

b) Wastes containing 1% or more by weight of any of the following mercury and/or mercury compounds:

Mercury nucleate, Mercurous acetate, Phenylmercury acetate, Phenylmercuric nitrate, Thimerosal;

c) Wastes containing mercury and/or mercury compounds other than those listed in a) and b) above

d) Wastes to be exported for the purpose of D1 to D4 or R 10 of Annex IV of the Convention, which cannot meet the following criteria:

i) Wastes in solid form, which cannot meet the Ambient Soil Quality Standards in terms of mercury and/or mercury compounds;

ii) Wastes in liquid form, which cannot meet the waste water discharge standards to soil in terms of mercury and/or Mercury compounds.

e) Wastes to be exported for purposes other than those listed in the above d), which cannot meet the following criteria;

i) Wastes in solid form, which cannot meet the standards in Attached Table 1 of the verification standards for hazardous wastes in terms of mercury and/or mercury compounds;

ii) Wastes in liquid form, which cannot meet the standards in Attached Table 1 of the effluent quality standards in terms of mercury and/or mercury compounds.

Y30. Wastes containing thallium and/or thallium compounds listed as follows:

a) Wastes containing 0.1% or more by weight of any of the following thallium and/or thallium compounds:

Thallium chlorate, Thallium acetate, Thallic oxide, Thallium bromide, Thallous nitrate, Thallium iodide, Thallium sulfate

b) Wastes containing 1% or more by weight of thallium

c) Wastes containing thallium and/or thallium compounds other than those listed in a) and b) above

Y31. Wastes containing lead and/or lead compounds listed as follows:

- a) Wastes containing 0.1% or more by weight of any of the following lead and/or lead compounds: Lead, Lead azide, Lead arsenite, Lead monoxide, Lead chloride, Basic lead silicate, Lead perchlorate, Lead chromate, Lead silicate, lead acetate, Tribasic lead sulfate, lead cyanamide, Tetraalkyllead, Lead cyanide, Lead tetroxide, lead nitrate, Lead hydroxide, lead styphnate, Lead stearate, Lead carbonate, Lead naphthenate, Calcium plumbate, dibasic lead sulfite, Dibasic lead phosphite, Lead stearate dibasic, basic lead phthalate, Lead dioxide, Lead fluoroborate solution, Lead phosphite dibasic, Lead arsenate, Lead fluoride, Lead metaborate, Lead methanesulphonate, Lead iodide, Lead sulfate, Lead chromate molybdate sulfate
- b) Wastes containing lead and/or lead compounds other than those listed in (a) above
- c) Wastes to be exported for the purpose of D1 to D4 or R10 of Annex IV of the Convention, which cannot meet the following criteria;
 - (i) Wastes in solid form, which cannot meet the Ambient Soil Quality Standards in terms of lead and/or lead compounds;
 - ii) Wastes in liquid form, which cannot meet the waste water discharge standards to soil in terms of lead and/or lead compounds;
- d) Wastes to be exported or imported for purposes other than those listed in c) above, which can not meet the following criteria.
 - (i) Wastes in solid form, which can not meet the standards Attached Table 1 of the verification standards for hazardous wastes in terms of Lead and/or lead compounds.
 - (ii) Wastes in liquid form, which can not meet the standards in Attached Table 2 of the effluent quality standards in terms of Lead and or Lead compounds

Y32. Wastes containing inorganic fluorine compounds excluding calcium fluoride listed as follows:

- a) Wastes containing 0.1% or more by weight of any of the following inorganic fluorine compounds:
Fluorosilicic acid, Bromine pentafluoride, Bromine trifluoride, Boron trifluoride dihydrate, Potassium bifluoride, Difluorophosphoric acid, Ammonium fluoride, Potassium fluoride (spray dide), Chromic fluoride, Hydrofluoride, Ammonium hydrogenfluoride, Hydrofluoric acid, Sodium fluoride, Fluorosulphonic acid, Fluorophosphoric acid anhydrous, hexafluorophosphoric acid, Fluobolic acid
- b) Wastes containing 1% or more by weight of any of the following inorganic fluorine compounds:
Ammonium fluoroborate, Ammonium fluorosilicate, Barium fluoride, Barium fluorosilicate, Iodine pentafluoride, Lithium borofluoride, magnesium borofluoride, Magnesium fluorosilicate, manganese fluorosilicate, Potassium fluoroborate, Potassium fluorosilicate, Potassium hydrogen fluoride, Sodium fluorosilicate, sodium hydrogen fluoride, stannous fluoride, Sodium fluoroborate, zinc fluorosilicate,
- c) Wastes containing inorganic fluorine compounds other than those listed in a) and b) above

Y33. Wastes containing inorganic cyanides listed as follows:

- a) Wastes containing 0.1% or more by weight of any of the following inorganic cyanides:

Cyanogen bromide, Hydrogen cyanide, hydrocyanic acid aqueous, leadcyanide, mercurycyanide, mercuric potassium cyanide, nickel cyanide, Potassium cyanide, Silver cyanide, sodiumcuprocyanide, Sodiumcyanide, Zinc cyanide

- b) Wastes containing 1% or more by weight of any of the following inorganic cyanides: Barium cyanide, Barium platinum cyanide, Calcium cyanide, Copper cyanide, Potassium cobalt cyanide, Potassium cuprocyanide, Potassium gold cyanide, Potassium nickel cyanide
- c) Wastes containing inorganic cyanide other than those listed in a) and b) above
- d) Wastes to be exported or imported for the purpose of D1 to D4 or R10 which cannot meet the following criteria:
 - i) Wastes in solid form, which cannot meet the Ambient Soil Quality Standards in terms of inorganic cyanide
 - ii) Wastes in liquid form, which cannot meet the waste water discharge standards to soil in terms of inorganic cyanide
- e) Wastes to be exported or imported for the purposes other than those listed in d) above, which cannot meet the following criteria;
 - (i) Wastes in solid form, which cannot meet the standards in attached table I of the verification standards for hazardous wastes in terms of inorganic cyanide;
 - (ii) Wastes in Liquid form, which cannot meet the standards in Attached Table 1 of the effluent quality standards ins terms of inorganic cyanide.

Y34. Acidic solutions or acid in solid form with Ph value of 2.0 or less, or basic solutions or bases in solid form with Ph value of 11.5 or more by weight (in case of substances in solid form, Ph value of the solution of water-substance has a ratio 1:3 in weight)

Y35 Basic solutions or bases in solid form.

Y36. Wastes containing asbestos in the form of dust or fibers

Y37. Wastes containing organic phosphorus compounds listed as follows:

- a) Wastes containing 0.1% or more by weight of any of the following organic phosphorus compounds:
 Azinphos-ethyl, Azinphos-methyl, Butyl phosphorotrithionate, Carbophenothion, Chlorfenvinphos (I SO), Chlormephos, S-[(6-Chloro-2-oxo-3-brenzoxyazolyl) methyl] O, O-diethyl phospholodithioate, Chlorthiophos, Camaphos, Cresyldiphenyl phosphote, Crotoxyphos, Crufomate, Demephion, Demeton-O-methyl, Demeton-S-methyl, Dialifos, Dichlofenthion, Dichloromethylphosphine, Dicrotophos, O, O-Diethyl-s-2-(ethylthio) ethyl phosphorodithioate, Diethyl=4-nitrobenzylaphosphonate, O, O-Diethyl-O-(5-phenyl-3-isoxazolyl)phosphorothioate, O,O -Diethyl-O-3,5,6-trichloro-2-pyriylphosphorothioate, Dimefox, O, O-Dimethyl-S- (1, 2-etylthioethyl phosphorodithioate, Dimethyl 2,2-dichlorovinylphospate, Dimethyl etylthicethyl dithiophosphate, Dimethylhydrogen phosphite, Dimethyl-methylcarbamoylthioethyl thiophosphate, O, O-Dimethyl-N-methylcarbamoyl-methyl dithiophosphate, - Dimethyl -S- (N-methyl-N- formoylcarbamoylmethyl) dithiophosphate O, O-Dimethyl-O-[3-methyl-4-(methylthio) phenyl] thiophosphate, O,O-Dimethyl-O-(3-methyl-4-nitrophenyl) thiophosphate, O, O-Dimethyl-S-(phenylaceticacidethylester) dithiophosphate, O,

O-Dimethyl phthalimid methylthiophosphate, Dimethylthiophosphoryl chloride, Dimethyl 2, 2, 2-trichloro-1-hydroxyethyl phosphorate, Dioxathion, Diphenyl-2, 4, 6-trimethylbenzoylphosphine-oxide, Edifenphos, Endothion, Ethion, Ethoatethyl, Ethoprophos, O-Ethyl-O-2-isopropoxycarbonylphenyl-isopropylphosphoroamidithioate O-Ethyl-O-p-nitrophenylthionobenzenephosphate, Fenamiphos, Fensulfothion, Fonofos, Hexaethyl tetraphosphate, Hexamethylphosphoric triamide, Heptenophos, Isodecyl diphenylphosphate, 2-Isopropyl-4-methylpyrimidyl-6-diethylthiophosphate, Isothioate, Mecarbam, Menazon, Mephosfolan, Methamidophos, 2-Methoxy-4H-1, 3, 2-benzodioxaphosphorin-2-sulfide, S-[5Methoxy-2-oxo-2, 3-dihydro-1, 3, 4-thiadiazolyl-(3)-methyl] dimethyl-phospholothiothionate, Methyl parathion, Methyltrithion, Mevinphos, Naled, Omethoate, Oxydisulfoton, Oxydemetonmethyl, Paraoxon, Parathion, Pirimiphosethyl, Phenkapton, Phorate, Phosfolan, Phosphamidon, Prothoate, Propaphos, Pyrazophos, Pyrazoxon, Quinalphos, Schradan, Sulprofos, Tetraethyl dithiopyrophosphate, Thionazin, Temephos, Terbufos, Tris (1-aziridinyl) phosphine oxide, Triamiphos, Triazophos, Trichloronate, Triethylphosphate, Tris(1-aziridinyl) phosphine sulphide, Tris (4-methoxy-3, 5-dimethylphenyl) phosphine, Trixylyl phosphate, Tributyl phosphates 3-(Dimethoxyphosphinyloxy)-N-methyl-cis-crotonamide, Di-(2-ethylhexyl) phosphoric acid, Di-(ethylhexyl) phosphoric acid, Triallyl phosphate, Tricresyl phosphate, Tris(isopropylphenyl) phosphate, Tris(2,3-dibromopropyl) phosphate

b) Wastes Containing 1% or more by weight of any of the following organic phosphorus compounds:

Amidothioate, Bialaphos, O-4-Bromo-2-chlorophenyl O-ethyl-S-propyl phosphorothioate, Bromophosethyl, Butamifos, O-Buthyl-S-benzyl-S-ethyl phosphorodithioate, 2-Chloro-1-(2,4-dichlorophenyl) vinyl dimethyl phosphate, DEF, Demeton, Demeton-O, Dialkyl phosphodithioate, O-2, 4-Dichlorophenyl-O-ethyl-S-propylphosphorodithioate, Diethyl-S-benzyl thiophosphate, Diethyl-4-chlorophenylmercaptopythylthiophosphate, Diethyl-(1,3-dithiocyclopentylidene) - thiophosphoramidate, Diethyl-4-methylsulfinylphenyl-thiophosphate, O,O-Diethyl-O-(3-oxo-2-phenyl-2H-pyridazin-6-yl) phosphorothionate Diethyl-paradimethylamino sulfonylphenylthio phosphate Diethylthiophosphorylchloride, O,O-Diisopropyl-S-benzylthiophosphate, Diisopropyl-S-(ethylsulfinylmethyl) - dithiophosphate, Dimethyl-S-p-chlorophenylthiophosphate, O,O-Dimethyl-O-4-cyanophenyl phosphorothioate, 2,3-(Dimethyldithiophosphro)-paradoxan, O,O-dimethyl-S-2(ethylsulfinyl)- isopropyl-thiophosphate, Dimethyl-[2-(1'-methylbenzyloxycarbonyl)-1-methylethyl]-phosphate O,O-Dimethyl-O-(3,5,6-trichloro-2-pyridinyl) phosphorothioate, Ethyl-2,4-dichlorophenylthionobenzene phosphorate, O-6-Ethoxy-2-ethylpyrimidin-4-yl=O, O-dimethyl=phosphorothioate, Fosthiazate, Leptophos, Mesulfenfos, Methylcyclohexyl-4-chlorophenylthiophosphate, Oetyldiphenyl phosphate, Phenylphosphonic dichloride Phenylphosphorous thiodichloride, Piperophos, Propetamphos, Pyraclofos, Sulfotep, Tetraethylpyrophosphate, Temvinphos, Tributoxyethyl phosphate, Tri-n-butyl phosphine, S,S,S-Tributyl phosphorotrithioate, Triethyl phosphite, Trimethyl phosphate, Trimethyl phosphite, Triocetyl phosphate, Tris(chloroethyl) phosphate, Tris (B-chloropropyl) phosphate, Tris (dichloropropyl) phosphate

c) Wastes containing organic phosphorus compounds other than those listed in a) and b) above

d) Wastes to be exported for the purpose of D1 to D4 or R10 of Annex IV the Convention, which cannot meet the following criteria:

i) Wastes in solid form, which cannot meet the Ambient Soil Quality Standards in terms of organic phosphorus compounds;

ii) Wastes in liquid form, which cannot meet the waste water discharge standards to soil in terms of organic phosphorus compounds

e) Wastes to be exported for the purposes other than those listed in the above d), which cannot meet the following criteria;

i) Wastes in solid form, which cannot meet the standards in Attached Table 1 of the verification standards for hazardous wastes in terms of organic phosphorus compounds;

ii) Wastes in liquid form, which cannot meet the effluent quality standards in terms of organic phosphorus compounds

Y38. Wastes containing organic cyanides listed as follows:

a) Wastes containing 0.1% or more by weight of any of the following organic cyanides: Acetone cyanhydrin, Acrylonitrile, Adiponitrile, 2-Amino-5-(2-chloro-4-nitrophenylazo) -4-methyl-3-thiophenecarbonitrile, 2,2' -Azobis-[2-(hydroxymethyl) propionitrile], 2,2' -Azobis-(methylbutyronitrile), Benzonitrile, Bromobenzylcyanides, Bromoxynil, 3-Chloro-4-methylphenyl isocyanate, Cyanazine, α -Cyano-3-phenoxybenzyl=bis(trifluoromethyl) methyl -1-(3,4-isopropylidene) butene-1, 4-decarboxylate, Cyclohexyl isocyanate, 2,6-Dichlorobenzonitrile, Dichlorophenylisocyanate, 3,3' -Dimethyl-4,4' - biphenylenediisocyanate, Diphenylmethane-4,4' - diisocyanate, Ethylene Cyanhydrin, Fenpropathrin, Ioxynil, Isophorone diisocyanate, lactonitrile, Malononitrile, Methacrylonitrile, methyl isocyanate, Phenylacetoneitrile, Phenyl isocyanate, O-Phthalodinitrile, Propionitrile, Trimethylhexamethylene diisocyanate, Tolylenediisocyanate

b) Wastes containing 1% or more by weight of any of the following organic cyanides: Acetonitrile, 2,2' -Azobis isobutyronitrile, 2,2' -Azobis-(2,4-dimethylvaleronitrile), 2,2' -Azobis-(2,4-dimethyl-4-methoxyvaleronitrile), 1,1' -Azobis-(hexahydrobenzonitrile), Butyronitrile, N-cyanoethyl monochloroacetamide, Cyanofenphos (CYP), (RS)- α -cyano-3-phenoxybenzyl, Cyhalothrin, Cyphenothrin, Cyfluthrin, 2,3-Dibromopropionitrile, 2-Dimethylaminoacetonyl, Ethyl cyanoacetate, Ethyl isocyanate, Fluvalinate, Hexamethylene diisocyanate, Isobutyl isocyanate, Isobutyronitrile, Isocyanatobenzotrifluoride, Isopropyl isocyanate, Methoxymethyl isocyanate, Methyl isothiocyanate, 3-(N-Nitrosomethylamino) propionitrile, n-Propyl isocyanate, Terephthalonitrile, Tralomethrin, 1,2,5-Trithiocycloheptadiene-3,4,6,7-tatranitrile (TCH),

c) Wastes containing organic cyanides other than those listed in a) and b) above

Y39. Wastes containing phenols and/or phenol compounds

a) Wastes containing 0.1% or more by weight of any of the following phenol and/or phenol compounds: 2-Aminoanthraquinon, 7-Amino-4-hydroxy-2-naphthalene sulfonic acid, p-t-Butylphenol, Carboic oil, Chlorophenol, Coal tar, Cresols, Cyclohexylaminophenol, Dichlorophenols, 2,4-Dichloro-3-methylphenol, 1,4-Dihydro-9,10-dihydroxyanthracene, 2,4-Dinitro-6-sec-buthylphenoldimethyl acrylate, 4,6-Dinitro-o-cresol, 2,4-Dinitrophenol, Dinoseb, Dinosebacetate, Dinoterb, Dinoterbacetate, Dodecylphenol, o-Ethylpheno Heptyl-1[2,5-dimethyl-4 (2-methylphenylazo)] phenylazo-2-naphthol, Hydroxybenzene, isoamyl salicylate, Medinoterb, Methyl salicylate, Nitrocresols, Nitrophenols, Nonylphenol, Nonylphenol poly (4-12) ethoxylates, Pentachlorophenol, 4-Phenoxyphenol, Picric acid, Sodium pentachlorophenate, Trichlorophenols, 2-(thiocyanatomethylthio) benzothiasol, Xylenols

b) Wastes containing 1% or more by weight of any of the following phenol and/or phenol compounds: 2-Amino-4-chlorophenol, Aminophenols, Ammonium dinitro-o-cresolate, Ammonium picrate, Chlorocresols, Diazodinitrophenol, 2,4-Dinitro-6-cyclohexylphenol, 2,4-Dinitro-6-(1-methylpropyl) -phenol, Dinitrophenolate, alkali metals, Dinitroresorcinol, Dyes, Hydroquinone, 4-Hydroxysulfonic

acid, N-Methylcarbonyl-2-chlorophenol (CPMC), B-Naphthol, Resorcinol, sodium-2, 4-dichloro-6-nitrophenolate (DNCP), Sodiumdinitro-o-cresolate, 2,4,6-Tri(dimethyl-aminomethyl) hydroxbenzene, 2,4,6-Trinitro-m-cresol, 2,4,6-Trinitroresolcinol

c) Wastes containing phenol and/or phenol compounds other than those listed in a) and b) above.

Y40. Wastes containing ethers listed as follows:

a) Wastes containing 0.1% or more by weight of any of the following ethers:

o-Anisidine, 2-(2-aminoethoxy) ethanol, 2-Amino-dimethoxypyrimidine, a-[1-[(Allyloxy) methyl] -2-(nonylphenoxy) ethyl] -w-hydroxypoli (n=1-100) (oxyethylene), Allylglycidylether, Alkaryl polyether (C9-C20 Alcohol (C6-C17) sec-poly (3-12) thoxylates, alcohol (C12-C15) poly (1-11) ethoxylates, Alcohol (C13-C15) lyethoxylates, 1,2-Butylene oxide, Butyl glycidyl ether, Butyl hydroxy anisol, 2-t-Butyl-6-nitro-5-[p-(1,1,3,3-tetramethylbutyl) phenoxy] benzoxazole, Carbofran, 4-Chlorobenzyl-4-ethoxyphenyl ether, p-(2-Chloroethyl) anisol, m-Chloromethylanisol, Coumafuryl, p-Cresidine, Endothal sodium, 2, 3-Epoxy-1-propanol, 2,3-Epoxypropyl-acetate, 2-(2,3-Epoxypropyl)-6-methoxyphenyl-acetate, a-2, 3-Epoxypropoxyphenyl-w-hydropoli(n=17) [2-(2,3- epoxypropoxy) benzylidene-2,3-epoxypropoxyphenylene], Ethyleneglycol isopropyl ether, Ethyleneglycol phenyl ether, Ethyleneglycol methylbutyl ether, Ethyleneglycol monoacrylate, Ethyleneglycol monobutyl ether, Ethyleneglycol monobutyl ether acetate, Ethyleneglycol monoethyl ether, Ethyleneglycol monoethyl ether acetate, Ethyleneglycol monomethyl ether, Ethyleneglycol monomethyl ether acetate, Ethyleneglycol mono-n-propyl ether, Ethyl 3-ethoxypropionate, Safrole, Propylene oxide, Di-(2-chloro-iso-propyl) ether, B, B'-Dichloroethyl ether, 3,3'-Dichloro-4,4'-diaminodiphenyl ether, 1,3-Dichloro-2-methoxy-5-nitrobenzene, Disodium=6-(4-amino-2,5-dimethoxyphenylazo)-3-[4-(4-amino-sulfonatephenylazo)-2, 5-dimethoxyphenylazo]-4- hydroxy-2-naphthalenesulfonate, Diphenyl ether, Dipropyleneglycol monobutyl ether, Dipropyleneglycol monomethyl ether, Din-pentyl ether, Styreneoxide, Petroleum ether, Tetrahydrofuran, Dodecylphenoxybenzene disulphonate (solns.), Drazoxolan, Triethyleneglycol monoethyl ether, Triethyleneglycol monomethyl ether, 2, 4, 6-Tris(chloromethyl)-1, 3, 5-trioxane, 3, 3, 3-Trifluoro-1, 2-epoxypropane, Tripropyleneglycol monomethyl ether, Trimethylolpropane polyethoxylate, 5-[N,N-Bis(2-acetoxyethyl)amino]-2-(2-bromo-4,6-dinitrophenylazo)-4-methoxyacetanillide, 1,6-Bis(2,3-epoxypropoxy) naphthalene, 4,4'-Bis (3-epoxypropoxy) biphenyl, 1,1-Bis[p-(2,3-epoxypropoxy) phenyl] ethane, 1,1-Bis[p-(3-chloro-2-hydroxypropoxy) phenyl] ethane, Bis(chloromethyl) ether, 4,6-Bis(difluoromethoxy)-2-methylthiopyrimidine, Tributyltin oxide, Bisphenol A diglycidyl ether, Diglycidyl ether of Bisphenol F, Ethyl vinyl ether, Phenylglycidylether (RS)-1-(4-Phenoxyphenoxy)-2-propanol, Dihydro-2 (3H) -furanone, Butoxyl, Brucine, Furfural, Furfurylalcol, B-Propiolactone, 2,3-Epoxypropyl-propionate, Propyleneglycol monoalkyl. ether, Propyleneglycol monomethyl ether acetate, ropoxur, 1-Bromo-4-(2,2-dimethoxyethoxy)-2,3-dimethylbenzene, 1,1'-[Oxybis(methylene)bis(benzene)] Polyethyleneglicol monoalkyl ether, Methylchloromethyl ether, 2-Methoxy-2-methylpropane, 4-Methoxy-2,2', 4' -trimethyldiphenylamine, 1-(4-Methoxyphenoxy)-2-(2-methylphenoxy) ethane, Morpholine, Resorcinol diglycidyl ether, Rotenone

b) Wastes containing 1% or more by weight of any of the following ethers:

Acetal, Anisol, N-Aminopropylmorpholine, Allilethylether, Ethylpropyl ether, Ethyleneglycol diethyl ether, Ethyleneglycol diglycidyl ether, Ethyleneglycol dimethyl ether, 3-Ethoxypropylamine, 1,2-Epoxy-3-ethoxypropane, Glycidol, Chloroethyl vinyl ether, Chloromethyl ethyl ether, Diallil ether, Diethyleneglycol dimethyl ether, Diethyleneglyco 1 monobutyl ether, Di-2-ethoxyethyl peroxydicarbonate, 3, 3 Diethoxypropene, Diethoxymethane 2,5-Diethoxy-4-morpholino benzenediazonium zinc chloride, 1,3-Dioxane, Dioxolan, 2,3 -Dihdropylae, Diphenylsulphide, Dibutyl

ether, Dipropyl ether, 4-Dimethylamino-6 (2-dimethylaminoethoxy) toluene-2-diazonium zinc chloride, Dimethyldiethoxysilane, Dimethyldioxane, Dimethoxyisopropylperoxydicarbonate, 1,1-Dimethoxyethane, Di-methoxybutyl peroxydicarbonate, 2,2-Dimethoxypropane, Tetrahydrofurfurylamine, Triglycol dichloride, Trinitroanisole, Trinitrophenetole, Nitroanisole, Neopentylglycol diglycidyl ether, 3-(2-Hydroxyethoxy)-4-pyrrolidin-1-ylbenzenediazonium zinc chloride, Isobutyl vinyl ether, Phenetidines, Phenetole, Phenoxyethylacrylate, Ethylbutyl ether, n-Butyl methyl ether, Furan, Furfurylamine, Furfurylmercaptan, 2-Bromoethylethylether, 4-[Benzyl (ethyl) amino] -3-ethoxybenzenediazonium zinc chloride-[Benzyl(methyl) amino]-3-ethoxybenzenediazonium zinc chloride, benfuracarb, Tetrahydrofurfuryl methacrylate, methylal, Methyltetrahydrofuran, 2-Methylfuran, Methylpropyl ether, Methyl-3-methoxybutanol, N-Methylmorpholine, 4-Methoxy-4-methylpentane-2-one

c) Wastes containing ethers other than those listed in a) and b) above

Y41. Wastes containing halogenated organic solvents listed as follows:

a) Wastes containing 0.1% or more by weight of any of the following halogenated organic solvents:

Chloropropanes, Chloropropenes, Chlorobenzene, Chloroform, Carbontetrachloride, Dichloroethanes, Dichloroethylenes, Dichloropropanes, Dichloropropenes, Dichlorobenzene, Methylenechloride, Dibromoethanes, Tetrachloroethane, Tetrachloroethylene, Tetrabromoethane, Tetrabromomethane, Trichloroethanes, Trichloroethylene, Trichloro-trifluoroethane, 1,2,3-Trichloropropane, 1,2,4-Trichlorobenzene, Pentachloroethane

b) Wastes containing 1% or more by weight of any of the following halogenated organic solvents: 1,1-Dichloro-1-nitroethane, 1,4-Dichlorobutane, Dichloropentanes, Bromoform

c) Wastes containing halogenated organic solvents other than those listed in a) and b) above

d) Wastes in liquid form to be exported for the purpose of D1 to D4 or R10 of Annex VI of the Convention, which cannot meet the waste water discharge standards to soil in terms of tetra-chloro-ethylene and/or tri-chloro-ethylene

e) Wastes to be exported for the purposes other than those listed in the above d), which cannot meet the following criteria;

i) Wastes in solid form, which cannot meet the standards in Attached Table 1 of the verification standards for hazardous wastes in terms of tetra-chloro-ethylene and/or tri-chloro-ethylene;

ii) Wastes in liquid form, which cannot meet the standards in Attached Table 1 of the effluent quality standards in terms of tetra-chloro-ethylene and/or tri-chloro-ethylene

Y42. Wastes containing organic solvents excluding halogenated solvents

a) Wastes containing 0.1% or more by weight of any of the following organic solvents:

Acrolein, Diisononyl adipate, Acetaldehyde, Ethyl acetoacetate, Methyl acetoacetate, Acetophenone, Acetone, Aniline Allyl alcohol, Alkylbenzenes, benzylbenzoate, Methyl benzoate, Isoamyl alcohol, Isooctanol, Isooctane, isononyl alcohol, Isobutanol, Iso Butylamine, 4-Methyl-2-pentanone, Isopropylamine, Isopropyl alcohol, Isopropyl cyclohexane, isopropyl toluene, 3-Methyl-2-butanone, Isopentane, Isopentene, Isobutyric acid, Ethanolamine, Ethylanilines, Ethylamine, Ethylcyclohexane, N-Ethyl cyclohexylamine, 2-Ethylbutanol, N Ethylbutylamine, Ethyl-butylketone, 2-Ethyl-3-propyl acrolein,

Ethyl-n-propyl ketone, 2-Ethylhexanol, 2-Ethylhexylamine, Ethyl n-pentyl ketone, 2-Butanone, Ethyleneglycol diacetate, Ethylene glycol, Ethylenediamine, Octanol, Octane, Octanes, Formic acid, Isobutyl formate, n-Butyl formate, Methyl formate, Quinoline, Dimethyl succinate, Acetic acid, Isobutyl acetate, isopropyl acetate, isopentyl acetate, Ethyl acetate, Ethylbutyl acetate, n-Octyl acetate, Cyclohexyl acetate, n-Decyl acetate, n-Nonyl acetate, Vinyl acetate, 2-Phenyl ethyl acetate, Butyl acetate, sec-Butyl acetate, n-Propyl acetate, n-Hexyl acetate, sec-Hexyl acetate, Heptyl acetate, Benzyl acetate, pentyl acetate, sec-Pentyl acetate, methyl acetate, Methylpentyl acetate, Mesityl oxide, Diisobutylamine, Diisobutyl ketone, Diisopropanolamine, Diisopropylamine, N, N e, Diethylaminoethanol, Diethylamine, Diethylenetriamine, Cyclohexanol, Cyclohexanone, Cyclohexane, Cyclohexylamine, Cycloheptane, Cyclopentane, Cyclopentene, Dicyclohexylamine, Di-n-butylamine, Dipropylamine, Dipentene, N, N-Dimethylacetamide, N, N-Dimethylaniline, Dimethylamino azobenzene, 2-dimethylaminoethanol, 2,6-Dimethyl-4-heptanol, N, N-Dimethyl formamide, Diethyl oxalate, Camphor oil, Styrene, Butyl stearate, Tetrahydrothiophene-1, 1-dioxide, Petroleum naphtha, Petroleum benzene, Dimethyl sebacate, Solvent naphtha, Diethyl carbonate, Dimethyl carbonate, Decanol, Decene, Tetraethylenepentamine, Tetrahydronaphthalene, Turpentine oil, Dodecanol, 1-Dodecylamine, Triethanolamine, Triethylamine, Triethylenetetramine, Tributylamine, Tripropylamine, Toluidine, Naphthalene, Nitroethane, Nitroxylenes, O-Nitrotruenene, Nitropropanes, Nitrobenzene, Nitromethane, Ethyl lactate, Butyl lactate, Carbon disulfide, Nonanol, Nonane, Nonene, Paraldehyde, Methyl palmitate, Picolines, 4-Hydroxy-4-methyl-2-pentanone, Pinenes, Pyridine, Phenyl ethyl alkyl, 1-Phenyl-1-xylethane, n-Butanol, 2-Butanol, Dialkyl phthalates, Bis (diethyleneglycol) phthalate, Butyl benzylphthalate, Butanediols, n-Butylamine, sec-Butylamine, tert-Butylamine, 1,3-Propane sultone, Propionic acid, n-Amyl propionate, Ethyl propionate, n-Butyl propionate, Methylpropionate, Propylamine, Hexanol, Hexane, Hexenes, Heptanols, Heptane, n-Heptene, Benzyl alcohol, Benzene, 1,3-Pentadiene, Pentanols, n-Pentane, Pentenes, Formamide, White spirit, Di-n-butyl maleate, Methyl myristate, Methanol, Methyl alcohol, Methylamine, Methyl iso-amylketone, 7-Methyl-1, 6-octadiene, 2-Methylcyclohexanol, Methylcyclohexanone, Methylcyclohexane, Methylcyclopentane, 1-Methyl naphthalene, Methyl n-pentyl ketone, Methyl butanol Metju; nitu; letame, Methyl butanol, 2-Methyl hexane, Methyl n-hexylketone, Methyl heptyl ketone, Methylpentanol, 2-Methyl pentane, 2-Methyl-1-pentane, 4-Methyl-1-pentane, Ethyleneglycol monoacetate, Methyl laurate, Butyric acid, Ethyl butyrate, Vinyl butyrate, n-Butyl butyrate, Methyl butyrate, Ligroin, Dimethylsulfide, Dimethylsulfate

- b) Wastes containing 1% or more by weight of any of the following organic solvents:
 Allylamine, Methyl valerate, Methyl isopropenyl ketone, Isobutyl isobutyrate, Isopropyl isobutyrate, Ethyl isobutyrate, N-Undecane, Ethyl alcohol, N-ethyltoluidine, Allyl formate, Ethyl formate, Propyl formate, Pentyl formate, Allyl acetate, Isopropenyl acetate, tert-Butyl acetate, Diethylamine, Diisopropyl ketone, Diethyl ketone, Diethyleneglycol, Cyclohexene, Cycloheptene, Cyclopentanol, Cyclopentanone, Dipropyl ketone, Dimethylcyclohexane, Dimethyl sulfoxide, 2,3-Dimethylbutane, 1,3-Dimethylbutylamine, Dioctyl sebacate, Dibutyl sebacate, Thiophene, n-Decane, Tetrahydrothiophene, Terpinolene, Triethylamine, Trimethylene glycol, Methyl lactate, Dimethyl disulphide, Acetyl methyl carbinol, Vinyltoluene, Piperidine, 3-Butanol, Butylmercaptan, 1,4-Butynediol, n-Propanol, Isopropyl propionate, Isobutyl propionate, 4-Methyl-1,3-dioxacyclopentan-2-one, 1,2-Propylenediamine, 2-Methyl-2,4-pentanedil, Pentamethylheptane, Pentane-2,4-dione, Triisopropyl borate, Ethyl borate, Trimethyl borate, Butyric anhydride, N-methylaniline, Methyl vinyl ketone, N-Methylpiperidine, Methyl propyl ketone, 5-Methylhexan-2-one, Isopropyl butyrate, Isopentyl butyrate, Pentyl butyrate
- c) Wastes containing organic solvents other than those listed in a) and b) above

Y43. Any congener of Polychlorinated debenzo-foran.

Y44. Any congener of Polychlorinated dibenza-p-dioxin.

Y45.

Wastes containing organohalogen compounds other than substances referred to in this Schedule, listed as follows:

a) Wastes containing 0.1% or more by weight of any of the following organohalogen compounds: 1-(Acetylamino)-4-bromoanthraquinone, Atrazine, 2-Amino-2-chloro-5-nitrobenzophenone, (6R,7R)-7-Amino-3-chloromethyl-8-oxo-5-thia-1-azabicyclo(4,2,0)-octa-2-ene-2-carboxylic acid=4-methoxybenzyl, Methyl aminodithio-2-chloropropionate hydrochloride, 2-Amino-3,5-dibromothiobenzamide, 2-Chloro-2', 6'-diethyl-N-(methoxymethyl) acetanilide, Aldochlor, Aldrin, Isodrin, Imazalil, Ethyl-3, 5-dichloro-4-hydroxybenzoate, Ethyl-3, 5-dichloro-4-hexadecyloxybenzoate Ethylene chlorohydrine, Epichlorohydrin, Acetyl chloride, Anisole chloride, Allyl chloride, Choline chloride, Chlorinated paraffins (C10-13), Pyrosulphuryl chloride, Benzylidene chloride, Benzyl chloride, Benzoyl chloride, Endrin, Captafol, Canphecklor, Coumachlor, Crimidine, Chloral, Chlordimeform, Chlordane, Chlorendic acid, Chloroacetaldehyde, Chloroacetone, Chloroanilines, 4-Chloro-2-aminotoluene hydrochloride, 1-Chlorooctane, 1-Chloroethylchloroformate, 1-Chloro-3-(4-Chlorophenyl)hydrazono-z-propanol Monochloroacetic acid, Chlorodinitrobenzene, 3-Chloro-1, 2-dibromopropane, 1-Chloro-3, 3-dimethyl-2-butanol, Ethylchlorothioformate, 2-Chloro-5-trifluoromethylnitrobenzene, Chlorotoluidines, Chlorotoluenes, 2-Chloronicotinic acid, Chloronitroanilines, 4-Chloro-2-nitrotoluene, N-(2-Chloro-3-nitro-6-pyridyl) acetamide, 4-(2-Chloro-4-nitrophenylazo)-N-(2-cyanoethyl)-N-phenetyl aniline, Chloronitrobenzenes, Chloropicrin, Chlorohydrins, Chlorophacinone, 4-Chloro-o-phenylenediamine, 3-Chloro-2-fluoronitrobenzene 3-Chloro-4-fluoronitrobenzene, Chloroprene, 2-Chloropropionic acid, 3-Chloropropionic acid, 1-chlorohexane, 1-chloroheptane, p-Chlorobenzylchloride, p-Chlorobenzotrichloride, Chloromethyl=p-tolyl=ketone, 2-(4-Chloromethyl-4-hydroxy-2-thiazoline-2-yl guanidine=chloride, Methyl 2-[(chloromethyl) phenyl] propionate, (2S)-3-Chloro-2-methylpropionic acid, (Z)-4-Chloro-2-(methoxycarbonylmethoxyimino)-3-oxobutyric acid, 2-Chlorobutyric acid, kepone, Kelevan, 1-Chloroformyl-1-methylethyl acetate, 1-Bromoformyl-1-methylethyl acetate, Benzotrichloride, 3,5-Diaminobenzene, Diallyl, Silicon tetrachloride, Diglycol chlorohydrin, Cyclohexenyltrichlorosilane, 3,4-Dichloroaniline 4, 5-Dichloro-p-n-octylisothiazole-3-one, Dichloroacetic acid, Methyl dichloroacetate, 3, 3'-Dichloro-4,4'-diaminodiphenylmethane, 3,5-Dichloro-4-(1,1,2,2-tetrafluoroethoxy) aniline, 1,4-Dichloro-2-trichlorosilyl-2-butene, 2,4-Dichloro-5-trifluoromethylnitrobenzene, 1,4-Dichloro-2-nitrobenzene, 2,2-Dichloro-5-nitrobenzophenone, 2,4-Dichlorophenoxyacetic acid diethanolamine, 2,4-Dichlorophenoxyacetic acid diethylamine, 2,4-Dichlorophenoxyacetic acid triisopropanolamine, 2,4-Dichloro-3-fluorene tobenzene, 1,3-Dichloro-4-fluorobenzene, 2,3-Dichloro-1-propanol, 2,2-Dichloropropionic acid, Methyl 2,3-dichloropropionate, Dichlorobromomethane, 1,6-Dichlorohexane, 2,6-Dichloro-3-perchloromethyltoluene, 4,5-Dichloro-2-perchloromethyltoluene, Dichlorobenzidine, 2,2-Dichloro-3-pentanone, 2,4-Dichloro-3-pentanone, 2,6-Difluoroaniline, 3,4-Difluoronitrobenzene, 2-Dibromoethylene 2'-(2,6-Dibromo-4-nitrophenylazo)-5'-diethylaminoacetanilide, 2,3-Dibromopropionate, Dibromomethane, Simazine, Acetyl bromide, Allyl bromide, Sulfalate, Cyclohexyl-1-iodoethyl=carbonate, DDT (chlorophenothane), 2,4-DB((2,4-dichlorophenoxy) butyric acid), Dieldrin, 2,2,6,6-Tetrachlorocyclohexanone 2,2', 4,4'-Tetrachlorobenzophenone, Tetrahydro-5, 5-dimethyl-2(1H)-pyrimidinone [p-trifluoromethyl]-a-[p-(trifluoromethyl) styryl] Cynamiliden] hydrazono, 2,2,3,3-Tetrafluoroxetane, Diuron, Telodrin, Toxaphene, 1-(4-Chlorophenoxy)-3,3-dimethyl-1-(1H-1, 2,4-triazol-1-yl)-2-butanone Trichloroacetylchloride, 2,2,6-Trichloro-6-(1-chloroisobutyl) cyclohexanone, Trichloroacetic acid, 2,4,6-Trichloro-1,3,5-triazine, 2,2,3-Trichloro-3-phenyl-1, 1-propanediol, 2,4,5-Trichlorophenoxyacetic acid, Trichlorobutene, Perchloromethylmercaptan, 2-Trichloromethyl-5-(4-hydroxystyryl)-1,3,4-oxadiazole, Sodium trifluoroacetate, 2,3,4-Trifluoronitrobenzene, Nitrobenzotrifluoride, Trimethylacetylchloride, Trimethylchlorosilane, Sodium=4-(2,4-dichloro-m-toluoil)-1,3-dimethylpyrazole-5-oleate, Nitrofen, Paraquat, 5'-Bis(2-acetoxyethyl) amino]-2'-(2-chloro-4-nitrophenylazo) acetanilide 4-(p-Bis(2-chloroethyl) aminophenyl) butyric acid, odomethylpivalate 2-t-Butyl-5-chloro-6-nitro-benzooxazole, O-3-t-Butylphenyl -chlorothioformate,

2-Chloro-1-propanol, 4-Bromo-3-oxobutyroanilide, 1-Bromo-2-chloroethane, Ethyl bromoacetate, 3-Bromopropionic acid, Ethyl 3-bromopropionate, (E)-3-[p-(Bromomethyl) phenyl] acrylic acid, Ethyl (E)-3-[p-(bromomethyl) phenyl] acrylate, 3-Bromo-2-methylpropionic acid 4-Bromo-2-methoxyimino-3-oxobutyl=chloride, Hexachlorocyclohexane, hexachloro-1, 3-butadiene, Hexachlorobenzene, Heptachlor, Perfluoroproxy-1,1,2-trifluoroethylene, 1-Benzyl-2-(chloromethyl) imidazole=chloride, Hexachloro-hexahedra-methano-dioxathiepine oxide, N-[B-(benzol) furan-2-yl] acryloyl-N'-trichloroacetohydrazid, Pentachloronaphthalene, Pentafluoroiodoethane, Mirex, 2-Methyl-4-chlorophenoxy-acetic acid, Methyltrichlorosilane, 2-Methyl-3-trifluoromethylaniline, Methylphenyldichlorosilane, Methrachlor, 2-Mercaptobenzothiazol, Monofluoroacetic amide, Acetyl iodide, Allyl iodide, Methyl iodide, 3-Iodopropionic acid

b) Wastes containing 1% or more by weight of any of the following organohalogen compounds: Isopropyl-N-(3-chlorophenyl) carbamate (IPC), Imidacloprid, Echlomezole, Ethychlozate, Epibromohydrin, (4-Chloro-2-methylphenoxoy) acetic acid, Isobutyl chloride, Butyl chloride, Propionyl chloride, Pentyl chloride N'-(2-Methyl-4-chlorophenyl)-N,N-dimethylformamazine chloride, Oxadiazon, 2-Chloro-4, 5-dimethylphenyl-N-methylcarbamate, Chlorphenamidin-[3, 5-Dichloro-4-(3-chloro-5-trifluoromethyl-2-pyridylox y) phenyl]-3-(2, 6-difluorobenzoyl) urea, Chlormequat, Chloroacetonyl, Chloro acetophenone, Chloroanisidine, Allyl chloroformate, Isobutyl chloroformate, Isopropyl chloroformate, Ethyl chloroformate, 2-Ethylhexyl chloroformate, 2-Ethoxyethyl chloroformate, Chloromethyl chloroformate, Cyclobutyl chloroformate, Phenyl chloroformate, n-Butyl chloroformate, sec-Butyl chloroformate, t-Butylcyclohexyl chloroformate, 2-Butoxyethyl chloroformate, n-Propyl chloroformate, Benzyl chloroformate, Methyl chloroformate, Isopropyl chloroacetate, Ethyl chloroacetate, Sodium chloroacetate, Vinyl chloroacetate, Methyl monochloroacetate, 1-Chloro-1,2-dibromoethane, 2-Chloropridine, Chlorobutanes, 3-Chloro-1-propanol, Glycerol a-monochlorohydrin, Isopropyl 2-chloropropionate, Ethyl 2-chloropropionate, Methyl 2-chloropropionate, 1-Chloro-3-bromopropane, Dichlorobenzylacid ethyl ester, p-Chlorobenzoyl chloride, Chlorobenzotrifluorides, 1,1-Bis(p-chlorophenyl)-2,2,2-trichloroethanol, 2,4,6-Trichlorophenyl-4'-nitrophenyl ether, 1,4,5,6,7,7-Hexachlorobicyclo(2,2,1) hept-5-ene-2,3-d carboxylic acid di-2-propenylester, Dicloro dinitromethane, Dichlorobutylene, 1,3-Dichloroacetone, 2,5-Dichloroaniline, 3,5-Dichloroaniline, B, B'-Dichloroethyl horma 1,1'-Ethylene-2, 2'-dipyridiliumdibromide, Dibromochloropropane 3,5-Dibromo-4-hydroxy-4'-nitroazobenzene (BAB), 1,2-Dibromobutan-3-one, m-Dibromobenzen, Bromoacetone, Isopropyl bromide, Ethyl bromide, Xylol bromide, Diphenylmethyl bromide, Phenacyl bromide, n-Buthyl bromide, 2-Bromobutane, Benzyl bromide, Thiochlormethyl, 1,1,2,2-Tetrachloronitroethane, Methyl trichloroacetate, Trichloronitroethylene, 2,4,5-Trichlorophenoxyacetic acid butoxyethylester, 2,4,5-Trichlorophenoxyacetic acid methoxyethylester, 2,4,6-Trinitrochlorobenzene, Trinitrofluorenone, Trifluoroacetate acid, Trifluoromethanesulfonic acid 2-Trifluoromethylaniline, 3-Trifluoromethylaniline, N,N'-[1,4-Priperazinediylbis(2,2,2-trichloroethylidene)] bisformamide, Nitrobromobenzene, n-Valerylchloride, Halofuginone, Isopropyl p,p'-dibromobenzilate, Fluoroaniline, Fluoroacetic acid, Fluorotoluene, Fluorobenzene, Fulsulfamide, Methyl bromoacetate, 3-Bromopropyne, Bromobenzene, 2-Bromopentane, 1-Bromo-3-methylbutane, Bromomethylpropane, Hexachloroacetone, Hexachloro-1,3-cyclopentadiene, Hexachlorophene, Hexythiazox, Permethrin, Benzotrifluoride, Benzoate Pentyltrichlorosilane, Methylallyl chloride, Methyl bromoacetone, Sodium fluoroacetate, Monofluoroacet-p-bromoanilide, N-(p-Bromobenzyl) monofluoroacetamide, n-Butyl iodide, Benzyl iodide, 2-Iodobutane, Iodopropanes, Iodomethylpropane, Hexafluoroacetone

c) Waste containing or contaminated with polychlorinated biphenyls (PCBs) and/or polychlorinated triphenyls (PCTs) and/or polybrominated biphenyls (PBBs) of 50 ppm or more by weight.

- d) Wastes other than the organic halogen compounds given in a), b), and c) (excluding wastes listed in other items)
- e) Wastes to be exported for the purpose of D1 to D4 or R10 of Annex IV of the convention, which cannot meet the following criteria:
 - i) Wastes in solid form, which cannot meet the Ambient Soil Quality Standards in terms of PCB
 - ii) Wastes in liquid form, which cannot meet the waste water discharge standards to soil in terms of PCB.
- f) Wastes to be exported or imported for purposes other than those in e) above, which cannot meet the following criteria:
 - i) Wastes in solid form, which cannot meet the standards in Attached Table 1 of the standards for hazardous wastes in terms of PCB
 - ii) Wastes in liquid form, which cannot meet the standards in Attached Table I of the effluent quality standards in terms of PCB.

SEVENTH SCHEDULE

Regulation 28

FEEES

1. Application for licences:
 - (a) for transportation of waste under Regulation 6 shs.
 - (b) for storage of waste under regulation 6 shs.
 - (c) to own/operate a waste disposal site/plant under regulation 11... shs.....

2. Licence to:
 - (a) transport waste under regulation 7 shs
 - (b) own/operate a waste disposal site/plant under regulation 17 shs
 - (c) export wastes under regulation 16 shs
 - (d) import wastes under regulation 16 shs
 - (e) storage of wastes under regulation 7 shs

3. Transboundary movement of wastes:
 - (1) Notification document for transboundary movement of waste under regulation 18 shs
 - (2) Movement document for transboundary movement of wastes under regulation 16 shs

EIGHTH SCHEDULE

Regulation 19

PORT OF ENTRY

1. Nimule
2. Malaba
3. Mutukula
4. Bwera
5. Katuna
6. Entebbe Airport

APPENDIX II

UNITED NATIONS ENVIRONMENT PROGRAMME PROGRAMME DES NATIONS UNIES POUR L'ENVIRONNEMENT

UNEP/UNDP JOINT PROJECT ON ENVIRONMENTAL LAW AND INSTITUTIONS IN AFRICA

WORKSHOP ON DEVELOPMENT AND HARMONIZATION OF ENVIRONMENTAL LAW ON SELECTED TOPICS IN EAST AFRICA

2nd to 10th February 1998

Venue: Sunset Hotel, Kisumu, Kenya

I. INTRODUCTION

This is a synoptic outline for a workshop to discuss the development and harmonization of environmental law on selected topics in the East African Region under the UNEP/UNDP/DUTCH Joint Project on Environmental Law and Institutions in Africa. The purpose is to provide a handy brief on the objectives of the workshop. A brief background, particularly how the workshop falls into the overall picture of the Joint Project, is provided. The section on participants indicates the mode of selection and the role to be played by the individuals. That is directly related to the schedule of the workshop, which outlines the procedure for the participation of those invited.

Finally, the section on the procedure for finalization of the report is outlined.

II. BACKGROUND

The East African Sub-Regional Project is a component of the UNEP/UNDP Joint Project on Environmental Law and Institutions in Africa funded by the Dutch Government. Systematic and essentially national activities are being conducted in Burkina Faso, Malawi, Mozambique and in Sao Tome and Principe. Although South Africa was identified by the Project Steering Committee as a project country, no systematic activities have been done there and no firm decision has been taken by the Government as to whether they will, in fact, be so involved. This uncertainty is occasioned by the broad constitutional, policy and legislative reorientations which have been evolving in the country since 1994.

The activities of the Joint Project in East Africa (Kenya, Tanzania and Uganda) focus on matters of sub-regional character. The underlying presupposition is that the physical

and historical situation in East Africa offered an opportunity to initiate and encourage dealing with environmental issues according to problem-sheds. The historical facts are that (a) there is a history of regional cooperation among the countries from colonial times; and (b) there is shared legal tradition which derives from common law origins. It was resolved by the Project Steering Committee that the two historical facts could be relied upon to support harmonized legislation on selected themes in the commonly shared environment.

Representatives of the three governments met in February 1995 to work out general principles and modalities for their cooperation. Their second meeting was in May 1995 to discuss the general terrain of topics amenable to development and harmonization of laws. The final decision on six priority topics was taken at their third meeting in February 1996.

The six topics which were selected for the Project's activities are: (i) Development and harmonization of EIA Regulations; (ii) Development and harmonization of laws relating to transboundary movement of hazardous wastes; (iii) Development and harmonization of the methodologies for the development of environmental standards; (iv) Development and harmonization of forestry laws; (v) Development and harmonization of wildlife laws; and (vi) Recommendation for legal and institutional framework for the protection of the environment of Lake Victoria. For each of the topics, the delegates worked out generic terms of reference. However, each national team was subsequently to work out country-specific terms of reference to reflect national legal and institutional situations as well as existing priorities.

The respective national consultants were also selected by the National Coordinating Committees (NCC), working in consultation with an officer at the UNDP country office.

The national consultants have now completed their work. In each case, the reports have enjoyed review by the national panels constituted under the aegis of the respective NCCs. Draft reports, as they evolved, were circulated to the consultants in the three countries. In some cases, the consultants were able to take the reports of their counterparts into account in finalizing their reports. Therefore, some degree of harmonization of reports will, presumably, have been done.

The workshop which is proposed herein, will bring together the consultants for each topic for substantive discussions of their reports and to agree on recommendations as to what should be done next and by whom.

III. OBJECTIVES

The objectives of the workshop may be summarized as follows:

- (1) to ensure that the recommendations for policies and law for the respective topics are in harmony as far as possible;
- (2) to promote the development of legal and institutional machineries which are comparable in all the three East African countries in the absence of an over-arching sub-regional framework;
- (3) to harmonize the normative prescriptions and institutional machineries and therefore create an opportunity for harmonized enforcement procedures; and
- (4) to create an opportunity for dealing with the respective environmental problems according to the problem-sheds, which are essentially sub-regional.
- (5) to make recommendations on how each country should proceed towards implementation of the recommendations.

IV PARTICIPANTS

There will be four (4) broad categories of participants, over a seven days period:

- (1) Consultants who worked on each respective topic. These will work as specific sub-regional teams of experts of reach topic and the number per topic varies by the subject and from country to country. The selection of consultants was done so as to ensure complementarity of expertise and, therefore, full coverage of the topic.

A list of consultants by the topics is attached.

- (2) National Coordinators for the project will attend from each of the three countries. Since they are in the picture of the project and how the consultancies were carried out at the national level, the coordinators will attend throughout the workshop. They are to carry the national spirit and ownership, ensuring that the workshop recommendations are consistent with national legislative procedures and policies. They can therefore suggest adjustment in the recommendations while maintaining the overall objectives.

The meeting of country representatives in February 1995 had suggested that the national coordinator, who would eventually attend this workshop, should ideally have legal training. However, where the coordinator has no legal training then he/she should be accompanied to this workshop by another government officer who is fully aware of this project and is legally trained.

The rationale for this position is that the coordinator (and such an associate) would be responsible for ensuring that the documents emanating from the workshop are consistent with the national legislative framework, procedures and policies.

This provision should explain instances where the one national coordinator may be accompanied by an additional officer. The national coordinator and his/her associate would also have two procedural functions at the workshop. First, they would be advisors to the meeting of permanent secretaries (see below) on the substance and procedures of the project. Secondly, they will present the status report on the evolution of the project at country level, to the meeting of permanent secretaries.

- (3) There will be two principal Facilitators at the Workshop. The two persons will have read all the six reports from the three countries and identified the main features/typologies which require (i) improvement for internal cogency and/or (ii) harmonization from normative, procedural or institutional point of view.

It is proposed here that while the foregoing preparation should ideally cover all the six topics from the three countries, it may be practical for the respective facilitator to read broadly, but prepare detailed comments on only three topics. We anticipate that two teams of respective consultants on each topic will run concurrently for a maximum of two days for each topic, making a total of three days for the consultants' sessions. Thus, a facilitator would work in details with one group on three teams for the respective three days.

The East African Sub-Regional Project has been an intriguing experiment not only for the project management but also for members of the Steering Committee. The latter group is keen to follow the procedure and see the quality of the outcome. For these reasons, the project management has deemed it fit that the facilitators for each team of consultants should be from the institutions and members of the Steering Committee.

It is with gratitude we record here that Professor David Freestone (The World Bank) and Mr. Jonathan Lindsay (FAO) have accepted to assist as facilitators for the workshop.

- (4) A meeting for Permanent/Principal Secretaries responsible for environment from the three countries, was proposed by the 1995 meeting, as a component of the sub-regional workshop. Therefore, there would be only one such officer from each of the three countries, making a total of three.

Their meeting will be attended by the national coordinators as discussed above.

The permanent/principal secretaries are the accounting officers and policy leaders in their ministries. It was deemed essential that they receive a full briefing on the aspirations and activities of the project. In this way they can discuss the deliverables and take decisions and assume actual ownership of the outcome.

Ultimately, their cooperation and support is essential for the national level adoption and enactment of the recommendations of this project.

This explains the necessity of a meeting of these senior officers together with their national coordinators, with pertinent legal backing. It is also essential that this meeting be held towards the end of the workshop, to receive the report or outcome of the sessions of consultants.

The meeting will comprise a briefing on the overall Joint Project by the management, and a report on the national activities by each of the three coordinators; workshop reports from the meeting of consultants on each of the project topics, given by the national coordinators. In other words, each national coordinator will assume the repertory role for two of the six topics.

- (5) The overall workshop Chair will be by Director, UNEP Environmental Law and Institutions, Programme Activity Centre.

V. PROGRAMME OF THE WORKSHOP

The Workshop will be divided into two broad categories:

1. Meeting of Experts/Consultants
2. Meeting of Permanent/Principal Secretaries

The duration is from 2nd to 10th February 1998. The daily schedule will be from 0830 hours to 1700 hours, subject to variation by necessity.

Although the records of the proceedings will be kept by the Secretariat, it is proposed that a representative/consultant from one of the countries be the official rapporteur, responsible to the workshops, for the accuracy of the reports. Subject to confirmation by the meeting of consultants, we propose that the country teams be designated as rapporteurs as follows: EIA Regulations (Uganda); Lake Victoria Environment (Tanzania); Hazardous Wastes (Tanzania); Environmental Standards (Uganda); Wildlife (Kenya); and Forestry (Kenya).

Daily meetings of the experts will run on two Tracks, as in table below:

Consultants for each topic will arrive the day before their respective topics schedules on the programme and depart after the end of the second day. The Coordinators as described above will stay from 1st to 10th February 1998.

8th February Preparation of reports by the Coordinators
Arrival of Principal/Permanent Secretaries

9th and 10th - Meeting of the Permanent/Principal
February Secretaries (with Facilitators from FAO and
The World Bank and the National
Coordinators). The six topics will be
paced out over the two days and resolution
adopted at the end of the deliberations. A
detailed programme of work for the two
days will be drawn in consultations with
the national coordinators.

DATES	TRACK I IN TOPICS	TRACK II TOPICS
2nd & 3rd February	EIA Regulations	Lake Victoria Environment
4th & 5th February	Hazardous Wastes	Wildlife Legislation
6th & 7th February	Environmental Standards	Forestry Legislation

VI. OUTLOOK

At the end of the meeting of the experts, each consultant will be expected to have a clear picture of what additional amendments or changes they need to do to effect the harmonization. It will be urged that such amendments are completed within approximately two weeks after the workshop.

Secondly, the national coordinators will advise on the approximate schedule for the national consensus-building workshops and implementation of recommendations.

Finally, the consultants will make such other adjustments as may be recommended by the workshop. The national coordinators will advise on when the final reports will be submitted and, therefore, the activities concluded.

The principal/permanent secretaries may, in instances where they deem it practical, advise on when the legislative actions might be taken at national level on each topic.

APPENDIX III

UNEP/UNDP JOINT PROJECT ON ENVIRONMENTAL LAW AND INSTITUTIONS IN AFRICA

EAST AFRICAN SUB-REGIONAL PROJECT MEETING OF THE PERMANENT SECRETARIES RESPONSIBLE FOR ENVIRONMENTAL MATTERS

Nairobi, 15 April 1998

REPORT OF THE MEETING OF THE PERMANENT SECRETARIES ON THE DEVELOPMENT AND HARMONIZATION OF ENVIRONMENTAL LAW ON SELECTED TOPICS UNDER THE EAST AFRICAN SUB-REGIONAL PROJECT

BACKGROUND:

The meeting of the Permanent Secretaries responsible for environmental matters in Kenya, Uganda and Tanzania met in Nairobi, Kenya at the UNEP Headquarters on 15 April 1998. The meeting marked a culmination of series of activities executed under the East African Sub-regional Project of the UNEP/UNDP/Dutch Joint Project on Environmental Law and Institutions in Africa which began in 1995. In particular, the Permanent Secretaries met to discuss, evaluate and assess the recommendations made by a series of six sub-workshops held simultaneously and back to back in Kisumu, Kenya from 2-10 February 1998.

The sub-workshops had reviewed and assessed the reports prepared by national consultants on the six priority areas identified earlier on, namely, Environmental Impact Assessment (EIA) Regulations, Hazardous Wastes, Environmental Standards, Lake Victoria Environment, Wildlife laws and Forestry laws. Furthermore, each sub-workshop had made a series of recommendations geared towards assisting the national consultants with mechanisms to strengthen their reports on the basis of discussions and comments made in the relevant sub-workshops.

Based on recommendations made by experts in the six sub-workshops, the meeting of Permanent Secretaries was convened as above stated to review the work of the experts and the recommendations for action. The one day meeting was followed by another day's meeting of the National

Coordinators of the Project to finalize the documents, on the basis of instructions given by the Permanent Secretaries.

OPENING OF THE MEETING:

The meeting of the Permanent Secretaries was officially opened by Mr. Donald Kaniaru, Director, UNEP, ELL/PAC, at 9.10 a.m. on 15 April 1998 at UNEP Headquarters. The morning part of the meeting was chaired by Mr. Donald Kaniaru, while the latter afternoon part was chaired by Mr. Patrick Kahangire, Acting Permanent Secretary, Ministry of Natural Resources, Uganda.

In his opening remarks, Mr. Kaniaru expressed his hope that the intervening period had provided appropriate opportunities to the Permanent Secretaries to be briefed on the results of the sub-workshops by their National Coordinators, and that in turn, they had consulted their other colleagues in the relevant Government departments on the issues discussed. In that regard, he called upon the Permanent Secretaries to comment on each of the six areas, principally focusing on updates and actions taken since the sub-workshops in February 1998. He further requested them to endorse or modify or add to the recommendations or specific points made by the consultants to pave the way for targeted implementation.

He concluded by urging that the three Governments should advise the relevant departments dealing with the East African Co-operation Secretariat (EAC) of the evolving need to take up environmental policy coordination questions urgently, and

the possibility of negotiating treaties or protocols to give legal effect to the recommendations made by the consultants. He assured the Permanent Secretaries that once EAC is advised by the Governments, UNEP would be ready to assist by making its expertise available to the EAC and the Governments.

BRIEF ON THE SCOPE OF THE JOINT PROJECT:

The Task Manager of the UNEP/UNDP Joint Project in Environmental Law and Institutions in Africa, Professor Charles O. Okidi, briefed the Permanent Secretaries on the scope, objective and status of the Joint Project including the sub-regional project. He clearly showed them what the Sub-Regional Project has achieved to date and where it stands in relation to the overall Joint Project.

STATEMENTS BY PERMANENT SECRETARIES:

The Permanent Secretaries made statements and, in particular, informed the other participants the role the Joint Project has played in their countries, in particular, in the field of the development of environmental law and institutions including building the capacities of their officials and institutions. Status of development of environmental legislation in each country were narrated in the statements including the constraints faced in the implementation of some of the activities.

The Permanent Secretaries appreciated the Joint Project efforts in organizing several capacity building workshops in the field of environmental law. They were also delighted with the efforts taken by the Project to utilize national experts to undertake review of the six priority areas. The exercise has succeeded in building a cadre of national expertise in the field of environmental law and ensures national ownership of the reports produced and laws and/or implementing regulations prepared.

All of them were thankful to the sponsor of the Joint Project, the Dutch Government, the implementors of the Project, UNEP and UNDP as well as all other supporting partner organizations, IUCN, FAO, and the World Bank. To this end, they unanimously recommended the extension of the Joint Project to permit them to complete the on-going activities and allow the Governments to develop regulations to implement the six areas. They emphasized that the extended period would equally permit them to focus on new priority areas identified by their experts.

PRESENTATION OF THE REPORTS OF THE SUB-WORKSHOPS:

On behalf of the National Coordinator from Tanzania, the National Coordinators from Kenya and Uganda officially presented to the Permanent Secretaries the reports which

were adopted by the experts of each Sub-Workshop on the six areas discussed during their meetings held in Kisumu, Kenya from 2 to 10 February 1998. The presentation of each report was followed by discussion of the issues raised and recommendations made. As necessary, an update of the facts or situation since February 1998 in each country was made. For instance, Uganda reported that they had their national consensus building workshop to review the reports and the revised reports have already been forwarded to UNEP. Kenya reported that it was going to hold its national workshop from 26 April to 1 May 1998 to review the consultants' reports and recommendations. Tanzania on the other hand, reported that it held its national workshop on 11 April 1998 whereby the reports were reviewed and recommendations made. As the result of the national workshop recommendations, Tanzania had requested for extension of time to permit the consultant to prepare the report on EIA while the one dealing with the forestry legislation to rewrite it to the required standards.

The reports presented were on the development and harmonization on the following six areas:-

- (i) Environmental Impact Assessment Regulations
- (ii) Forestry Legislation
- (iii) Transboundary Movement of Hazardous Wastes
- (iv) Methodology for the Development of Environmental Standards
- (v) Management of the Lake Victoria Environment
- (vi) Wildlife Legislation.

The presentation of each report was divided into four main sectors. They were namely:-

- (i) General overview of the reports as presented by the national consultants in the sub-workshop.
- (ii) Reasons justifying the need for sub-regional harmonization of each area presented.
- (iii) Common elements to be considered by Governments during the preparation of national legislation in each of the six areas.
- (iv) Conclusions made by each sub-workshop, namely, requesting EAC to assist in the preparation of an overarching agreement on the environment with sectoral Protocols on each of the six areas. While requesting UNEP to facilitate the development of the agreement and the protocols, reports urged the donor to favourably consider extending the Joint Project.

RECOMMENDATIONS:

The Permanent Secretaries endorsed all the six reports of the sub-workshops together with the recommendations made

with minor adjustments. They all acknowledged that the reports were a clear testimony of success of the capacity which the Joint Project has built in their countries during the execution of Joint Project activities. They expressed satisfaction with the good quality of the reports which were presented to them. While they agreed that the Joint Project has succeeded in organizing capacity building in a number of areas in environmental management, they recommended more training programmes to include the private sector. Of priority importance, the Permanent Secretaries emphasized a training programme on EIA for the private sector.

While requesting UNEP to assist in the implementation of all the recommendations made, the Permanent Secretaries promised to commit themselves to support implementation of activities at national level. In addition, they promised to ensure that the recommendations they have adopted are forwarded to the EAC for implementation as proposed. They recognized the need for an overarching treaty/protocol on the environment which will facilitate future development of sectoral protocols on different priority areas. To this end, they requested UNEP to facilitate and support EAC and the Governments in the development of the proposed protocols, at appropriate moments.

To synthesize their endorsement of the recommendations made by their experts, the Permanent Secretaries requested UNEP to assist and support them in the preparation of a Memorandum of Understanding (MOU) on Environment as a matter of urgency. Consequently, the Permanent Secretaries mandated and instructed their National Coordinators to commence preparation of the draft MOU for their consideration. After consultation, the meeting agreed that the first meeting of the National Legal Experts under the sub-regional project will be held from 25 to 26 May 1998 to discuss and review the draft text which would have by then been prepared and circulated to the national experts for their input. The Permanent Secretaries expects the text to be ready for adoption at the latest in July 1998.

Furthermore, as recommended by the experts, the Permanent Secretaries strongly requested the extension of the Joint Project to allow them to complete the activities already under way. Extension would also permit Governments to strengthen

and reinforce the completed activities by developing implementing regulations. They hope that the extended period would equally permit them to focus on new priority areas to be identified.

FOLLOW UP:

The Permanent Secretaries instructed the National Coordinators who met for another extra day on 16 April 1998, to finalize and compile documents discussed in their meeting.

They were instructed to prepare the following from the recommendations of the experts on the six areas which had been endorsed and the new recommendations which emanated from the meeting:-

- (i) To identify from the reports of the Sub-Workshops recommendations which cut across and common to all the six areas and those recommendations specific only to certain areas. The identification of these issues are attached as *Annex IV*.
- (ii) To identify recommendations which are addressed to Governments for their implementation. These are attached as *Annex V*.
- (iii) To identify recommendations addressed specifically to EAC for their action and execution. These are enclosed as *Annex VI*.
- (iv) To identify those recommendations which requested the support and assistance of UNEP and its affiliates in their implementation. These are enclosed as *Annex VII*.
- (v) To prepare for their adoption and signature, by July 1998, a MOU on Environment. MOU, they emphasized, will be benchmark for the success of the activities under the East African Sub-project.

CLOSING REMARKS:

After usual exchange of courtesies and appreciations for the cordial and friendly atmosphere, the meeting was declared closed at 18.00 hours on 15 April 1998.

RECOMMENDATIONS ON THE HARMONISATION OF ISSUES FOR THE DEVELOPMENT OF HAZARDOUS AND NON-HAZARDOUS WASTES REGULATIONS

The three reports of Kenya, Tanzania and Uganda were harmonized and the following are the major themes for the development and harmonisation of hazardous and non-hazardous wastes regulations.

3. HAZARDOUS WASTES

- a. Hazardous waste should be regulated by legislation within a wider environmental management matrix (such as framework environmental law) complemented by an effective institutional mechanism. This framework should integrate the legal regulation of hazardous wastes with regimes for hazardous substances, non-hazardous waste, air, water and soil pollution
- b. The legislation should be flexible enough to accommodate changes in industry, technology, environment etc.
- c. There should be a common definition of hazardous waste (along the lines of the Bamako Convention).
- d. Similar/identical systems among the three countries for registration of hazardous waste and a licensing system for emissions, disposal and management measures should be established.
- e. Adherence to the polluter pays principle should be accepted as the baseline.
 - Industries should have the obligation of appropriate prior treatment of hazardous waste before discharge into central treatment facilities or the environment.
 - Comparable systems of licensing fees should be adopted on sub-regional basis.
- f. Penalties commensurate with the severity of risks should be commonly adopted and/or harmonized.
- g. Provision should be made for health and safety regulations for those employed in facilities that generate, transport or dispose of hazardous waste, and the rigorous enforcement of those regulations.
- h. Utilization of economic and social instruments (including incentives and self-regulation) should be commonly encouraged.
- i. Provision should be made for waste minimization through cleaner production methods, reclamation, re-use, and recycling.
- j. Compulsory insurance against risks with premiums to be paid by the industry (perhaps a common scheme with bonding arrangements) should be established.
- k. The regime should reflect international obligations, so as to include for example, the following concepts:
 - Prior Informed Consent
 - No import from outside Africa
 - Prohibition of illegal traffic
 - Repatriation of illegal imports
 - Exchange of information (especially at sub-regional level)
- l. Scientifically managed waste disposal methods should be practiced.
- m. A consistent measurement system should be established for hazardous waste among the three countries of the sub-region.
- n. Similar provisions for packaging and labelling should be developed.
- o. Provision for sorting of waste adopted and harmonized.
- p. Planning should be made for disaster preparedness at local and national levels with provision for sub-regional response cooperation, particularly for shared resources.
- q. To address the situation where damage might exceed the limits of the proposed insurance scheme, restoration funds should be established at national level and consideration be given to a sub-regional scheme.
- r. EIA should be practiced for disposal facilities, regulation of operations, maintenance and closure of sites.
- s. Regulation of storage, handling and transportation of hazardous waste should be developed and harmonized.
- t. Specific regime should be established for transboundary impacts incorporating respect for the principles of equitable utilization of shared natural resources and the avoidance of transboundary harm.
- u. Special protection must be adopted for of human settlements as well as fragile and vulnerable environments in the sub-region, for example, islands, biodiversity components, wetlands, terrestrial, freshwater and marine eco-systems.
- v. Decentralization of enforcement should be organized to ensure efficiency.

APPENDIX IV

UNEP/UNDP/DUTCH JOINT PROJECT ON ENVIRONMENTAL LAW AND INSTITUTIONS IN AFRICA

EAST AFRICAN SUB-REGIONAL PROJECT WORKSHOP ON HARMONIZATION OF DRAFT REPORTS AND LAWS

February 2-10 1998

LIST OF PARTICIPANTS BY SUBJECTS

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Permanent Secretary, Ministry of Environment and Natural
Resources, Kenya
Principal Secretary, Office of the President, Tanzania
Permanent Secretary, Ministry of Natural Resources, Uganda

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