KINGDOM OF LESOTHO

NATIONAL PROFILE OF CHEMICALS MANAGEMENT INFRASTRUCTURE

2010

MINISTRY OF TOURISM, ENVIRONMENT AND CULTURE

DEPARTMENT OF ENVIRONMENT / NES

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The project "Updating National Chemicals Management Profiles, Development of a National SAICM Capacity Assessment, and Holding of a National SAICM Priority Setting Workshop" in Lesotho was developed with the technical assistance of the United Nations Institute for Training and Research (UNITAR) and the financial support of the Strategic Approach to International Chemicals Management (SAICM) Quick Start Programme Trust Fund.

saicm

unitar
United Nations Institute for Training and Research

FOREWORD

The development of a National Profile or the updating of an existing National Profile in the manner suggested, has resulted in a useful tool to support the implementation of various international agreements including Strategic Approach to International Chemicals Management (SAICM) and the Stockholm Convention on Persistent Organic Pollutants (POPs). While the suggested approach is comprehensive, the guidance document has been designed to provide flexibility to countries in order to ensure that efforts are undertaken in accordance with country priorities and are consistent with available information and resources

A National Profile is a comprehensive assessment, done at the country level involving all interested and affected parties, of the national infrastructure relating to legal, institutional, administrative and technical aspects of chemicals management. A National Profile also provides key information on the nature and extent of chemicals availability and use in the country.

The Stockholm Convention, which was adopted in May 2001, is a global treaty designed to protect human health and the environment from persistent organic pollutants (POPs). The Convention text specifies the measures that must be taken in order to comply with the obligations associated with being a Party to the Convention. These include regulatory measures regarding production, import, export, use and disposal and reduction/elimination of unintentional releases of POPs.

A basic and early requirement of a country to meet its obligations as a Party to the Stockholm Convention is the preparation of a National Implementation Plan (NIP). Lesotho has done so and is in the process of implementing the plan. Understanding the country's baseline situation regarding POPs, and chemicals in general – through the preparation of a National Profile – can be seen as a fundamental component of a NIP. Thus while the NIP was developed, the Profile is also updated as a partner product and tool for efficient management of chemicals.

At its inception meeting in Stockholm in 1994, the IFCS recommended that "National Profiles to indicate the current capabilities and capacities for management of chemicals and the specific needs for improvements should be elaborated as soon as possible and no later than 1997". The Profiles were recognized as one of its "Priorities for Action" to implement Chapter 19 of Agenda 21.

Two years later, the Second Intercessional Group of the IFCS (ISG-2) invited countries to "...commit to the preparation of a mini or comprehensive National Profile...using the process in the revised UNITAR guidance document". During its Second Session in Ottawa, Canada, February 1997, the IFCS issued a statement which "encourages countries to prepare and continuously update national profiles, using the UNITAR/IOMC guidance document, with the involvement of all concerned parties, and to use conclusions based on these assessments to define priorities to be addressed through national action programmes for strengthening chemicals management…".

The Intercessional Group Meeting (ISG 3) in Japan, December 1998, called on "IFCS Vice presidents to continue their efforts supporting the completion of countries' National Profiles, with the purpose of both improving the sound management of chemicals in each country and with the view towards compiling a

regional profile. ISG3 encouraged those countries that have not prepared their National Profile to do so before Forum III, and requested donors to support governments and UNITAR/IOMC activities in this area".

At the Third Session in Salvador da Bahia, Brazil, October 2000, the IFCS committed, with the support of donor countries and international organizations, to achieve the following goal:

> "By 2002: Most countries, through a multi-stakeholder process, will have developed a National Profile on chemicals management, ensured national coordination for the sound management of chemicals and designated an IFCS National Focal Point".

In addition to the implementation of the Stockholm Convention, a variety of chemicals related international agreements and conventions exist which have and will continue to affect national legislation, regulations and policies for the sound management of chemicals. Examples of key international agreements, many of which have only been recently negotiated, include: Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal and Rotterdam Convention on the Prior Informed Consent (PIC) Procedure for Certain Hazardous Chemicals and Pesticides in International Trade; Chemicals Weapons Convention; Vienna Convention/Montreal Protocol on Substances that Deplete the Ozone Layer; and ILO Convention 170 concerning safety in the use of chemicals at work. Furthermore, while each of these agreements has its precise objectives and purpose, some of the regulatory and policy instruments required to implement the obligations under various agreements at the national level are often similar, if not the same.

Recognizing the potential for synergy across the implementation of the various chemicals related international agreements and the need for related coordination within countries, the World Summit on Sustainable Development (WSSD), in an effort to further build on the achievements made since United Nations Conference on Environment and Development (UNCED) and expedite the realization of the remaining goals, outlined subsequent steps in its *Plan of Implementation*. Included in this plan are recommendations to "Promote the ratification and implementation of relevant international instruments on chemicals and hazardous waste…and encourage and improve coordination as well as supporting developing countries in their implementation" (Paragraph 22(a)), and "Encourage partnerships to promote activities aimed at enhancing environmentally sound management of chemicals and hazardous wastes, implementing multilateral environmental agreements, raising awareness of issues relating to chemicals and hazardous waste, and encouraging the collection and use of additional scientific data (Paragraph 22(d)).

'MAMORUTI MALIE (MRS)

PS. Ministry of Tourism, Environment and Culture

FOREWORD TO THE FIRST NATIONAL PROFILE [1997]

Nine years have gone by since the majority of the countries have endorsed the concept of environmentally sustainable development at the Earth Summit in Rio de Janeiro, Brazil, 1992. The participating Governments articulated their commitment to sustainable development in Agenda 21. Chapter 19 of Agenda 21 deals specifically with environmentally sound management of chemicals. In this regard legal and technical infrastructure for environmentally sound management of chemicals is crucial. The participating nations resolved that "by the year 2000, national systems for environmentally sound management of chemicals including legislation and provision for implementation and enforcement should be in place in all countries to the extent possible".

It is generally, accepted that the use of chemicals is an essential means of achieving socio-economic development in the countries throughout the world, Lesotho included. In order for such activities to be consistent with the government's developmental goal of sustainable development, the application of chemicals has to maximize the benefits while minimizing their adverse effects on human health and environment.

The importance of baseline data collection on chemical management practices in the country as a starting point, for achieving the aforementioned goal, could not be over-emphasized. The national chemical management profile which essentially provides baseline data will be used as an official national reference document, which gives a clear picture of the national legal, institutional, administrative and technical infrastructure for management of chemicals. The report has identified gaps, national needs, strengths and weakness in the existing infrastructure. It has also identified national priorities in as far as chemical management is concerned.

The profile should therefore be viewed as a "living" document, which will be regularly updated as more information becomes available.

More importantly, this document will serve as a benchmark for all concerned parties to cooperate towards the development and implementation of a national action plan for environmentally sound management of chemicals.

'MAMORUTI MALIE (MRS)

P.S. - Environment, Gender and Youth Affairs

ACKNOWLEDGEMENTS

The project "Updating National Chemicals Management Profiles, Development of a National SAICM Capacity Assessment, and Holding of a National SAICM Priority Setting Workshop" in Lesotho was developed with the technical assistance of the United Nations Institute for Training and Research (UNITAR) and the financial support of the Strategic Approach to International Chemicals Management (SAICM) Quick Start Programme Trust Fund.

This report is a collective product in more ways than one. Starting with its authorship, its commissioning and towards its actual compilation, there has been a multitude of players. The Committee on Chemical Management wishes to pass their deepest gratitude to all those stakeholders who collectively and individually contributed in the compilation in many ways making this product what it is.

It would be remiss not to mention all environmental Units members of the line ministries for the comments and inputs, which they so consistently and patiently offered.

An equal measure of gratefulness goes to the administration of the Ministry and NES for allowing a conducive environment with full cooperation and support for our Second and more comprehensive National Profile on Chemicals Management Infrastructure.

Above all we would like to thank all those respondents, for taking time out of their daily activities and patiently responding to what is admittedly a difficult and pretty much impossible questionnaire.

ABBREVIATIONS/ACRONYMS

AAS	Atomic Absorption Spectroscopy
AGOA	African Growth and Opportunity Act
ALE	Association of Lesotho Employers
CEDAMA	Committee on Environment Data Management
CFC	Chloro-Fluoro Carbon
CHEMAC	Chemical Management Committee
COLETU	Congress of Lesotho Trade Unions
COWMAN	Committee for Waste Management
DANCED	Danish Cooperation for Environment and Development
DDT	Di-nitro-dichloro-ethylene
DMA	Disaster Management Authority
FAO	Food and Agriculture Organization
FDA	Food and Drug Association
FIDA	Federation of Women Lawyers
FMU	Food Management Unit
GC	Gas Chromatograph
GLP	Good Laboratory Practices
GMP	Good Management/Manufacturing Practice
HPLC	High Pressure Liquid Chromatograph
ICCS	International Conference on Chemical Safety
ICP-AES	Inductively Coupled Plasma Atomic Emission Spectroscopy
IFCS	Inter-governmental Forum on Chemical Safety
ILO	International Labour Organization
IMF	International Monetary Fund
IR	Infra Red Spectroscopy
IRPTC	International Register of Potentially Toxic Chemicals
IPCS	International Programme on Chemical Safety
LCCI	Lesotho Chamber of Commerce and Industry
LCO	Lesotho Consumer Organization
LCN	Lesotho Congress of Non-governmental Organizations
LCTU	Lesotho Congress of Trade Unions
LEA	Lesotho Environment Authority
LEC	Lesotho Electricity Corporation
LEJAC	Lesotho Environmental Justice and Advocacy Centre
LHDA	Lesotho Highlands Development Authority
LPC	Lesotho Pharmaceutical Corporation
LPG	Liquefied Petroleum Gas
MCC	Maseru City Council
MDP	Ministry of Development Planning
MEGYA	Ministry of Environment, Gender and Youth Affairs
MITM	Ministry of Industry, Trade and Marketing
MNR	Ministry of Natural Resources
MOHSW	Ministry of Health and Social Welfare

MOAFS	Ministry of Agriculture and Food Security
MOEL	Ministry of Employment and Labour
MTEC	Ministry of Tourism, Environment and Culture
NEAP	National Environment Action Plan
NES	National Environment Secretariat
NGO	Non-governmental Organization
NUL	National University of Lesotho
NMR	Nuclear Magnetic Resonance
OSH	Occupational Safety and Health Inspectorate
PBB	Poly-Brominated Bi-Phenyl
PCB	Poly-Chlorinated Bi-Phenyl
PIC	Prior Informed Consent
POP	Persistent Organic Pollutants
PS	Principal Secretary
RSA	Republic of South Africa
SACU	Southern Africa Customs Union
SQUAM	Standards and Quality Assurance Management
TRC	Transformation Resource Centre
UN	United Nations
UNCED	United Nations Conference on Environment and Development
UNDP	United Nations Development Programme
UNEP	United Nations Environment Programme
UNITAR	United Nations Institute for Training and Research
WASA	Water and Sewerage Authority
WHO	World Health Organization
UV-Vis	Ultra Violet & Visible Spectroscopy
WCO	World Customs Organization

EXECUTIVE SUMMARY

Lesotho just like many other members of the UN has taken steps to address the many glaring environmental issues that face her and the rest of the world today. Some of the environmental concerns are directly related to the use, storage and handling of different types of chemicals; industrial, agricultural, pharmaceutical and consumer chemicals. The National Environment Secretariat (NES) through the Chemical Management Advisory Committee (CHEMAC) and two consultants, a chemical profile of the country has been compiled with the aim of using it as a baseline for future activities. It is hoped that indeed this profile shall point the way forward for effective management of chemicals especially in establishing the right legal, institutional, and administrative and infrastructure tools.

While all efforts were made in the first national profile, there were some gaps, mainly data gaps. This resulted in an incomplete or no assessment at all. Recommendations were made towards improving data systems and a committee on data management was set up in order to facilitate orderly maintenance of data systems in various relevant institutions and further to facilitate means and ways of sharing such data. Within the Bureau of Statistics, a division of Agriculture and Environmental Statistics was established. This division is however still involved in agricultural data alone so far.

The main incorporations can be cited as updating of data, the same data that is now updated to 2008 available values or data currently available; secondly aspects of Persistent Organic Pollutants and some other conventions that are chemically orientated have been included and lastly political changes and governance. Attempts were made to solicit sectoral budgetary breakdowns but to no avail; either due to too much secrecy or simply not well recorded.

The profile begins with a brief background of Lesotho with emphasis on the geographic, demographic, political and economic description of the country. The chemical manufacturing capacity at the moment is very small with the bulk of the chemicals being imported from other countries especially the Republic of South Africa. This is very much reflective of the generally small industrial and economic base of the country. Chapter 2 provides basic information about the production, importation, exportation and use of chemicals in the country. The highlights of the chapter are that since there is no production of chemicals in Lesotho there are no exports. However, imports are quite substantial with 93% of the chemicals coming from Lesotho's immediate neighbour, the Republic of South Africa.

The next chapter provides an overview of the problems associated with chemical production, trade and use of chemicals. Some of the concerns are that currently chemicals are not registered as a result quantities coming in through the borders cannot be assessed. There is also insufficient ability to control most forms of pollution and contamination by chemicals, which include dyes, hydrocarbons, petroleum products, volatile organic solvents and dioxins.

Legal instruments and non-regulatory mechanisms for the management of chemicals are discussed in chapter 4. The implementation and enforcement of these mechanisms as well as the identification of their relevant strengths and weaknesses are also discussed. Some of the weaknesses which stand out are the lack of specific guidelines in the handling and storage of chemicals other than Liquid Petroleum Gas and Chloro-Fluoro-Carbons. The Environment Bill has also taken a long time to be enacted and hence is hampering progress in the management of chemicals and the environment at large.

In chapter 5, the mandates and programmes of different ministries, agencies and other governmental institutions responsible for various aspects of chemicals management are described and analyzed. The various ministries, agencies and other governmental institutions responsible for a range of activities, including importation, production, storage, transportation, distribution, marketing, handling and disposal are identified. However, the level of involvement in these activities is largely not quantified nor qualified.

A description and review of activities of non-governmental bodies and entities which support national efforts to manage chemicals is detailed in chapter 6. Few organizations that have the capacity to provide information relating to chemical management activities are NES, LMS, Department of Labour, Ministry of Agriculture, NUL and LPC. To a large extent the organizations have the resources such as laboratories, libraries and trained personnel. However, lack of records has contributed to the little or no availability of information regarding the management of chemicals and other related activities.

Chapter 7 describes and analyses mechanisms which facilitate co-ordination and co-operation among ministries, agencies and other relevant governmental and non-governmental bodies, in particular areas of chemicals management. All in all there are no formal means of co-operation between government ministries, NGO's and other organizations. However, some NGO's are part of many policy-making bodies even though currently there are no policies dealing specifically with the management of policies.

The next chapter is concerned mainly with data, its accessibility and its use. It attempts to describe and analyze mechanisms which facilitate co-ordination and co-operation among ministries, agencies and other relevant governmental and non-governmental bodies in particular areas of chemicals management. Even though information and data is not readily available a notable initiative of improving data sharing, CEDAMA has drafted guidelines in relation to data exchange. Also a draft Access to Information Bill is being circulated with the aim of getting input from other stakeholders.

Chapter 9 specifically focuses on the technical infrastructure in Lesotho. In this chapter, mechanisms that facilitate co-ordination and co-operation among ministries, agencies and other relevant governmental and non-governmental bodies, in particular areas of chemical management are described and analyzed. Laboratories, research centers, computers etc. are identified as infrastructure installations and facilities which are key to the management of chemicals.

Chapter 10 describes national participation and involvement in international organizations concerned with the management of chemicals and to identify opportunities for an integrated approach at the national level. On the other hand, chapter 11 provides an overview of mechanisms available to provide information to workers and to the public concerning the potential risks associated with chemical production, import, export, handling, use and disposal. While the last chapter provides an overview of resources available within government relating to various aspects of chemical management and to analyze resource needs.

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INTRODUCTION

Chemicals are a vital part of our daily life. They provide us with a wide range of benefits, from day to day-household needs, such as cosmetics and fuel to increased agricultural and industrial productivity as well as control of diseases. On the other hand these very chemicals have become a potential cause of health and environmental problems throughout their life cycles. To many, the word 'chemical' has become synonymous with danger.

The last three decades have seen a number of international efforts, which attempted to address specific aspects of chemicals management; among these international policy instruments, we can cite a few which include:

- The United Nations Environment Programme, London Guidelines for exchange of Information on chemicals in International trade.
- Food and Agricultural Organization International code of conduct for the Distribution and Use of Pesticides
- International Labour Organization 1993 Convention Concerning the Prevention of Major Industrial Accidents
- Stockholm Convention on Persistent Organic Pollutants
- Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal;
- Rotterdam Convention on the Prior Informed Consent (PIC) Procedure for Certain Hazardous Chemicals and Pesticides in International Trade;
- Chemicals Weapons Convention;
- Vienna Convention/Montreal Protocol on Substances that Deplete the Ozone Layer; and
- ILO Convention 170 concerning safety in the use of chemicals at work.

A follow through of all these came as a declaration out of the 1992 United Nations Conference on Environment and Development in Rio De Janeiro. This conference devoted a considerable attention to the issues of chemicals management. This is recognized in chapter 19 of the Agenda 21, a comprehensive document outlining responsibilities of states towards achieving environmentally sustainable development.

As a first key step in response to Agenda 21, International Programme on Chemical safety (IPCS) convened an International Conference on Chemical Safety (ICCS) in Stockholm in April 1994. It was in this conference where, an Intergovernmental Forum on chemical safety (IFCS) was established; as a non- Institutional arrangement that would advice and recommend to governments of states and NGO's on issues of chemicals management.

In its provision of policy guidance in the management of chemicals, the forum puts emphasis on regional and sub-regional co-operation. One of the priorities for Action Plan, to implement the

recommendations of chapter 19 of Agenda 21, is the preparation of National Profiles on chemical management. These profiles should serve as baseline documents setting out the legal, institutional, administrative and technical infrastructure for management of chemicals within each country. The major intention is to provide governments, institutions, business, professional organizations and the general public with a comprehensive description of the way in which chemicals are managed.

The profiles are thus meant to contribute to a better understanding of which problems or potentials problems related to chemicals exist in a country, and what mechanism are available to address these problems.

The profile shall then become a reference point against which future activities can be measured. One of the centerpieces in preparation of a national profile is to encourage greater communication and cooperation between all stakeholders concerned with issues relating to chemicals

The United Nation Institute for Training and Research (UNITAR) developed a document to assist countries in preparation of profiles. Countries depending on political, economic and social needs can use this document flexibly;

The National Environment Secretariat as the focal point in Lesotho, through the Chemical Management Advisory Committee (CHEMAC), appointed consultants to compile and start dialogue on the profile, under their coordination. In the development of the first country profile, in 1998 the consultants followed through with consultations and drafting, while members of CHEMAC reviewed the text. Several institutions and organizations as reflected in the acknowledgements provided useful inputs and documents. Members of CHEMAC are listed in Appendix 3.

NATIONAL PROFILE OF CHEMICALS MANAGEMENT INFRASTRUCTURE; 2008 is a new document that has been build over and above the earlier version. It is in effect an updating of the national old profile. The process of updating has been done here to provide three areas which add value to the old document; the added and changed information relates to:

Persistent Organic Pollutants, which were not included in the last issue
Up to date data as pertaining to all relevant assessment basis and
Country specific SWOT is then undertaken to offer basis for capacity assessment

The format and style of the report has been changed slightly, with the addition of new chapters introduced in the most recent national profile guidance document being included. For purposes of this profile chemicals are said to be elemental or compound substance or mixtures of substances, which are active constituents of or used in manufacturing of products. Applications of these chemicals have been divided into industrial, agricultural, pharmaceutical and consumer (food additives and cosmetics). The term contaminant thus refers to these chemicals in different media, which they were not meant for.

Many Areas concerned with chemicals management in Lesotho are not particularly documents and systematic data are hard to come by wherever it even exists. Relevant legislation, management/regulatory structures are however clear enough, at least within the present context. Roles of NGO's are flamboyantly understood.

Because of the general easy going and low basic understanding of environmental problems on the part of our greater general public, which exacerbated the difficulty of data collection, some areas could not be dealt with, with thorough extent. The focus thus became directed towards the eminent problem of indifference towards chemical management in general, data and regulatory mechanisms.

As was the hope of the committee on chemical management, that the document should be a living document and that it is updated and reviewed regularly, this is the first review and updating which also includes aspects of the POPs.

CHAPTER 1:

NATIONAL BACKGROUND INFORMATION

1.1 – PHYSICAL AND DEMOGRAPHIC CONTEXT

The Kingdom of Lesotho is a small, landlocked, mountainous African state forming part of Southern African region. Situated within the boarders of South Africa, it is a sovereign and independent state. The country is herein influenced by a description of its landscape and population, its political and socio-economic structure.

Lesotho lies between latitudes 28 and 31 degrees South and longitudes 27 and 30 degrees East. Located at the Southern Tip of Africa Lesotho is completely outside the tropics and enjoys a cool, temperature climate. Known as the "mountain kingdom", this is the only country in the world with all its territory lying at altitudes in excess of 1000 meters above sea level.

About two thirds of this land of high mountains, deep valleys and cool rivers consists of high land area known as the Maluti, while the rest toward the western side constitutes the foothills and the narrow 'low lands' (lowest point being 1388 meters).

Lesotho comprises an area of 30,355 Km^2 (11, 720 square miles), roughly the size of Belgium. The Maluti Mountains run northeast to southwest, overlooking the western distant of the country- below them. The Drakensberg range in the east is the major chain with high cliffs of the escarpments, making access from the west very difficult. This is where the highest peak in Southern Africa is found. (Thabana Ntlenyana 3, 482m)

The two big rivers of Southern Africa rise out of these mountains, namely the Mohokare and Senqu, which merge and flow all the way to the Atlantic Ocean. The vegetation is mainly grassland and bushveld, with forests in the ravines and on the windward slopes of the mountains.

Lesotho, formerly known as Basotholand, under the British protectorateship since March 12th, 1863; attained independence on the 4th October 1966.

Lesotho is still a constitutional monarchy, however, and keeps working hard to keep its traditional values entrenched in ancient institution and culture of chieftainship. These values are thought to be entrenched even in the demands of present day democratic culture.

Sesotho and English are both official languages, on which all government matters are transacted. Few people speak Xhosa (Bathepu), probably from the Southern Eastern influence across the border. The population of Lesotho is currently estimated at 1,880,661. This is according to the 2006 Lesotho Census of Population and Housing preliminary results. Out of this population males constitute 916,282 and females represent 964,379. The urban population of Lesotho has been rising over the years. This population increased from 10.5% in 1976 to 24% in 2006 leaving the rural population at 76%.. More than 20% of Lesotho,s population resides in Maseru district, the capital district. Maseru is one of the ten (10) administrative districts with their centers declared as urban areas. The fertility rate in Lesotho is estimated at 4.1 per women, with a life expectancy at birth of 58.6 years for males and 60.2 years for females.

The 1996 population census indicated that 29% of population was economically active, which constituted mainly people above 10 years old, with highest activity rate being in the age group 25-54

years. The expected economically active life is 36.1-year for males and 15.7 years for females. The female population of Lesotho is more educated than the male population. The population of illiterate females can be estimated at 45%, implying a literacy rate of 55% for females, while it is 38% for males, the overall being 53%. Beyond this, children aged between 5 and 14 were predominantly illiterate, according to the 1995 National literacy survey. These children then either had no education or had only attended standard 1-4; those children who were 5 to 15 in1995 are currently aged 20-29 and highly economically active, the question is how active are they in the true impact to the economy?. Literacy definition in Lesotho is rather made stringent, in that it is defined as having attained more than four years of schooling.

The concentration of unemployed population is in the 20-44 age groups, and these people predominantly just have 'primary' education, but for men, the 2nd largest group is 'no schooling' at all. This implies that policy aimed at lowering the unemployed rate in the country should focus on middle aged and uneducated people, or people with low levels of education. Out of 438, 642 employed Basotho, which is 20% of the total population, 124,258 are working outside Lesotho.

As in many developing countries informal sector employs between 40-60% of the labour force or between 15 and 25 million people in Africa. (ILO/JASPA), 1986). For purposes of this report informal sector includes all economic activities, which are not effectively subject to 'formal' rules of contracts, licenses taxation, inspections, etc. While the observations are that it is the biggest sector, there are no adequate records of its quantification.

1.2 – POLITICAL/GEOGRAPHIC STRUCTURE OF THE COUNTRY

These sections provide various background details regarding the country that help to set the exercise of National Profile development into the national context.

Lesotho is divided into 10 administration regions named, districts, these within the local government structures are headed by District Administrators. The districts are subdivided into wards, with district coordinating and development councils having a very close relationship with traditional system of administration; hereditary chieftainship is still embraced by most Basotho and is cherished as the grassroots local government.

Lesotho held its first ever local government elections on 30 April 2005. The elections were a major step towards institutionalizing grassroots democracy through direct and active involvement of Basotho in their own governance.
Each Community Council is composed of between nine and 15 elected councillors and a maximum of two chiefs who are nominated by the gazetted chiefs in that Community Council area. Community Councils perform a range of functions as specified in the Second Schedule of the Local Government Act. In the interim phase, due to the immediate challenges posed by inadequate resources and capacities, Community Councils access staff and other resources from District Councils

The chairpersons of all the Community Councils in a district, together with at least one member elected from each Community Council, form that area's District Council along with two chiefs who are elected by the chiefs from the district's Community Councils. A typical District Council consists of a minimum of

21 and a maximum of 41 nominated councilors from Community Councils. District Councils are headed by an elected Chairperson. The 10 District Councils are body corporate. They have the resources, capacity and infrastructure to deliver a wide range of developmental services to the people living and working in their areas.

Maseru Municipal Council is currently the only Municipal Council in existence. Municipal Councils have a minimum of eight members and a maximum of 15 including three gazetted chiefs nominated by other chiefs within the council boundaries. The Maseru Municipal Council is a body corporate formed from a cluster of villages within the urban area of Maseru. It consists of 15 councillors.

The thrust of local government, as envisaged by the Government of Lesotho, is to improve service delivery and bring services closer to the people, this within the context of this document is understood to include waste and chemicals management if not the whole environmental management portfolio.

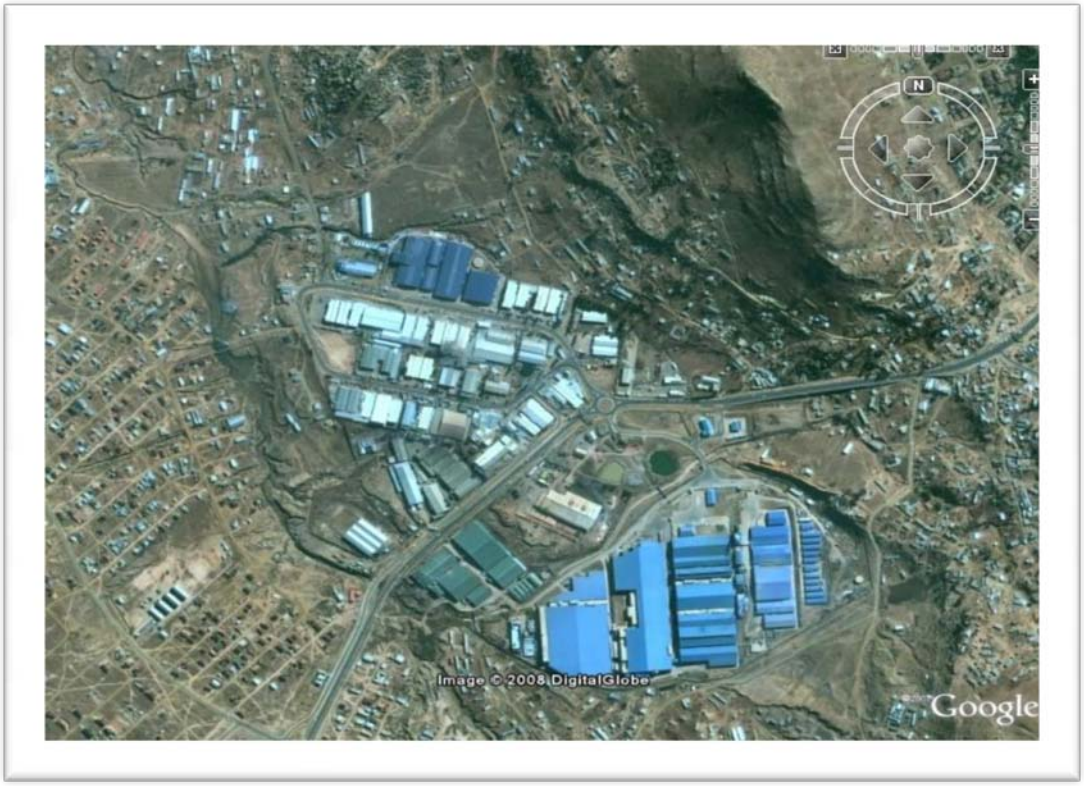
1.3 – INDUSTRIAL, AGRICULTURAL AND OTHER KEY ECONOMIC SECTORS

This section provides and describes general information about the industrial and agricultural sectors of Lesotho. The mission for the performance measurement of the manufacturing sector in Lesotho is to provide accurate, relevant and timely information for decision-making, policy and programme formulation planning and research by both public and private sectors.

1.3.1 Overview of Industry

Lesotho makes a good choice as a location for export oriented manufacturing industries and numerous foreign companies have successfully established bases in this country. The Lesotho National Development Corporation is the major driver behind attracting new manufacturing investments in the country. It administers fully serviced industrial plots, providing both general purpose and customized factory building as well as developing commercial property for leasing. LNDC administers full-secured sites in Maseru, the capital (Thetsane industrial site), at Maputsoe (plus Ha Nyenye). Industrial sites at Teyateyaneng, Mohale's Hoek and Mafeteng are steadily being occupied. All these estates currently cover an area of about 160 hectares. The Nyenye and Thetsane estates are shown in the Google earth images below:

Nyenye Industrial Site - Maputsoe



Thetsane industrial site – Maseru

There is a new industrial area in Maseru, Ha-Tikoe that will cover an area of about 80 hectares, which is being opened to meet a growing demand of expansion and further potential projects. Types of industries already established at these sites include Clothing, Textiles, Footwear, Agro-business, 'chemicals' and health care. Some Engineering, construction and building materials as well as commercial services and distribution carry a considerable portion of overall industrial strength.

Mining

Exploration of the mineral wealth of Lesotho has not yet been sufficiently undertaken until now. Known deposits of diamond are exploited by fledging mining industry, . The mine at Lets'eng-La-Terae has recently been re-opened. Currently the mine is operating at full capacity based on its established mining infrastructure and a metallurgical process plant. Production commenced in 2002. Further diamond digging areas exist nearby Liqhobong where work is done on a co-operative basis. Mineral reserves are estimated at 1,913, 600 tones at a grade of 69 carats per hundred tones.

The Ministry of Natural Resources through the Department of Mines and Geology is responsible for the regulation of the mining sector and co-ordination of development and operational activities in the mining, energy and water sectors. The Ministry Headquarters provides leadership and policy directions to the departments and parastatal companies. The Principal Secretary assisted by the Deputy Principal Secretary provides administrative leadership under the political direction of the Minister. In 2005 a new mining law (Mines and Minerals Act 2005) was enacted to replace the Mining Rights Act of 1967. The new mining law, together with accompanying fiscal provisions, provides a standard licensing regime covering both exploration and mining, and the option for the government to acquire not less than 20%

equity interest in a mining operation. A mining license is no longer automatically granted to an existing prospecting rights holder, but has to be applied for separately, however the exploration holder is considered first. All new developments will be in terms of the Mines and Minerals Act 2005; licensing of the ***Lets'eng*** and ***Liqhobong*** mines took place under the 1967 Act. Royalty is 3% for industrial minerals and 10% for precious minerals.

Commercial interest in the mineral resources of Lesotho was limited to diamonds. In recent years, 33 kimberlite pipes and 140 dikes, of which 24 are diamondiferous, have been identified by the Lesotho Geological Survey. Since 1996, Messina Diamond Corp. of Canada, whose name changed to MineGem Inc. in 2000, was exploring the Liqhobong kimberlite pipes, which are located about 120 kilometers east-northeast of the capital of Maseru. In Messina's 1999 annual report, the company disclosed the results of work on its two discoveries—the Main Pipe and the Satellite Pipe. The indicated resources were estimated to be 2.6 million metric tons (Mt) of ore at a grade of 69 carats per 100 metric tons (t) with an average value of US$39 per carat for the Satellite Pipe and 37 Mt of ore at a grade of 16 carats per 100 t with an average value of nearly US$64 per carat for the Main Pipe [Messina Diamond Corp., 2000, p. 8]

In December 1999, Messina signed an option agreement with the Industrial Development Corporation (IDC) of South Africa whereby IDC could obtain up to a 40 % interest in the new operating company Liqhobong Mining Development Company (Pty.) Ltd. with a maximum investment of US$3 million, subject to IDC's completion of a successful feasibility study on the Satellite Pipe. Completed in September 2000, the final feasibility study estimated mine reserves amenable to open pit mining at the Satellite Pipe to be more than 1.9 Mt at a grade of 60 carats per 100 t. The study estimated that US$7.1 million would be required to bring the mine into production at a rate of 420,000 metric tons per year of ore and at a full capacity output of 300,000 carats per year during a 5-year mine life. A production development decision was expected in early 2001 [MineGem Inc., 2000].
Letseng Diamonds (Pty.) Ltd. and its partner New Mining Corporation of South Africa (88%), which was a black empowerment group spun off during the unbundling of JCI Ltd., and the Government (12%) announced plans to reopen mining of the kimberlite pipes at Lets'eng-la-Terae. The Government can acquire an additional 12% equity interest through reinvestment of future dividends.

In 2003, Lesotho became a Participant of the International Kimberley Process Certification Scheme governing the international trade in rough diamonds and it was deemed compliant with its minimum conditions, meaning the country can legitimately export diamonds through the established global trading system, which it has with its renowned large diamonds.

Other exploration work on minerals has revealed the existence of some base metals and clays; however, viability of mining them is still being investigated. Coal and bituminous shale deposits have been indicated in several areas, though a clear data does not exist about them. Lesotho imports all of its oil and gas, yet this industry is one of the key elements in the economy of Lesotho. There are no known oil or gas reserves.

The revival of the diamond mining industry in Lesotho showed some hope for new opportunities for Basotho mineworkers displaced from the South African gold mines and for replacing related lost Government revenues. The commissioning by Global Diamond Resources plc (formerly Lesotho Diamond Corporation) of its Kao diamond mine in Lesotho on November 22, 2007 is further evidence of this increased hope.

Tourism

Popularly known as the “Mountain Kingdom” and “The Kingdom in the sky”, this rugged country has tremendous potential for development in the tourism industry. The recognition of the significant role that the sector could play in the economy of the country has led to promotional programmes to be put in places, through several strategies directed at developing and harnessing this opportunity.

The potential is however not yet realized due to various factors including lack of public investment into the industry, which is said to be the limiting factor in this poverty stricken country.

1.3.2 Economic Growth Factors

Lesotho's national income and economic growth largely depend on:

- its agricultural sector, with subsistence livestock and grain farming prevalent;
- transfer income generated through migrant labour on South Africa's mines;
- public-sector income generated by the sale of water to South Africa as well as tax-equivalent receipts via the Southern African Customs Union (SACU);
- donor aid and other transfer income channeled through the public sector; and
- Jobs created in the public and parastatal sectors as well as the other (mostly rather small) sectors of the economy.

Several of these income- and growth-generating activities or sectors have limited growth prospects. For example, further reductions in mining employment may be on the cards; income-earning levels in agriculture are still too low to absorb more labour; improvements in agricultural output are likely to boost household earnings rather than generate more jobs; the rapid increase in manufacturing employment (towards a level of about 60,000 in 2005) has lately been stalled due to tough competition for Lesotho's AGOA-preferenced clothing and textile exports to the USA; and SACU payments to Lesotho have also declined, due to a restructuring of the Customs agreement.

Thus, Lesotho's sustained economic growth and, in particular, its employment potential is under severe strain, unless new sources of growth and job creation can be found (and leaving aside ,the two other factors in the growth equation, viz. high HIV mortality and permanent emigration to South Africa or elsewhere).

It is here where *Lesotho's tourism* has lately come in as a promising (new) growth sector, which is viewed by many as a welcome catalyst for the inflow of foreign exchange (via external tourists), as an attraction for new investors (to build hotels and chalets), the creation of new jobs as well as generation of government revenue and, generally, an acceleration of business and entrepreneurial activities. At the same time one can hear warnings that the growth potential and macro-economic impact of tourism in Lesotho (as in other developing countries) can easily be overrated,

1.3.3 Agricultural Sector

The vast majority of rural households in Lesotho gain significant part of their livelihood from subsistence farming, i.e. more than 85% of the population is engaged in subsistence agriculture and informal activities.

Agriculture in Lesotho is classified as a primary sector, with about 90 percent subsistence agriculture practiced than commercial (10 percent). The agricultural sector makes a relatively small contribution (about 16.5 percent) to the country GDP and has been in the decline in the past years, but its socio-economic importance is high since it plays an important part in providing a livelihood for the majority of the rural population.

It turns out that there has been an increase in GDP from M1275.9 million to M1355 million in the period 2003/04 to 2004/05. However the overall performance of the sector has decreased from 17.1 % to 16.5%. This is because the two sectors, crops and livestock have slightly declined from 10% to 9.7% and from 6.5% to 6.2% respectively

Comparing the nature of the agricultural sector against the two main major sectors, Industry (mining and quarrying and secondary industries) and Services (tertiary industry), there has been relative growth to the two sectors while agriculture at large has been stagnant. In percentages, while real value of the two other sectors has been hovering above the 0% mark since 2000, agricultural sector has since that time up to the present been below or around the 0% mark. This shows that no real value has been added to the economy by this sector.

To boost production this marketing year 2004/2005, Block Farming was encouraged countrywide to counter the negative productivity trend. But farmers have resorted mainly to conservation farming techniques which is also encouraged by the Ministry of Agriculture and Food Security due to the escalating soil erosion and environmental degradation.

Livestock farming is characterized by medium holdings of cattle, sheep and goats, while maize, sorghum, wheat and Beans/Peas dominate the crop family, in that order of significance. Agricultural goods, exported primarily to R.S.A. include mohair, wool and hides, as well as high value crops such as asparagus. While efforts are being made to improve on this sector, Lesotho imports most of the products that are used in the country since it is not self sufficient in food production.

Industrial manufacturing for purposes of this report refers to only secondary industries, which include electricity, water & construction.

Table 1A below is a reflection of the typical economic performance and contributing sectors in Lesotho. The data indicate that the top sectors in terms of both % contribution to GDP and output value are, Textile; Wholesale & retail; Agriculture and Mining respectively. However the only real growth is seen only in mining. This is due to the recent diamond rush of the Northern Mountains of Letseng and Kao. Agricultural output has been progressively declining, yet still remains a major sector and source of livelihood for Basotho.

Table 1A: Overview of National Economic Sectors (2007 prices)

ISIC Rev.4 (Draft) Code [1]	Economic Sectors and Related Activities	Contribution to Gross Domestic Product (%)	Output Value (mil USD)	Growth rate over past three years (%)
Sector of Agriculture, Forestry and Fishing				
A 01	Crop and animal production, hunting and related service activities	6.7	98.6	-2.0
A 02	Forestry and logging	0.7	8.6	4.0
A 03	Fishing and aquaculture	0	0	0
Sector of Mining and Extraction				
B 04-09	Coal/Oil/Natural Gas/Minerals/Metals	6.5	51.9	64.5
Sector of Manufacturing/Industry				
C 10	Food products	2.7	32.6	5.6
C 11	Beverages			
C 12	Tobacco products	0	0	0
C 13-15	Textiles/wearing apparel/leather	13.0	153.5	2.3
C 16	Wood and products of wood and cork			
C 17	Paper and paper products			
C 18	Printing and record media			
C 19-22	Coke, refined petroleum products, chemicals, pharmaceutical products, plastic products	0	0	0
C 23	Non-metallic mineral products	0	0	0
C 24-25	Basic metals and fabricated metal products	0	0	0
C 26	Computer, electronic, and optical products	0.1	35.9	13.1
C 27	Electrical equipment			
C 28-30	Machinery and equipment, motor vehicles, other transport equipment	0	0	0
C 30-33	Others	1.4	18.6	10.9
Sector of Services				
D	Electricity, gas, steam and air conditioning supply	4.2	48.9	6.8
E	Water supply, sewerage, waste management			
F	Construction	4.9	54.4	5.3
G	Wholesale and retail trade, repair of vehicles and motorcycles	12.3	137.0	2.7
H	Transportation and storage	2.6	30.6	2.8
I	Accommodation and food activities	1.2	14.5	3.4
…….				
S	Other service activities (dry cleaning)	negligible		
TOTAL	ALL INDUSTRIES		1,096.3	4.5

Source: Revised National Accounts, no 29: 2008

Some of the categories are not listed specifically in the national accounts reports. These industries are thus all categorized under others. For example, Wood and wood products is a known industry where furniture is manufactured, but because it is not listed outright, it is embedded within the others category (C30 -33). It would also be noticed that electricity and water are classified together and this goes for Food and beverages. Last column was calculated as an average over the years 2005,06 and 07.

The table below, table 1B was supposed to reflect the structure of manufacturing and agricultural sectors in order to give the level of activity and of course the potential level of chemicals management thereof. The data as structures, in terms of facilities is only available with regard to Industrial or manufacturing sector. As already highlighted, the agricultural sector of Lesotho is in totality subsistence. The land tenure system has a great bearing in this skew, mainly because the objective was that all citizens should have access to some patch of land for the purpose. Lately some small forms have mushroomed. These are not only documented but even their commercial activity and real production is not known.

Table 1.B: Structure of manufacturing and agricultural sector

	Micro farm or facilities (%)	Small farms or Facilities (%)	Medium farms or facilities (%)	Big farms or facilities (%)
Industrial / manufacturing sector	12.5	7.5	30	50
Agric sector	No Data	N/A	N/A	N/A
Total				

Source: Lesotho Manufacturing Portfolio, September 2000.

The latest agricultural production data available dates back to 2005, published in 2007. Table 1C shows the major cereals and domestic animals and the level of activity in terms of value and size. This data may augment the missing one in table 1B, in that instead of individual farms, the total land area that was cultivated is given. A standard size of a medium farm is about 20 Hectares, if we regard the size of productive area for maize in the northern region, in current value, then the number of farms would be 2131. This is probably, by estimation 60 percent of the total arable land in the region. The mountain area is normally highly utilized hence the production area is about 90 percent while it would be less than 50 percent for the southern region.

Table 1.C: Break down of agricultural production by region

Region	Major Products	Total value in Maloti		Size of Productive Area (H) or Flock	
		1997	Current	1997	Current
Northern	Maize	61.2	34 982	70 767	42 625
	Sorghum	11.2	6 394	11 549	8 704
	Wheat	2.7	103	6 822	312
	Peas	1.7	153	1 541	165
	Beans	19.6	212	7 450	3 260
	Cattle		1.3 bil	271 985	318 367
	Sheep		88.0 mil	196 960	125 764

	Goat		82.9 mil	237 875	138 110
Southern	Maize	16.2	27 741	33 743	55 714
	Sorghum	7.9	10 152	16 032	18 874
	Wheat	2.9	4 767	9 049	4 233
	Peas	1.7	153	2 353	489
	Beans	14.5	976	2 845	4 632
	Cattle		1.2 bil	175 180	295 025
	Sheep		297.6 mil	394 955	425 153
	Goats		224.5 mil	281 650	374 242
Mountain	Maize	14.6	16 016	27 846	13 963
	Sorghum	1.4	2 109	2 486	945
	Wheat	9.8	1 947	8 031	5 866
	Peas	2.2	640	2 248	1 372
	Beans	1.9	907	941	892
	Cattle		394.9 mil	124 196	98 732
	Sheep		269.9 mil	343 904	385 517
	Goat		158.0 mil	210 003	263 280

Source: BOS; Lesotho Agricultural Situation Report 1981/82 – 2004/2005

Table 1.D: Breakdown of industrial production by major sector in Lesotho

Industry/Products	Production Index 2000=100		Number of Industrial facilities		Number of Employees	
	2000	*2007*	*2000*	*2007*	*2000*	*2007*
Food and Beverages	107.6	328.0	6	ND	1064	1061
Textiles & clothing	119.8	62.3	21	ND	16,106	36,592
Leather & footwear	100.1	29.8	3	ND	2970	2,057
Furniture and Printing	136.1	ND	4	ND	419	N/A
Chemical Products	140.0	ND	3	ND	38	N/A
Non metal mineral products	95.7	ND	4	ND	370	N/A
All Other manufacturing Industries	109.3	119.1	9	ND	496	1,953
Totals	808.6	ND	50	ND	21463	41663

Source: Lesotho Manufacturing Portfolio and Performance of manufacturing sector, 1996-2000 and 2000-2005, and Performance of Manufacturing Sector, 2008

Data is not available per region hence total national breakdown is reflected in table 1D above.

A total of 13,122 people were employed in the manufacturing Industry in 1997 (Labour force survey 1997), according to table 1D, the number was 21,463 by September 2000. The 1997 employment figures indicate that employment had doubled by 2007, and it can be estimated that these figures continue to grow to date.

1.3.4 INDUSTRIAL EMPLOYMENT BY MAJOR SECTORS

Levels of Employment

This section provides a detailed overview of the levels of employment in different sectors of the national economy that have implications for the safe management of chemicals in general. The suggested table describes some 12 key sectors, the number of facilities in each, their total employment, value of their outputs, and the types of emissions associated with each sector, when reflected would indicate and identify the relative importance of different industries that have implications for the safe management of chemicals.

For employment assessment, table 1E is presented herein as an indication of the employment profile of Lesotho. Unfortunately still, the last labour force survey was done ten years ago. The major industrial sectors as pertinent to Lesotho, are categorized in different format than the one required. As a result, there seem to be no data for the categories. The format used by BOS is reflected in table 1E

Table 1.E – Industrial Employment by Major Sectors as presented by BOS

Industry	*Total Employment1*	*Total Percentage*	*Percent Males*	*Percent Females*
Agric, Hunting and Forestry	48,233	3.8 %	5.4 %	1.7 %
Fishing	0	0.0 %	0.0 %	0.0 %
Mining and Quarrying	6,347	0.5 %	0.7 %	0.2 %
Manufacturing	44,425	3.5 %	2.35 %	5.1 %
Electricity, Gas and Water	6,347	0.5 %	0.5 %	0.6 %
Construction	60,926	4.8 %	5.5 %	3.9 %
Wholesale, Retail and H/H Goods	59,657	4.7 %	3.2 %	6.6 %
Hotel and Restaurant	8,885	0.7 %	0.3 %	1.3 %
Transport, Storage and Communication	21,578	1.7 %	2.7 %	0.5 %
Financial Intermediate	3,808	0.3 %	0.3 %	0.3 %
Real Estate, Renting and Business Act	11,423	0.9 %	1.0 %	0.8 %
Defense and Social Security	15,866	1.25 %	1.5 %	0.9 %
Education	26,655	2.1 %	1.5 %	3.0 %
Health and Social Work	10,154	0.8 %	0.6 %	1.1 %
Social and Personal Service Activities	19,039	1.5 %	0.5 %	2.8 %
Private HH with employees	54,580	4.3 %	1.3 %	8.1 %
Territorial Organizations and Bodies	0	0.0 %	0.0 %	0.0 %
Not Defined	635	0.0 5%	0.0 %	0.0 %
Subsistence Farming	871,372	68.65%	72.8 %	63.2 %
TOTAL	1,269,297	100.0 %	100.0 %	100.0 %

Source: Labour Force Survey, 1999

Economic Evolution and Prospects

The following analysis is in whole extracted from the speech by Dr. Majoro, an economist and the then Principal Secretary in the Government of Lesotho.

The 1980s experienced particularly poor economic performance, which ultimately led to Lesotho's first IMF sponsored and designed structural adjustment programme (SAP) in 1988. The two 3-year SAPs from 1988 to 1995 followed by stand-by arrangements to 1997 enabled the economy to benefit significantly from the Lesotho Highlands Water Project (LHWP) investments. Economic growth rose rapidly, and peaked at 9 percent in 1996 before falling to still a strong 7.5 percent in 1997. This was however the last year of strong growth, as a recession set in 1998 following political upheavals. Although the economy recovered relatively quickly, growth has remained low since then. The main lesson is that correct sequencing of macroeconomic reforms and investment stimuli can generate significant growth.

Despite positive average growth since independence, there is consensus that poverty has worsened, particularly in the last decade and half. Thus, growth and particularly the high growth of the 1990s failed to generate the wealth necessary to reduce poverty substantially and evenly. Clearly, economic growth, while necessary, is not sufficient for poverty reduction and cannot alone reduce poverty under all circumstances. Per capita income, which is a reasonable proxy for poverty, has not grown significantly and remains nearly at the same level as in the 1980s. So even this 'better measure' fails to correlate closely with trends in poverty. In the next paragraphs, an attempt is made to explain the poor correlation between the measures of economic performance and poverty.

Lesotho is a dual economy in the traditional sense of a rural-urban split, but also in another interesting sense of its income being derived from both domestic (domestic production, mainly agriculture) and external sources (migrant remittances from RSA mines). Duality holds interesting prospects: trends in the two sources of income could take different directions with positive effects offsetting negative ones; same direction with reinforcement of either the positive effects or negative ones; or change in only one source. In this context, there are two observations to make about the evolution of the domestic and external sectors. During this period, Lesotho endured endemic political instability, military insurrections, coups and usurping of power by the military. These various forms of instability delayed the transformation needed to substitute external sources of income through an expansion of the domestic productive capacity that would have employed a large number of Lesotho citizens domestically. The sharp decline in RSA mining jobs from 126,000 in 1987 to fewer than 50,000 presently severely undercut incomes of a large number of households, thereby removing resources for agriculture including for purchase of inputs and implements. This external shock has directly translated into a rising incidence of poverty, as a result of the inability of the domestic productive sector to absorb returning miners and attendant losses of incomes. The lesson is that the domestic productive capacity failed to develop sufficiently to absorb the inevitable transformation in RSA mining. While there are many plausible explanations for the sluggish response by the domestic productive sector, the key determinant was the lack of an appropriate investment environment arising from political instability and attendant governance challenges.

Lesotho's Unemployment has been on the order of 40 percent or more for most of its independence. In many other nations, such levels would easily trigger change in government or major political upheavals.

Yet in Lesotho, such levels seem not to have created major difficulties. It is important to understand the historical context of this phenomenon. In the early post-independence period, Lesotho derived most of its income from agriculture (a domestic source) and miners' remittances (an external source). The latter has been so significant (half of national income) that low domestic economic activity and low employment levels could be tolerated. Agriculture, known popularly as the 'backbone of the economy' provided most of the employment outside the formal sector. As the formal sector was and remains tiny, economic activity was dominated by agriculture, which accounted for at least 30 percent of domestic output.

Today, the economy of Lesotho has been transformed considerably, from an economy dominated by agriculture and migrant incomes to one that depends more on manufacturing and construction. Construction has been driven by the investments in the LHWP, while manufacturing has benefited from Foreign Direct Investment (FDI) from Asian firms enticed by lucrative trade preferences. The share of agriculture in domestic economic activity has gradually fallen from about 30 percent at independence to 17 percent today. Many reasons have been forwarded, including poor weather and eroding soil conditions. Although many of these explanations make sense, that they are only proximate. The fundamental reason lies in Lesotho's land tenure system which is designed to safeguard equity and guard against alienation of land from the nation and sale to foreigners. However, the use of land as an economic input requires a land tenure system that recognizes land as a factor of production and that promotes land transferability and formal land markets. Much of the reform effort has been directed at the symptoms rather than fundamental sources of market failure such as inappropriate property rights. What is needed is radical reforms aimed at easing land transferability and creating incentives for protection of land under private or community management regimes. Until the real reforms are undertaken, agriculture's role in the economy will continue to decline, exacerbating food insecurity.

By contrast, the share of manufacturing has risen sharply, driven mainly by textile production. Exports to the US rose by nearly 600 percent between 1996 and 2004, to peak at $447 million. Employment rose by 83 percent from less than 30,000 in 2000 to about 55,000 in 2004 before falling to about 40,000 presently. In 2004, the sector contributed 20 percent to national output, some 3 percent above the share of agriculture! The manufacturing success is unfortunately based on a special US trade preference regime, whose structure changed fundamentally for the worse at the beginning of 2005. As a result, textile trade is undergoing major restructuring following the removal of textile quotas. China and several other Asian producers, which are significantly more competitive than Lesotho, are out-competing Lesotho in US markets and will continue to do so for some time. In 2005, Lesotho's total exports to the United States fell by 13 percent, while jobs also contracted to 36,000 before recovering to the current 40,000.

The foregoing illustrates that the structure of the economy determines the level and pattern of contribution to economic performance. There are many other factors behind economic performance, among which political and economic stability, capacity of national institutions and public investment in infrastructure are at the top. Many people fondly recall that at independence Lesotho was ahead of Botswana and Swaziland in terms of its socio-economic development. Today, many wonder what happened to Lesotho, and how and why it remains the only Least Developed Country (LDC) in the BLS fraternity. Most people subscribe development to abundance of natural resources such as oil, gold or diamonds. Therefore Lesotho being small, completely landlocked by South Africa, and without natural resources, has no chance of ever developing. Scholars of Asian economic success know that this is not necessarily so—availability of natural wealth is not a necessary condition for socio-economic

development and in fact in many African states it has been a sufficient condition of civil conflict and a critical impediment to growth and development.

Lesotho's long term economic growth of around 3 percent since 2001 used to be significantly better than that of many African Countries, but is today falling behind African trends and far smaller than the level needed to achieve Lesotho's National Vision 2020 and Millennium Development Goals. One of the key impediments to private sector investment is the lack of infrastructure which in turn is limited by a small amount of public investment to provide infrastructure such as roads for opening up communication and trade, telecommunications for easier communications, water for industrial and household uses, and energy for driving the economy. Public investment in infrastructure has been far less than ideal owing to lack of resources and low effectiveness of some of the institutions in the sector.

1.4. RELEASES OF CONCERN BY MAJOR ECONOMIC SECTORS

Lesotho is a party to a number of multilateral environmental agreements, such as the Stockholm Convention on Persistent Organic Pollutants, Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and Their Disposal, Vienna Convention on Ozone Layer and Montreal Protocol on Ozone Depleting Substances (ODS). Lesotho has acceded to the Rotterdam Convention on Prior Informed Procedure for Certain Hazardous Chemicals and Pesticides in International Trade in 2008. She has however not fully translated her political will into concrete actions due to diverse constraints. The main constraints are lack of financial resources, limited institutional capacity and lack of environmental awareness. There is also lack of effective comprehensive chemical related laws, as most of the laws dealing with different components of the environment are outdated. Poor enforcement and coordination of laws among institutions dealing with environmental issues also contributes to the dilemma. Despite the foregoing, Lesotho is obliged to enact effective national legislation to implement the Stockholm Convention.

The Stockholm Convention on Persistent Organic Pollutants was adopted on 22 May 2001 in Stockholm, Sweden, and came into force on 15 May 2004. Lesotho ratified the Convention on 23 January 2002. The objective of the Convention is to protect human health and the environment. It applies to twelve chemicals referred to as Persistent Organic Pollutants (POPs). Some of these persistent organic pollutants are agricultural pesticides while others are industrial chemicals and unwanted by-products of industrial or combustion processes. These chemicals can be grouped into the following three categories:

- Pesticides – aldrin, chlordane, DDT, dieldrin, endrin, heptachlor, hexachlorobenzene (also an industrial and unintended by-product), mirex and toxaphene;
- Industrial chemicals – PCBs (also unintended by-product); and
- Unintended by-products – dioxins, furans and PCBs.

Parties to the Stockholm Convention are obliged to implement the Convention through promulgation of legislative or adoption of administrative measures.

As one of the major components of the NIP development, the assessment of contaminated sites is herein outlined. This report follows the format developed by UNEP in the NIP guidelines, interrogating

Institutional and regulatory frameworks, identification of contaminated sites, current capacity and experiences with regard to management of POPs as well as the assignment of responsibilities among national institutions.

Health impacts

The assessment of the health effects of persistent organic pollutants in Lesotho was carried out in February to May 2004. Six districts of Lesotho were sampled for the study. The study covered: the assessment of environmental monitoring activities in various government and parastatal institutions; review of health records in hospitals, interviewing farmers, women who have had miscarriages, mothers of babies born with below normal birth weights and risk groups such as: incinerator operators, workers and scavengers in waste disposal sites, and residents close to potential release points for persistent organic pollutants like dioxins and furans. The key findings of the study include, but not confined, to the following:

- There is no monitoring of persistent organic pollutants in the monitoring activities of all institutions of environmental monitoring. The inclusion of these substances in the existing monitoring activities will require some training for staff and equipping laboratories of some of the institutions to enable them to analyse POPs.
- Environmental monitoring policies, standards and guidelines do not exist. These tools need to be developed to guide envisaged POPs monitoring in Lesotho.
- The Ministry of Health and Social Welfare does not adequately perform surveillance of environmentally related diseases. Orientation of clinicians on diseases that may require follow up to establish exposure to certain environmental factors will facilitate detection of root causes of the diseases which will, in turn, direct or inform focus for future monitoring areas.
- Persistent organic pesticides are not used in the production of food and animal feed. This may, therefore, rule out the presence of POPs in food. If present, it may be as a result of the POPs produced unintentionally and settling on food following transportation by environmental medium, such as air.
- Investigated women, mothers and children showed that some of the women went through successful pregnancies following a previous miscarriage. Children born in subsequent pregnancies were very much normal. Miscarriages in women and the low birth weights of newborn babies may not be due to exposure to persistent organic pollutants. Other factors may account for women's miscarriages and low birth weights in newborn babies. These factors may include: disease conditions, unexpected psychological factors, intrauterine malnutrition, multiple pregnancies, pre-eclampsia and other conditions with inadequate placental nutritional supply (Bergström, 1994).
- POPs associated health conditions were not identified among risk groups like farmers. The five areas under investigation were: skin conditions, eye conditions, respiratory, neurological/psychological conditions and conditions of the reproductive system. Albeit this observation, there is need to educate farmers on the safe handling and management of pesticides, orientation on persistent organic pollutants pesticides and their environmental and health effects. To reduce reliance on chemical control methods in pest control, integrated pest management and Integrated Vector Management need to be promoted.
- Waste disposal sites commonly used in Lesotho include dumpsites, such as the Tšosane dumpsite. This dumpsite serves the city of Maseru. One of the major characteristics of the dumpsite is the regular release of smoke due to spontaneous fires. Populations residing around

these dumpsites are affected in a number of ways that include high prevalence of health conditions that may be associated with vitiated air. Eye and respiratory conditions appear to be more dominant.

- Communities at risk of exposure to persistent organic pollutants include:
  - People living in the vicinity of dumpsites, such as Tšosane and Maputsoe dumpsites in Maseru and Ha Nyenye respectively.
  - Personnel working in power utilities especially those close to storage sites for decommissioned transformers that may be containing oil with PCBs.
  - Sector of the community that may be abusing transformer oil, using it as if its any lubricating oil.
- Lesotho does not have vector-borne diseases that are common in most African states. It is, therefore, unnecessary to contemplate the reintroduction of any of the POPs pesticides for public health purposes. It is, however, noted that institutions that used some POPs pesticides in the past, like Health and Agriculture, cannot clearly account for the fate of the leftovers of these chemicals after stopping them.
- Since DDT is still in use in the Republic of South Africa, community education needs to be embarked on to prevent it being purchased for use in agriculture by individual farmers in Lesotho. The incidence observed by the group assessing POPs pesticides should be considered with seriousness.

Table 1F: Releases by type and Media for Major Economic Sectors

ISIC Rev.4 (Draft) Code [1]	Economic Sectors and Related Activities	Major Pollution Emissions by Chemical Type	Media to which Emissions are Released: Air, Water, Soil	Wastes Emitted as: Solids, Liquids or Gases by Volume or Weight if Known
Sector of Agriculture, Forestry and Fishing				
A 01	Crop and animal production, hunting and related service activities	Inorganics, Pesticides	Water, Soil	NK
A 02	Forestry and logging	Pesticides	Water, soil	NK
A 03	Fishing and aquaculture	-		
Sector of Mining and Extraction				
B 04-09	Coal/Oil/Natural Gas/Minerals/Metals	Dust	Air	NK
Sector of Manufacturing/Industry				
C 10	Food products	Fats	Water	NK
C 11	Beverages	Sugars	Water	NK
C 12	Tobacco products			
C 13-15	Textiles/wearing apparel/leather	Organic Dyes, Particulates	Water, Air	NK
C 16	Wood and of products of wood and cork	Particulates	Air	NK

ISIC Rev.4 (Draft) Code [1]	Economic Sectors and Related Activities	Major Pollution Emissions by Chemical Type	Media to which Emissions are Released: Air, Water, Soil	Wastes Emitted as: Solids, Liquids or Gases by Volume or Weight if Known
C 17	Paper and paper products	Particulates, Organics	Air, Water	NK
C 18	Printing and record media	Inorganic & Organics	Water	NK
C 19-22	Coke, refined petroleum products, chemicals, pharmaceutical products, plastic products	Organics	Water, Air	NK
C 23	Non-metallic mineral products	Organics & Inorganics	Water, Air	NK
C 24-25	Basic metals and fabricated metal products	Fumes, Spark	Air	NK
C 26	Computer, electronic, and optical products	Fumes	Air	NK
C 27	Electrical equipment	Fumes	Air	NK
C 28-30	Machinery and equipment, motor vehicles, other transport equipment	Fumes, lubricants	Air, Soil	NK
C 30-33	Others			
Sector of Services				
D	Electricity, gas, steam and air conditioning supply	Organic gases	Air	NK
E	Water supply, sewerage, waste management	Polluted effluent	Water	NK
F	Construction	Particulates, Noise	Air	NK
G	Wholesale and retail trade, repair of vehicles and motorcycles	Waste lubricants	Soil, water	NK
H	Transportation and storage			NK
I	Accommodation and food activities	Waste water	Water,	NK
…….				
S	Other service activities (dry cleaning)	Solvents	Water	NK
TOTAL (if applicable)				

NK = not known.

It is simply instructive to consider the types of emissions per economic activity, but many of these activities if present in Lesotho are at a very low level. No surveillance of the amounts of emissions is yet done. These are point sources and can only be monitored as legal requirements through reporting

by proponents. When they are required by law to estimate their emission levels, a surveillance programme would be tailored.

Institutional and regulatory framework

Lesotho does not have a legislation dealing specifically with management of chemicals and pesticides. However, there are a few pieces of legislation, which generally touch on a broad subject of dangerous and hazardous substances but are not specific to POPs chemicals. Different Government Ministries, Departments and Parastatals administer these laws. Lack of coordination between the Ministries makes it difficult to enforce the laws effectively. This is compounded by the fact that most of these laws overlap, these laws were promulgated during the colonial era and are therefore outdated and do no cover current trends in environmental management, and others deal indirectly with the environment and as such many areas of environmental conservation and management are not covered in these laws. There are also gaps and inadequate provisions to address current environmental issues such as hazardous waste management, agricultural and industrial chemicals. Sections 2.2 to 2.5 below outline the major relevant legislation with relevance to chemicals management or environment in general.

1.5 COMMENTS/ANALYSIS

Demographic data for any country is arranged in such a way that the country's planning regime can use it. In Lesotho, the main use of demographic data has been for economic planning purposes. This has included very little technical elements such as usage of chemicals. Health surveillances on the same hand do not provide any light on any linkage of disease or affliction to chemicals neither is there any statistics on poisoning, just as a medical incidence. This situation compared to the format and depth of data required in this chapter, leaves a lot of gaps. Nevertheless the available information still provides good baseline information in so far as economic level of Lesotho is concerned.

The Bureau of Statistics has a division of Agriculture and Environment. This division should start to mainstream information requirements in the fields. There is an increasing need for environmental indicator status for evaluation of sustainable development criteria and it is a prerogative of the bureau to maintain surveillance on several important subjects. These subjects include waste management issues, technology issues directed at cleaner production, organic farming and health statistics.

While management of chemicals in the country is at its minimum, impacts are not so pronounced and the risks are not evident due to the low level of volumes in relative terms. The country is small with small population and low economic activity, especially chemical related manufacturing.

CHAPTER 2:

CHEMICAL PRODUCTION, IMPORT, EXPORT, STORAGE, TRANSPORT, USE AND DISPOSAL

INTRODUCTION

As in most countries, the chemical sector of Lesotho, makes a significant contribution to the domestic economy, even though it is mainly from importation and consumer use. Chemicals are still used for a wide variety of purposes, from personal care, medical uses and cleaning, through to agricultural and industrial purposes.

Lesotho however can be regarded as having no formal chemical industry. The formerly existent pharmaceutical company (LPC) is no longer functional. All that remains is the few chemicals used in textile industries and agrochemicals.

The Textile industry uses dyes and bleaches, while the agriculture sector covers mainly pesticides (all inclusive) and fertilizers; very little herbicides. Cleaning agents are also substantial chemical components and laboratory chemicals exist in the few institutions. This chapter thus is centered around import, use and disposal.

2.1 CHEMICAL PRODUCTION, IMPORT AND EXPORT

Table 2.A, sets out to indicate only the imported value, which is the site service of chemicals in the country. No production/manufacturing of chemicals, hence no exportation. Petroleum products constituted by far the largest value of imports followed by cosmetic products and pharmaceutical products. These values were compiled in 2008 yet are for four years ago and are compared with those that were reported in the previous report.

Table 2.A, Chemical Imports in 1999 and 2004

Description	Value of Imports by Commodity in Million Maloti (2004)				
	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter	Total 2004
Petroleum Products	111.701	139.452	168.303	151.681	571.138
Inorganic compounds and radioactive elements	3.553	2.975	13.275	0.732	20.537
Organic Chemicals and Pesticides	6.212	7.578	11.831	10.840	36.462
Pharmaceutical Products	8.041	10.736	10.905	8.774	38.458
Fertilizers	0.171	0.082	1.243	7.706	9.204
Cosmetic Products	18.824	21.148	12.984	15.685	68.641
Miscellaneous Chemical Products	4.037	11.182	2.578	2.448	20.247
Explosives	1.755	2.201	1.965	2.658	8.580

Source: Foreign Trade Statistics, No 1, 2008 by Bureau of Statistics Maseru

Almost all imports are consigned from RSA. Throughout the period 1989-1999 imports from RSA amounted to about 90% on the average. However all Southern African Customs Union (SACU) countries are trade partners of Lesotho. The 90% average has dropped to about 80% in 2004, which may come as a result of an increase in the number of trade partners, as well as the cheaper commodities they supply.

Table 2A1: Raw Materials for Chemicals and Related Industries

Raw Materials	Import (tons or volume/year)	Exports (tons or volume/year)	Extracted Locally (tons or volume/year)

BOS collects information in monetary terms and not volumes, even then since there is absolutely no chemical production in the country, there are no raw materials neither imported nor exported. The newly emerging industry, though at a very young age is the detergent production. The chemicals are exported at a very small scale. Pharmaceutical production is also closed down. There is therefore no data for the raw materials.

Table 2-1: indicated major trade partners of Lesotho, per import of 1999 and 2004

Trade Partners	Value in Maloti (1999)	Percentage Share of Imports (1999)	Value in Maloti (2004)	Percentage Share of Imports (2004)
RSA	3,598,269,364	92.54	7,020,022,278	78.2
Taiwan	122,765,116	3.16	567,200,632	6.3
Hong Kong	No data	No data	516,091,496	5.7
Botswana	28,513,285	0.73	No data	No data
USA	28,357,506	0.73	77,959,635	0.9
Singapore	No data	No data	59,393,394	0.7
India	No data	No data	56,263,656	0.6
South Korea	No data	No data	36,960,102	0.4
UK	No data	No data	21,584,034	0.2
China	18,206,215	0.47	358,979,145	4.0
Germany	13,330,193	0.35	No data	No data
France	10,477,395	0.27	No data	No data

Source: Foreign Trade Statistics, No 1 January 2008

2.2 CHEMICAL USE BY CATEGORIES

Chemicals like almost all commodities are imported by retailers in Lesotho. What Customs seem to record is monetary value of the commodities as it is related to customs union distributions and for purposes of VAT claims. The available data is the one kept at the ministerial departments, like energy, mines and Crops, and are themselves very limited and non consistent through years. Table 2B below indicates that limited available data and the units are reflected as at sources, hence why not uniform.

Table 2.B: Chemical use by Category

Type of Chemical	Quantity per Year	Source-dpt
Pesticides - Agric	Not available	Crop Protection
Pesticides - Public Health	Not available	Env. Health
Pesticides - Consumer use	Not available	BOS
Fertilizers	23533 tons	Crops
Petroleum Products	21,450,340 litres	Energy
Consumer chemicals	0.88 tons	BOS
Industrial Chemicals	2400 litres	BOS
Other chemicals (Explosives)	2.214.5 tons	BOS

Consumer chemicals in this table refer mainly to those chemicals used in High School teaching & other laboratories, as against the normal notion of all inclusive of household ones and cosmetics. The excluded ones were rather difficult to quantify from BOS sources.

Chemicals are not considered any special commodity that requires special attention in Lesotho. They are more treated like salt and sugar. A typical example are rodenticides whose trade booms to the level of being retailed at the level of informal sector due to high unemployment and the inherent demand due to low level of management of waste nationwide. The so called "Mafenetha" a highly poisonous internal bleeding rodenticide is sold by anybody anywhere, in any package unlabelled and unmonitored. One finds it in households together with other household commodities and has been used for suicide missions several times. The same goes for "Fiatane" which is mainly used for stock borer control, the chemical name is thiodan.

While we may know the value of chemicals imported into the country, safe for the informal imports that penetrate the borders, it is still not known as to the amounts used per different categories.

2.3 STORAGE OF CHEMICALS AND RELATED ISSUES

As mentioned in the previous section, imports are made direct by retailers. Their quantities are such that they fit the shelves and very little storage. Their main reason is that the chemicals do expire, so they do not stock a lot. Some existing storages are those that belong to the government, particularly the Ministry of Agriculture, which are warehousing facilities than storage. The Ministry extends subsidies to the sector in various forms including agricultural inputs and as such mainly fertilizers are stocked and sold by the ministry. This season a total of about 9200 metric tones of fertilizers is being distributed throughout the country and warehoused in every district.

The ministry only procures pesticides and other chemicals for demonstration purposes or during an epidemic situation. In 2002 a pyrethroid was consigned for termite control and that same consignment still exists in storages.-Of the 3600 liters imported, about 2600 liters is in storage to date. These are the largest storages found in the country. The tank capacities of petroleum products-diesel, petrol and paraffin totals 700 GL at the depots. Some petroleum products are taken straight to the filling stations by tankers. There are about 50 filling stations country-wide with various capacities.

Table 2C: Bulk Chemical Storage and Warehousing Facilities

Chemical Type	Size/Capacity (Volume in cubic meters or weight in tons)	Type of Facility [1]	Location Area (Port, Industrial Complex, Urban, Rural)	Labelling; Health and Environment Protection Measures [2]
Pesticides (agricultural, public health, and consumer use)	3,600 liters	Warehouse	Rural	Manufacturer labels
Fertilizers	9,200 tons	Warehouse	Rural	Manufacturer labels
Petroleum Products	128,000 liters	Underground tanks	Urban	GHLS
Industrial Chemicals (used in manufacturing/processing facilities)	NK			Manufacturer labels
Consumer Chemicals	NK			Manufacturer labels
Chemical Waste	NK			None
Other Chemicals (unknown/mixed use)	NK			Manufacturer labels

2.4 TRANSPORT OF CHEMICALS AND RELATED ISSUES

Table 2D: Supply Chain for Bulk Chemical Distribution and Transportation

Chemical Type	Type of Transportation Facility: Maritime, Inland waterway, Rail, Road, Air	Approximate Capacity (Volume in cubic meters or weight in tons transported by year)	Labeling; Health and Environment Protection Measures [1]
Pesticides (agricultural, public health, and consumer use)	Road	NK	Manufacturer labels
Fertilizers	Rail; Road	NK	Manufacturer labels
Petroleum Products	Rail; Road	NK	GHLS
Industrial Chemicals (used in manufacturing/processing facilities)	Road	NK	Manufacturer labels
Consumer Chemicals	Road	NK	Manufacturer labels
Chemical Waste	none	NK	Manufacturer labels
Other Chemicals (unknown/mixed use)	Road	NK	Manufacturer labels

No surveillance in terms of volume

2.5 CHEMICAL WASTE

Chemical waste observed around facilities, particularly, of commercial activity can be classified, as composed mainly of used automotive oil, and some minor streams of colored effluent from textile industries.

Major waste generation in Lesotho involves solid waste, which is not itself very directly related to chemicals management. In this regard, the 1997 solid waste survey revealed values depicted in table 2.2.

There is only one facility that is attempting to collect and recycle / reuse, mainly glass, oil and paper and metal. Cans are already recycled, in RSA hence are exported.

The government is in the verge of finalizing a solid waste management programme, which will involve a good collection system and construction of a modern sanitary landfill together with rehabilitation of the existing inappropriate dumpsite.

Table 2.2: Solid waste generation

Years	Population	Households	Waste in tons
1999	270071	54014	10576
2000	289516	57903	11338
2001	310361	62072	12154
2002	332707	66541	13029
2003	356662	71332	13967
2004	382342	76468	14973

Source: Solid Waste Management in Lesotho: Baseline Study, August 1999

The table above shows projected solid waste generated by residents in Maseru from 1999 to 2004. These figures assume that the population growth rate of Maseru is 7.4% and that the waste generated grows by the same proportion. The type of solid waste includes but is not limited to paper, plastic, organic compounds, textiles and glass. Figures for other towns and large settlement areas are however not available.

Review of past studies and findings in solid waste management in Lesotho

The first study for Waste management was conducted in 1987 by Ministry of Interior. It was titled *Solid Waste Management Study for Maseru.* It was found that Maseru City generated 10,000 tones of waste per annum. Another study was conducted by NES in 1997, titled *Waste Management in Lesotho - A Baseline Study.* The objectives of this study were as follows:

- To examine closely and analyse the pattern of waste generation in Lesotho, with specific focus on identifying possibilities for waste reduction through re-use, processing and recycling;
- To perform an in-depth analysis of waste management systems, with particular attention to holding facilities, collection and disposal system and institutional capacities;

- To investigate current efforts at waste minimization through re-use, processing and recycling and;
- To examine the current domestic and export markets for waste products, including the potential for such markets.

The study sampled 186 households and 133 industrial, commercial and institutional (offices) establishments in urban areas of Maseru, Hlotse and Mohale's hoek and the rural areas of Thaba-Bosiu. There were 17 industries, 63 commercial and 17 institutional enterprises sampled in urban Maseru. The rest were from the other two towns. The findings of this study were as follows:

The average household size was found to be 4.5. This is close to the findings of this study, as the average household size was found to be 4.2 by this study.

According to this study, plastic was the most generated waste type (47%) by households while organic material was the least (4%).

- Paper was the most generated waste (56%) by the establishments and the least was organic waste.
- An average household generated 110.8 kg of waste per year.
- An industry generated an average of 1 07,363 kg of waste per year.
- Commercial generated an average of 33,598 kg of waste per year
- Institutional generated an average of828 kg of waste per year

The study concluded that total waste generated in Lesotho was 802,389.5 tons per annum while annual waste generated per capita was 0.43 tons per annum. According to the 1997 study, only 0.63% of waste was recovered at that time. It can be deduced that the collection facilities have not changed from 1997 to now, only the number has increased. The same receptacles used in 1997 study are still being used now.

2.6 OVERVIEW OF TECHNICAL FACILITIES FOR RECYCLING OF CHEMICALS

Table 2F: Facilities for Recovery and Recycling of Chemicals and related Waste

Location of Facility, Operation or Process	Description of the Facility, Operation or Process	Recovery Operation (Annex IVB) R code	Capacity of the Facility (in metric tons)	Does the Facility Treat Wastes Imported? Yes/No

There are no facilities whatsoever available in Lesotho

2.7 OVERVIEW OF CAPACITY FOR DISPOSAL OF CHEMICALS

Due to poor waste management practices in the country, there is no measurement of quantities of waste generated or segregation of waste by type. The study conducted by Mhlanga and Gulilat (1997) indicated that the total waste generated in Lesotho was 802,400 tons per annum, while per capita waste generation was found to be 0.43 tons per annum. Subsequent study conducted by Mvuma (2002) indicated that per capita waste generation in the two study areas of Maseru and Maputsoe was found to be 0.13 kg per day. This translates into 47.47 kg per annum. According to the same study, the total amount of waste generated in Maseru was 157 552 tons per annum and 19 107 tons per annum in Maputsoe giving a total of 134 341 tons per annum.

Relative to industrial waste, there are no records of quantities of solid waste generated by industries. According to Lesotho National Development Corporation (LNDC) (2005), the waste stream generated by textile factories at Thetsane Industrial Estate consists of sludge, blasting sand, pumice stone and ash as well as bags that used to contain the sand, ash and stone. Most of the primary residual wastes generated in the textile industry are non-hazardous. These include fabric and yam scrap, off-spec yam and fabric and packaging waste such as paper and plastic.

The study on National Medical Waste Situation by Ministry of Health and Social Welfare, MHSW - Lesotho (2004), indicates that various categories of health care wastes are generated in health care facilities of Lesotho. However, the quantities are not established. There is little waste segregation by type apart from the segregation of sharps, e.g. used needles and syringes, and anatomical wastes. Any other waste from this source is mixed.

There are no existing facilities for disposing industrial sludge, blasting sand or any hazardous industrial waste in Lesotho, however in the meantime LNDC has given a go ahead for use of their site at Ha-Tikoe (along Kofi Annan Road) for disposal of sludge (see Map 4.1). There are furnace-like structures (incinerators) mainly used for burning paper. Most of them are in government offices and industries. The survey also identified facilities (waste infrastructure) and areas potentially having waste treatment infrastructure (e.g. factories).

There is currently no single existing and legally recognised sanitary landfill in Lesotho. Instead, dumpsites are being used for waste disposal in the urban areas, which in most cases were selected haphazardly with no consideration given to their location and/or the impacts these sites would have on the receiving environment and the affected communities. All of these are operating without regulatory instruments, e.g. user-fees and operating licenses. These sites are inappropriate, poorly developed, badly managed and unprotected. These sites are used for dumping all sorts of waste, e.g. domestic, hazardous and medical, etc, without the application of cover. Regardless, of the presence of these unsatisfactory waste disposal sites, waste is also still being dumped in open spaces, rivers, dongas and or burned in the open resulting in air pollution.

There is only one legal dumpsite in Maseru known as Tsosane dumpsite. The site is indeed less than a kilometre from residential areas and is situated within the catchment area of the Maqalika reservoir. Any water, particularly stormwater runoff during the rainy season flows freely into the dam.

Table 2G: Facilities for Disposal of Chemicals and Related Waste

Location of Facility, Operation or Process	Description of the Facility, Operation or Process	Disposal Operation (Annex IVA) D code	Capacity of the Facility (in metric tons)	Does the Facility Treat Wastes Imported? Yes/No

2.8 STOCKPILES, WASTE DEPOSITS AND CONTAMINATED SITES

A *contaminated site* is defined as a site at which substances occur at concentrations: (1) above background levels and pose or are likely to pose an immediate or long-term hazard to human health or the environment, or (2) exceeding levels specified in policies and regulations.

The Health impact survey conducted concurrently with identification of the contaminated sites found out that:

- There is no monitoring of persistent organic pollutants in the monitoring activities of all institutions of environmental monitoring. The inclusion of these substances in the existing monitoring activities will require some training for staff and equipping laboratories of some of the institutions to enable them to analyse POPs.
- Environmental monitoring policies, standards and guidelines do not exist. These tools need to be developed to guide envisaged POPs monitoring in Lesotho.
- The Ministry of Health and Social Welfare does not adequately perform surveillance of environmentally related diseases. Orientation of clinicians on diseases that may require follow up to establish exposure to certain environmental factors will facilitate detection of root causes of the diseases which will, in turn, direct or inform focus for future monitoring areas.
- Persistent organic pesticides are not used in the production of food and animal feed. This may, therefore, rule out the presence of POPs in food. If present, it may be as a result of the POPs produced unintentionally and settling on food following transportation by environmental medium, such as air.
- Investigated women, mothers and children showed that some of the women went through successful pregnancies following a previous miscarriage. Children born in subsequent pregnancies were very much normal. Miscarriages in women and the low birth weights of newborn babies may not be due to exposure to persistent organic pollutants. Other factors may account for women's miscarriages and low birth weights in newborn babies. These factors may include: disease conditions, unexpected psychological factors, intrauterine malnutrition, multiple pregnancies, pre-eclampsia and other conditions with inadequate placental nutritional supply (Bergström, 1994).
- POPs associated health conditions were not identified among risk groups like farmers. The five areas under investigation were: skin conditions, eye conditions, respiratory,

neurological/psychological conditions and conditions of the reproductive system. Albeit this observation, there is need to educate farmers on the safe handling and management of pesticides, orientation on persistent organic pollutants pesticides and their environmental and health effects. To reduce reliance on chemical control methods in pest control, integrated pest management needs to be promoted.

- Waste disposal sites commonly used in Lesotho include dumpsites, such as the Tšosane dumpsite. This dumpsite serves the city of Maseru. One of the major characteristics of the dumpsite is the regular release of smoke due to spontaneous fires. Populations residing around these dumpsites are affected in a number of ways that include high prevalence of health conditions that may be associated with vitiated air. Eye and respiratory conditions appear to be more dominant.
- Communities at risk of exposure to persistent organic pollutants include:

    - People living in the vicinity of dumpsites, such as Tšosane and Maputsoe dumpsites in Maseru and Ha-Nyenye respectively.
    - Personnel working in power utilities especially those close to storage sites for decommissioned transformers that may be containing oil with PCBs.
    - Sector of the community that may be abusing transformer oil, using it as if its any lubricating oil.

- Lesotho does not have vector-borne diseases that are common in most African states. It is, therefore, unnecessary to contemplate the reintroduction of any of the POPs pesticides for public health purposes. It is, however, noted that institutions that used some POPs pesticides in the past, like Health and Agriculture, cannot clearly account for the fate of the leftovers of these chemicals after stopping them.
- Since DDT is still in use in the Republic of South Africa, community education needs to be embarked on to prevent it being purchased for use in agriculture by individual farmers in Lesotho. The incidence observed by the group assessing POPs pesticides should be considered with seriousness.

Lesotho lacks adequate capacity and capability to achieve sound management of chemicals. These inadequacies include:

- Handling of chemicals by inadequately informed or trained personnel, especially operators of small scale enterprises;
- Lack of enforcement of laws;
- Inadequate capacity to enforce and implement the law;
- Shortage of management skills to deal with technology transfer and with storage, transportation, use or disposal of chemicals;
- Lack of effective mechanisms for coordinating the work of those responsible for different aspects of chemical safety;
- Lack of means of coping with chemical accidents and subsequent rehabilitation of the environment;
- Inadequate legal framework for the proper management of chemicals and for the implementation and enforcement of regulations for industrial and consumer hazardous substances;

- Lack of facilities for safe disposal and treatment of hazardous waste;
- Lack of environmental law awareness; and
- Inadequately trained law enforcement officers such as customs officers, police, public health officers, environmental inspectors, labour officers, magistrates, prosecutors and government lawyers.

The priority sites identified and which need to be addressed in the short, medium and long term have been reflected by the contaminants. PCBs contaminated sites are essentially suspect sites. Hence there is a need for actual testing of the suspected transformers and the spills. This would then allow for the formulation of regulations banning PCB containing equipment.

POPs pesticides, as well, do not seem to be a problem, however in the absence of banning mechanisms, such as regulations prohibiting import and production, the country may become a save heaven to those who wish to get rid of their stockpiles.

Dioxins and Furans, as indicated by the inventories, are mainly released from burning of wastes and sewage treatment. This therefore implies that Lesotho can concentrate on waste management programmes, aiming at Establishing one medium size incinerator, with emission controls, recovering and developing urban waste lots/dumpsites, educating the public and campaigning for antilitter and anti-burning of domestic waste behavior.

Table 2H: Obsolete Chemical Stocks, Chemical Waste Sites and Contaminated Areas

	Geographical Location (GPS Coordinates or Lat. Long)	Main Content by Chemical or Groups of Chemicals/Waste	Magnitude of the Site or Stocks; e.g. Small, Medium, Large
Obsolete Chemical Stocks	NONE		
Chemical Waste Sites	NONE		
Contaminated Areas	Several	PCBs and Dioxins and Furans	Smalll

Table 2H has no data because obsolete chemicals stocks were collected and exported for disposal through the POPs project and there are no chemical waste sites in the country. The ensuing analysis gives a clear picture of the waste situation in Lesotho, inclusive of any chemicals.

2.9 UNINTENTIONALLY GENERATED CHEMICALS

2.9.1 Persistent Organic Pollutants [POPs]

On the basis of the "Standardized Toolkit for Identification and Quantification of Dioxins and Furan Releases", the main categories were identified, which are relevant to Lesotho. Out of the 10

categories, 9 categories were deemed existent in the country; these are herein presented in table 2.3, below.

Table 2.3: Main categories of POPs, identifying those relevant to Lesotho.

Category	Source Category	Relevance to Lesotho
1	Waste Incineration	Yes
2	Ferrous and Non-Ferrous Metal Production	No
3	Power Generation and Heating	Yes
4	Production of Mineral Products	Yes
5	Transportation	Yes
6	Uncontrolled Combustion Processes	Yes
7	Production of Chemicals and Consumer Goods	Yes
8	Miscellaneous	Yes
9	Disposal/Land filling	Yes
10	Identification of Potential Hot-Spots	Yes

It was further realized that the burning of waste in many areas is regarded as incineration, which in real technical terms it is not. However, due to lack of another category, the process of burning, particularly medical waste has been treated as incineration. All hospitals in the country were found to have medium technology incinerators, all of which are either out of order or not functioning in a normal way.

The category of Power Generation and Heating was considered only as far as household heating and cooking is concerned, and here statistical data from demographic analyses were used to quantify amounts of fuel consumed, hence the emission rates of dioxins and furans.

Transport category was dealt with in two ways, namely, motor vehicle counts, as per the registers of the traffic departments, and through compiled statistical data on total imports of hydrocarbon fuels.

Activities in the Production of Mineral Products are quiet low, considering that it only applies to Brick production and Asphalt mixing. There are various data gaps in this area and these are discussed in detail in the report.

Regarding uncontrolled combustion processes, there is a serious problem of quantification as there is no way of assessing the frequency of burning. This deals with biomass burning as well as burning of waste, both of which are evidently common in Lesotho. The best option seemed to be a statistical estimation based on probabilistic aspects.

Production of chemicals is non-existent in the country. However the use of chemicals is applicable. This category is therefore considered only in so far as the use of chemicals and consumer goods is concerned. The subcategory deals with textile production since Petroleum industry is covered in transport. In this regard, customs records for a full year export of textile were used as the basis.

There are of course other diverse activities, which considered under miscellaneous. In this category, the crematorium is not yet in operation, but there are dry cleaners and a lot of tobacco smoking.

Emission from biomass has also been considered, and the drying of biomass was extrapolated from the household-heating category.

Under the category of Disposal, landfills and waste dumps capacities were estimated on daily basis over a period of a month in order to establish mean activity. As part of the study, it was noted that there exists a number of illegal dumpsites, some of which may have been missed, and this encompasses open waste dumping as well as composting. Sewage treatment activity calculations were based on the estimates of generated sewage as adopted by Water and Sewage Authority (WASA). The estimated amount of sewage generated is based on the total water consumption.

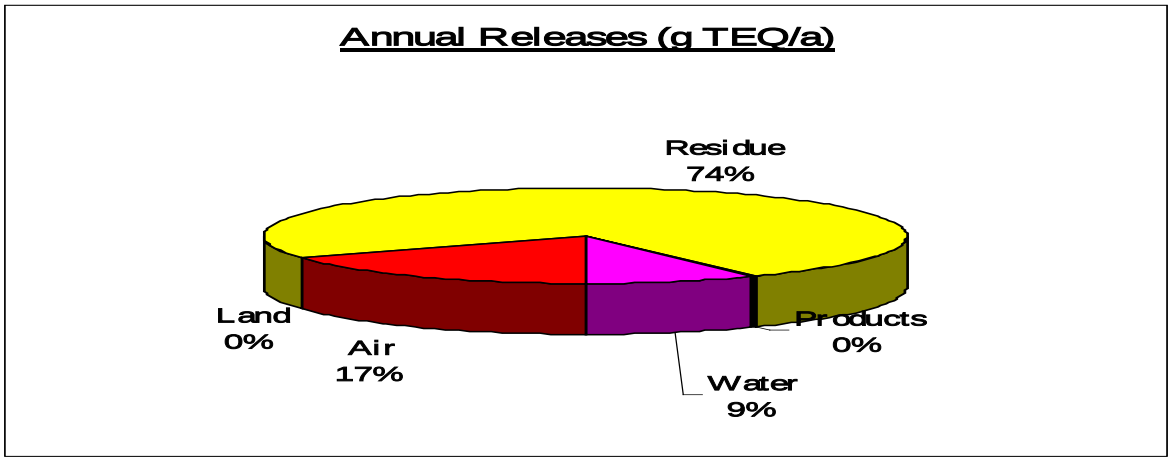
In all areas visited where activities existed, the extent of contamination, as well as the capacity to manage the activity was used as the basis of proclaiming such areas as hotspots. In as far as by-products are concerned; this was restricted to dumps of wastes/residue from all categories mentioned above.

Table 2.4: Unintentionally Generated POPs

Type of Facility/Practices	**Frequency of Occurrence / Number of Facilities**
(***Annex C. Part II: Source Categories)***	
(a) Waste incinerators, including co-incinerators of municipal, hazardous or medical waste or of sewage sludge	14
(b) Cement kilns firing hazardous waste	0
(c) Production of pulp using elemental chlorine or chemicals generating elemental chlorine for bleaching	0
(d) Thermal processes in the metallurgical industry (i) Secondary copper production	0
(ii) Sinter plants in the iron and steel industry	0
(iii) Secondary aluminium production	0
(iv) Secondary zinc production	0
(Annex C. Part III: Source Categories)	
(a) Opening burning of waste, including burning of landfill sites	National (10)
(b) Thermal processes in the metallurgical industry not mentioned in Part II	0
(c) Residential combustion sources	National
(d) Fossil fuel-fired utility and industrial boilers	10
(e) Firing installations for wood and other biomass fuels	0
(f) Specific chemical production processes releasing unintentionally formed persistent organic pollutants, especially production of chlorophenols and chloranil	0
(g) Crematoria	0
(h) Motor vehicles, particularly those burning leaded gasoline	National
(i) Destruction of animal carcasses	ND
(j) Textile and leather dyeing (with chloranil) and finishing (with alkaline extraction)	4
(k) Shredder plants for the treatment of end of life vehicles	0
(l) Smouldering of copper cables	0
(m) Waste oil refineries	0
TOTAL	38

The total by-products emissions for Lesotho are estimated at 292.3 g-TEQ/a in air, 149.1 g-TEQ in waters, 2.1 g-TEQ/a on products and 1264.6 g-TEQ as residues, while emissions on land are negligible, and the percentage contribution are shown in figure 1 below.

Figure 2A: *Graphical presentation of the overall annual releases of dioxins and furans for Lesotho*.

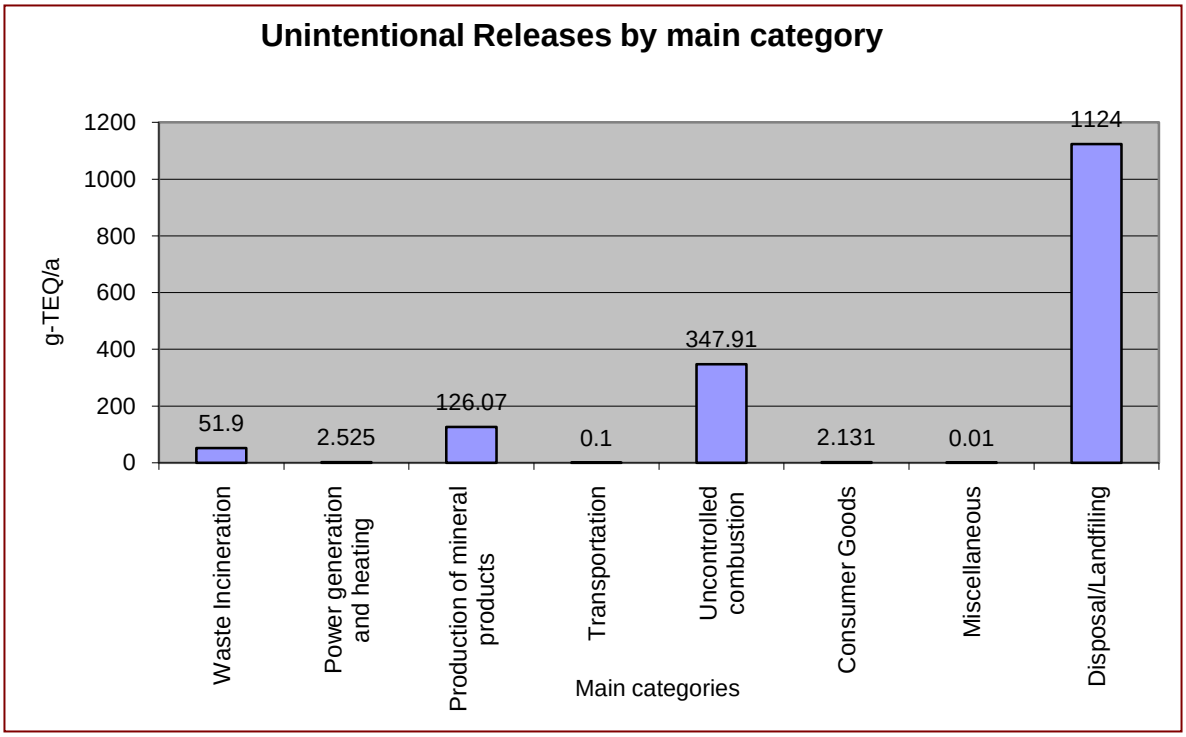


From figure 2A above, releases from products are far negligible, and represents about 0.12%, hence why it appears as zero on the pie chart. On the other hand, the bigger portion is contributed by residues that are left after burning waste at illegal and controlled dumping sites, which constitutes the major problem in relativistic assessment.

The dioxins and furans formed through various processes escape into the environment through different pathways/media namely: air, land and water. The escape into the air is brought about by combustion and high temperature thermal process, whereas on land it occurs by adsorption, absorption and leaching on or into the soil. The introduction of dioxins and furans to water could happen in a number of ways. This includes discharge of effluent or contamination with leachates and chemicals containing dioxins and furans. Of the three media, air is the most affected by these releases followed by water and then land. This can be explained by indicating that a lot of waste is burnt due to poor waste management system resulting in gaseous emissions. With water in the second spot, the contaminants are introduced through effluent from sewage treatment works, leachates from waste disposal sites all of which are operated in an inefficient manner. The land receives little pollution partly because Lesotho does not practice massive organic farming whereby sludge is used to condition the soil.

From figure 2B, unintentional release of dioxins and furans, by main category, is dominated by waste disposal or land filling, which is followed by uncontrolled combustion. The rest produce insignificant releases. From this analysis, it is obvious that when preparing the National Implementation Plan for Management of POPs, with respect to dioxins and furans, dumpsites and landfills should be afforded the highest priority. It is therefore conclusive that dumpsites, landfills and uncontrolled combustion are considered as hotspots. In terms of dumpsites, special attention needs to be given to Ha-Tšosane and Maputsoe dumpsites, which cater for all sorts of waste, including industrial waste.

Figure 2B: *Graphical presentation of unintentional release of dioxins and furans emissions by main category.*



In comparison with other countries (from the toolkit), Lesotho exceeds Uruguay and Jordan in all categories, but is far less than Philippines and Brunei Darussalam, in terms of dioxin and furan releases. A comparison that is understandable, considering the economic levels of these countries. This therefore indicates a direct correlation of emissions with economic level/activity of the country.

2.10 COMMENTS/ANALYSIS

Waste Incineration

- Incinerators are found only in Health facilities in Lesotho. There is neither record nor an attempt to monitor medical waste. Medical waste data needs to be regenerated. If hospitals could have waste management programme, again for their own performance and environmental aspects and planning, this would go a long way in assisting in the development of national waste management programmes. Therefore, this data should be regenerated.

Power Generation and Heating

- The information on exact use of fossil fuels for various categories could not be obtained hence the approach was to use demographics to calculate the percentages. There is a need to further breakdown the data sheets to incorporate all the consumption pathways.

Production of Mineral Products

- This category centers on the production of bricks of which it was found out that the technologies prescribed were not available. The challenge that remains is the development of air quality monitoring standards upon which the data could be generated.

Transportation

- Statistics on registered vehicles and other fuel consuming machinery from traffic department does not cover the fuel type of the car, at least on the register where it was easily accessible. This data would go a long way even on other emission estimates and planning. Statistics on government and foreign missions vehicles is also not available. In addition, reasonable number of locally used cars still uses foreign registration, mostly RSA registered cars. Statistics on the number of such cars is not available.
- Annual quantities for grease, paraffin, jet oil, motor oil, and solvents could not be calculated because their specific gravities or densities could not be found particularly from the toolkit. They are only reported in volumes and monetary value.

Uncontrolled Combustion Processes

- Information covering classes within this sub-category is not available from the relevant ministries or departments, which were supposed to generate such information.

Production of Chemicals and Consumer Goods

- The country is not involved in the production of chemicals. However there is an increase in the development of textile activities. The quantification of waste was done on the assumption that 10% of total textile material ends up as off-cuts. There is therefore a need to put in place a waste measurement mechanism in order to establish right quantities.

Miscellaneous

- Processes, such as drying of biomass, operation of cremation and smoke houses are not known or do not exist in the country. Therefore, totals for their annual consumption could not be determined.

Disposal/Landfill

- Amounts of waste that is burnt in households is a real problem, this can only be estimated using some statistical algorithm that would be acceptable.
- Water is one medium that is vulnerable to contamination by dioxins and furans, hence the importance of knowing the amount of leachates produced from a waste disposal facility.

The quantity of leachates can be computed using Water Balance formulae as follows:

$$Q\ (m^3/year) = P + S - R - aW$$

Where Q = Leachate
P = Precipitation
S = Surface seepage into the landfill
R = Surface run off from the landfill
a = absorptive capacity of waste (m^3/tone)
W = Weight of waste deposited (tones/year)

Unsaturated waste = 35 – 45%
Saturated waste = 50 – 60%

The current practice of waste disposal is such that waste is either discarded indiscriminately or on controlled and illegal dumpsites. In this, an attempt to quantify leachate quantities using the above equation, it was realized that the volumes of surface water entering and leaving the dumpsites were not quantified. Thus, without this information the amount of leachate generated could not be determined.

Other factors to consider, besides the water balance, is the geological characteristics specific for each dumpsite, rate of surface water evaporation from the dumpsites and soil porosity. Geological properties determine the soil characteristics and profile, hence the permeability of the soil. Different soils have different porosity; as such the leaching effect is also likely to differ too. For instance clay soil expands when wet, thereby obstructing percolation of leachate into the ground.

As a result, the information on annual average rainfall of different urban centers could not be of any use, in terms of estimating the amount of leachate caused by rainwater. However, a direct relationship is expected to exist between rainfall and the amount of leachate from dumpsites. In that respect, it is suffice to indicate that more leaching effect is expected at areas with high rainfall (e.g. Qachas Nek, Butha-Buthe and Quthing), and leaching is expected to be the least within places with lower rainfall (e.g. Mokhotlong and Maseru).

In the final analysis the major problem of analysis regarding chemicals management in Lesotho pertains to data availability, which can only be available if there is surveillance or monitoring programmes. There therefore still remains a major waste management problem in the country, which must be addressed. More stringent frameworks must be developed in order for this to occur. Furthermore, the current infrastructure remains weak and must be improved upon in order for waste management to be addressed.

CHAPTER 3:

PRIORITY CONCERNS RELATED TO CHEMICALS AT ALL STAGES OF THEIR LIFE CYCLE

3.1 INTRODUCTION

Beyond general environmental concerns, which are generally increasing as awareness increases, those that can be classified as being related to chemicals in any way, have been gathered from a variety of stakeholders, through questionnaire as well as dialogues, including the 1st stakeholder meeting. It could be said that, due to low production, in the strictest of terms, concerns regarding chemicals management are narrow and do not sound as aggravating.

Persistent Organic Pollutants (POPs) are synthetic chemical substances that pose toxic properties to humans and animals, are bio-accumulative in organisms through the food chains, and get transported over long-range distances from the points of their release through various environmental media such as air, water and migratory species. Their occurrence in the environment lasts for a considerable length of time. They last because they resist photolytic, chemical and biological degradation.

Persistent Organic Pollutants concentrate in fatty tissue of living organisms, and thus their contents increase in a process of bioaccumulation and bio-magnification. These classes of compounds are highly toxic and cause an array of adverse effects such as cancer and birth defects to both humans and animals.

Many of the POPs have found wide use as pesticides to protect plants against plants diseases and vector-borne diseases. Some are used as heat resistant dielectrics in electrical equipment such as transformers and capacitors. Dioxins and Furans are a category of POPs that are produced as by-products of incomplete combustion and chemical processes.

Because of the toxicity, persistence and distributive capacity of POPs, their strict management towards total elimination is desirable. To this end, an international cooperation and intervention is a prerogative of all nations.

Countries of the world have realized the importance and need of sound management of chemicals in general, with the aim of protecting human health and environment. The management has taken the form of various international and regional instruments, principles, guidelines and codes of ethics. Some of the pertinent international forums, initiatives and conventions include:

Lesotho became a party to the Stockholm Convention in January, 2002, In addition to her membership to Stockholm Convention; she is also a party to Basel Convention and Montreal Protocol and has acceded to Rotterdam convention.

3.2 "PRIORITY" CONCERNS

In this section, all concerns raised by stakeholders, including the public and the ministry of environment, are tabled in 3.A.

Table 3.A: Description of Problem Areas

Nature of Problem	Area	Brief Description	Pollutants
Water Pollution	Maseru	Existence of foreign chemicals in water leading to colouration and quality compromise	Dyes, Organics and Inorganic compounds
Air Pollution	Maseru	Uncontrolled combustions	Dioxins, Furans and GHG: Hydrocarbons Particulate matter
Land & Water Pollution	Around Major Urban areas	Oil drainage from repair areas, poor solid waste management	Used Oil
Ground Water Pollution	Maseru	Possible heavy metals, poor waste management	Petroleum products, All metallic wastes
Storage and Disposal of obsolete chemicals	Main stores and Laboratories	Disposal of expired chemicals keeps being difficult with more chemicals introduced	All types of chemicals
Occupational Health	Industrial areas	Exposure to fumes and dusts	Volatile organic solvents
Chemical Accidents.	Workplaces	Inappropriate storage and use	All types of chemicals
Chemical Accidents	Households	Accessibility to minors and inappropriate use	Mainly pesticides and fuels

The ultimate focuses of all problems relating to chemical management seem to involve lack of or non-existence of proper disposal and treatment of wastes and obsolete chemicals. The uncontrolled burning of wastes compounds the air pollution.

Uncontrolled dumping has become the easy way out in the absence of formal collection and disposal of municipality wastes and in most cases these are accessible to unknowing children. Furthermore, there is a tendency not to discriminate types of waste, such that the city sewer line is used for all purposes.

The quantification of the extent of these problems is still difficult due to lack of baseline data or statistics. However, as indicated in table 3B. Priority ranking is possible, on the simple basis of public concerns as gathered from media and a few consultations.

The situation of Lesotho can be regarded as moderate, in the sense that even at most severe situation where death has been recorded, the frequency is low. The low population also leads to relatively low exposure levels. This however does not exempt the country from instituting strict controls, for one life is as valuable as a million.

Table 3B: Priority Concerns Related to chemical

Nature of Problem	Scale of Problem	Level of concern	Ability to control Problem	Availability of statistical data	Specific chemicals creating concerns	Priority Ranking *
Air Pollution	Local to National/Regional	Medium	Insufficient	Not Available	NO_X, SO_X	2
Pollution of Inland Water	National	Medium	Insufficient	Not available	Inorganic elements	2
Ground water pollution	Localized to National	High	Insufficient	Not available	Heavy metals	2
Soil contamination	Local to National	Medium	Insufficient	Not available	Petroleum products and heavy metals and pesticides	2
Chemical residues in food	Regional	Medium	Insufficient	Not available	Pesticides	3
Drinking water contamination	National	Medium	Sufficient	Partially	Pesticides and Industrial chemicals	2
Hazardous waste treatment/ disposal	Local	High	Insufficient	Not available	Obsolete stock and medical	1
Occupational Health in Agric	National	Low	Insufficient	Not available	Pesticides	3
Occupational health-Industrial	National	Medium	Sufficient	Partially	Organic solvents	2
Public Health – HH exposure & poisoning	National	Medium	Sufficient	Partially	All chemicals	2

* Relative ranking from 1 to 5 indicates problems faced by the country (1 = most severe, 5 = least severe)

The severity of the impact or problem has been evaluated on the basis of population exposed, and the number of occurrences or frequency of the event. A situation like Hazardous waste treatment/disposal is ranked high due to openness of waste disposal with no management whatsoever, and this occurs almost everywhere in the country hence a very high exposure. But Occupational Health in agriculture is ranked medium because most citizens practice subsistence agriculture without a lot of chemicals inputs, even though dipping of animals still presents hazard in water ways.

3.3. ANALYSIS

Currently chemicals are not registered or even categorized by regulations. Customs depends on the declarations made at borders, which in many cases is neglected. Resultantly, quantities as well as types of chemicals that enter the country and their use are difficult to assess.

With this existing information, it is difficult to prioritize, except on the basis of observations and knowledge of possible effects. Additional information required include, types of chemicals imported, then quantities and their intended use. But it is even more important to be able to tell how much of each has actually been retailed to consumers.

Below is a brief discussion of the problems indicated in table 3B.

Air Pollution

Air pollution in the country comes as a result of vehicle emissions and industrial activities. In the Thetsane Industrial Area more specifically, thermal inversion has left a hazed landscape. Emissions concerned in processes within the industries include volatile organic compounds (VOCs) from coating, printing, drying and curing operations, particulates matter, nitrogen oxides, sulphur dioxide from boiler operations, and emissions from bulk storage tanks for commodity and speciality chemicals, solvent-based cleaning, warehouses for stored finished fabric and wastewater treatment plants (LEJAC, 2008). Furthermore, the use of coal for heating of residential houses has further enhanced the problem.

Tsosane dumpsite, which is used for the dumping of waste collected by Maseru City Council (however poor the collection intervals might be) also contributes to the amount of air pollution (together with other dumping sites in the country, including Ha Nyenye, etc.). As in any other situation, most landfills/dumpsites containing organic material will produce methane. This methane is highly flammable, and under uncontrolled situations (such as those experienced in dumpsites in Lesotho) continual burning takes place and a frequent cloud of smoke is visible. The abovementioned problems have proved difficult to control. A study was carried out in October 2005, on the development of a Landfill for Maseru, commission by the Maseru City Council. Among the recommendations of that study was the closure and rehabilitation of the T'sosane dumpsite. Unfortunately, neither the closure of the dumpsite, nor the development of the Landfill is taking place. Therefore, the ability to control the problem shall remain low.

Soil contamination

Soil contamination in the country comes in numerous forms. As indicated in table 3B, the specific chemicals creating concern are petroleum products, heavy metals and pesticides. The disposal of products such as used engine oil for instance proves to still be difficult, with such products being disposed of in pits. This invariably has an effect on the soil. Industrial activity also creates waste that leads to soil contamination. For instance, water released from the Thetsane Industrial firms contains dyes and other chemicals used in making of jeans. A stream then carries these substances towards the Caledon River, which moves on into South Africa. Farmers sometimes use the River as a water source for irrigation. Research in Lesotho has indicated that crop failure has occurred subsequent to irrigating with the water. Although this was not verified, it is possible that high dissolved solids led to

salination of the soil. Complaints about the soil becoming hard, which is a characteristic of soil mining, were mentioned by some interviewed individuals (LEJAC, 2008).

Some industries have attempted to recycle any waste water prior to releasing it into the Caledon River. The current problem is that not all industries are doing this. Departments such as the Department of the Environment have been advocating for the adoption of Cleaner Production and Consumption methods in trying to reduce the problem.

Drinking water contamination, Pollution of Inland Water and Ground water pollution

The textile industry is the major industry in the country. There are four major industrial areas, namely Maputsoe, Nyenye, Thetsane (Maseru) and Old Industrial Site (Maseru). Effluent from these areas ends up in the nearby Mohokare/Caledon River, which serves as a source of water for many communities further down stream (in Lesotho and at a Transboundary level, in South Africa). The likelihood of contamination is therefore high for communities that use the River as a source of drinking water.

Another concern in relation to the contamination of drinking water is with regard to the dumping of waste at the T'sosane Dumpsite, as well as other dumpsites in the country. Untreated waste is dumped in a disorderly fashion. Through processes of decomposition and the occurrence of rainfall, leachate is formed. The leachate seeps into the soil and finds its way into groundwater sources. The main source of drinking water for Maseru for instance is plagued with pollution, therefore requiring high levels of treatment.

Hazardous waste treatment/ disposal

Until now the T'sosane Dumpsite has not 'officially' taken H:H wastes. With the growth of the textile industry through a process used to dyeing process fork the clothing, a highly toxic sludge is produced that has become a bane to the government. This waste is currently stockpiled and is intended to be transported for disposal in South Africa. Toxic Sludge has to be encapsulated in concrete to safely dispose of the hazardous material.

Health Care Waste is yet another stream that finds its way into the illegal and inappropriate official dump sites. The risk is unimaginable to the scavengers. There is an urgent need to strengthen its management. Luckily, this areas falls within the assistance of Millennium Challenge Account and is being implemented.

Occupational Health in Agriculture and Chemical residues in food

Hazardous Agricultural chemicals have been a major concern for Lesotho in recent years. In recognition of high incidents of contamination of food, water and soil, the Ministry of Agriculture has taken drastic steps aimed at reducing reliance of synthetic pesticides particularly POPs. However, under circumstances where chemicals are sprayed on crops, farmers still do so without protective nose mask, bringing about numerous respiratory problems, as well as other conditions. Furthermore dipping in central water sources is a frequent occurrence, which has serious health effects on those involved, as well as for drinking water of communities.

Another unsafe practice evident in the agricultural sector relates to the delayed spraying of pesticides on crops. Crops that are ripe are sometimes sprayed, and when they are eaten, the residues of the pesticides are still evident. While there has not been any documented review of this, it has been acknowledged by many agricultural practitioners.

Occupational health-Industrial Exposure

The industrial sector, more especially textile manufacturing, remains with the problem of workers not using protective clothing. In the firms, particulates of cloth off-cuts find their way into the air, and are therefore inhaled by workers, bringing about respiratory problems. Firm employers also argue that employees, even when supplied with nose masks, employees want to chat with one another, and therefore they take off their masks when talking. The chemicals used in textile production are also dangerous to the skin, therefore posing a further problem.

Public Health –House hold exposure & poisoning

One of the problems in Lesotho is that of household chemicals, their safe use and storage. More often than not, they are the culprit in suicide attempts; rodenticide, petroleum oils and pesticides are often ingested by those who wish to take their lives. One of the reasons advanced is that they are easily accessible. An even more acute case is that of unsuspecting children who ingest these simply because they could lay their hands on them, a case of poor storage. In a yet dangerous case is the application of most household pesticides in an unventilated condition with people still in the house. These kinds of exposures are cumulative and can be blamed for the increased cases of pulmonary problems among the population; at least one out of every five Mosotho has either hay fever, sinus problems or some form of chronic allergic reaction.

All in all there is good agreement among stakeholders in terms of relative priorities. They also agree that comprehensive regulation would alleviate all of the above-mentioned problems.

CHAPTER 4:

LEGAL INSTRUMENTS AND NON REGULATORY MECHANISMS FOR LIFE CYCLE MANAGEMENT OF CHEMICALS

4.1 INTRODUCTION

The purpose of this chapter is to provide an overview of existing legal instruments and non-regulatory mechanisms for managing chemicals, including their implementation and enforcement, and identify relevant strengths, weaknesses and gaps

Lesotho has no policy on the management of chemicals but it has close to 10 legal instruments, which address environment management in some manner. However many of these instruments are either too general, weak and/or outdated. All of them are sectoral in nature as they were enacted to curb specific problems in a particular sector e.g. the Labour Code Order of 1992 which focuses primarily on the goings on at the workplace. Most of them are not very easy to enforce because of inadequately skilled manpower as well as lack of financial and political will. Penalties are minimal or non-existent in some instances. Many of the legislations are too general in their mention of chemical substances being it their handling, use, storage and so on.

This chapter provides an overview of existing legal instruments for the management of chemicals as well as those in the pipeline. Recommendations are also provided at the end of the chapter. Legal instruments are discussed in relation to national and regional

Problem areas identified in the 1997 State of Environment report for Lesotho include the quality of environmental legislation and the implementation of environmental laws. Existing statutes governing natural resource management and the protection of the environment are inconsistent, inadequate and un-consolidated. They also overlap and are often in conflict with one another. Their implementation is very poor because they are inaccessible (out of print, written only in English, and outdated). In addition, they depend on coercive measures, and are often reactive rather than preventive. Other factors that contribute to poor implementation of environmental legislation include poorly trained personnel, inadequate financial resources, weak administrative and organizational structures, institutional conflicts, scarcity of monitoring equipment and lack of environmental education and public awareness programmes. Legal reforms were initiated as early as 1989 to address the shortcomings in environmental legislation and in institutional capacity. This has culminated in the drafting of the Environmental Bill (now an Act which unfortunately was never functional), and in the establishment of NES to spearhead and co-ordinate environmental issues and ensure compliance with international conventions and treaties.

The Country is assisted by various UN organs in its endeavour to curb environmental degradation. The UNDP's Environment and Energy programme focuses on strengthening the capacity of the Government of Lesotho to manage environment change and adopt an integrated approach to the sustainable management of natural resources towards achievement of the Millennium Development Goals, especially Goal 7 – Ensuring Environmental Sustainability. It is in line with the overall national programme for tourism, environment and cultural development as elaborated in the Government of Lesotho's Poverty Reduction Strategy (PRS) and Vision 2020.

Table 4.A: References to existing legal instruments, which address certain aspects of Chemical management

Legal Instrument (Type, Reference, Year	Responsible Ministries of Body	Chemical use categories covered	Objective of Legislation	Relevant (1) Sections	Resources Allocated	Enforcement/ Ranking
Public Health Order, 1970	Ministry of Health	Vaccines, toxins, anti-toxins etc.	Supervision of vaccinations, toxins, anti-toxins (should include chemicals management).	Section 84 (1)	22 Hospitals, over 160 clinics, doctors, nurses, researchers not enough infrastructure, human resources, funds etc.	Weak and outdated
The Medical, Dental and Pharmacy order, 1970	Ministry of Health (Medical, Dental and Pharmacy Council)	Pharmaceuticals, Vaccines, poisons etc.	- licensing -formulation of medicines -importation -sale and storage -certificates of examination -marking and labeling -standards of composition, purity, sterility etc.	Section 35 (a-h) Section 38	Not enough human resources	Weak and outdated
Customs and Excise Order, 1970	Ministry of Industry, Trade and Marketing	general	-importation -exportation	Chapter 2,3,4	Lack of Human Resources, funds, infrastructure	Fair
International Health Regulations, 2005	Ministry of Health	Pharmaceuticals, Vaccines etc.	control of diseases	Articles 1-107		Fair
Trading Enterprises, 1999	Ministry of Industry, Trade and Marketing	general	Licensing of enterprises	Section 11(1), (2) item 4 (1), (2), (3)	Lack of enough Human Resources	Weak
Road Traffic Act	Ministry of Transport	general	To regulate transportation of goods	Part III, V, VI		Fair
Labour Code Order, 1992 And its amendment	Ministry of Employment and Labour	Workplace environment	To ensure safety and good health at the workplace	Section 105, 106, 109 (2) Sixth schedule: articles 17, 18, 20, 31	Not enough Human Resources	Fair
Liquefied Petroleum Gas Regulations, 1999	Ministry of Natural Resources	Liquefied Petroleum Gas	-prohibition on importation -application -approval criteria -restriction on removal of cylinders from Lesotho -duties of wholesaler, dealer and	Sections 1-16	Lesotho Petroleum Fund	Strong

Legal Instrument (Type, Reference, Year	Responsible Ministries of Body	Chemical use categories covered	Objective of Legislation	Relevant (1) Sections	Resources Allocated	Enforcement/ Ranking
			employees -display and communication of safety information etc			
Ozone Depleting Substances Regulations, 2000 (Still a draft)	Ministry of Tourism Environment and Culture	Chloro Fluoro Carbons	-Regulation of refrigerants and other coolants -import and export -servicing air conditioners, refrigerators etc. -total ban on ozone depleting substances, labeling, duties of custom officials, offences		Under Montreal Protocol Project – replacement of CFCs were made countrywide	Strong but not yet in force because it is awaiting publication of the Environment Act of 2008
Water Quality Guidelines	Ministry of Natural Resources	water	To regulate water pollution as well as setting standards for the quality of industrial and domestic water systems		None other than business as usual/recurrent budget	Awaiting the Environment Act of 2008
Environment Act of 2008	Ministry of Tourism, Environment and Culture	The entire environment	To set the framework for better management of the environment		None other than business as usual/recurrent budget	Not yet in force since it is awaiting publication
Mines and Minerals Act 2005	Ministry of Natural Resources	Environmental protection	Administration of mineral exploration and exploitation. types of licenses and conditions for mineral exploitation, environmental protection, finances and termination of mineral titles		None	
Hazardous and Non Hazardous Waste management Bill 2008	Ministry of Tourism, Environment and Culture	To be determined	Control of Generation, Transportation, storage, importation , recycling and Disposal of wastes; with sound institutional arrangement	Part IV	None	Still to be revised for enactment
Chemicals and Pesticides Bill						

4.2 SUMMARY DESCRIPTION OF KEY LEGAL INSTRUMENTS RELATING TO CHEMICALS

Even though there are not many such legal instruments, this section provides details on those legal instruments which are considered of particular importance for the management of chemicals. There are about 5 existing legal instruments governing chemicals in the country, namely (a) Environmental Act of 2008(b) Trading Enterprises Act of 1999 (c) Labour Code 1992 (d) Liquefied Petroleum Gas Regulations of 1997 (e) Ozone depleting substances regulations of 2000 draft.

a) Environmental Act 2008

The Act deals with the overall management of the Environment. With relevance to the Management of Chemicals

The Act primarily empowers the Department of Environment to:-

- Issue Environmental Impact Licenses, Pollution Licenses and Waste License
- Penalize anyone who may contravene the provisions of the law

Means of making legislation publicly known

- Publishing as a Government Gazette
- Which is available from the Government Printer

Licensing and Administrative Procedures

- Applicant/developer must undertake an Environmental Impact Statement where deemed necessary
- The Impact Statement is open for public inspection and scrutiny
- Issuance of a license is made provided the Environmental Impact Statement meets all the necessary requirements indicating that all environmental considerations shall be adhered to in development

Existing data base

- A register of all licenses and Environmental Impact Statements is kept by the Department of Environment
- The register has full particulars of the manager, directors, and the business itself

The Environment Act takes into consideration among others (with reference to chemicals management):

- The prohibition of discharge of hazardous substances, chemicals and materials or oil into the environment and spiller's liability.
- Management of toxic and hazardous chemicals and substances
- Handling of toxic or hazardous chemicals or substances
- Total Ban on hazardous chemicals and substances specified in the Second Schedule of the Act

b) Trading Enterprises Act of 1999

The act primarily empowers the Ministry of Trade to:-

- Deal with licensing issues of enterprises
- Penalize anyone who may contravene the provisions of the act

Means of making legislation publicly known

- Publishing as a Government Gazette
- Which is available from the Government Printer

Licensing and Administrative Procedures

- Applicant fills Form A of the second schedule
- Accompanied by proof of ownership, inspection certificate of premises, health certificate (food handlers), registration certificate, the Memorandum of Associations, Form L and share certificate
- In the case of partnership, deed of partnership issued in terms of the Partnership proclamation of 1957

Existing data base

- A register of all licenses is kept by the commissioner
- The register has full particulars of the manager, directors, and the business itself
- This is a manual database not computerized

c) Labour Code Order of 1992

The Labour Code stipulates guidelines for ensuring safety at the workplace for personnel and property. The regulations cover a wide range of issues like prohibited and toxic substances, removal of dust or fumes as well as the use of protective clothing and equipment. However aspects which address in more detail the use and handling of chemicals are under promulgation.

Means of making legislation publicly known:

- Publication in a gazette
- Publishing of occurrences in a government Gazette
- Which is obtainable at a nominal fee from the Government Printer

Administrative procedures

- Application for the registration of a factory; an application form should be completed
- Form for approval or denial of application is filled by a government official in the office of the labour commissioner
- A registration fee is normally charged
- Notification of the Labour Commissioner by way of a written report of any industrial accidents, dangerous occurrences and industrial diseases
- Employer keeps a record of all notifications of accidents and dangerous occurrences
- A register of date and result of examination of all persons examined who may have inhaled, ingested or otherwise absorbed substances which are listed under the sixth schedule of the labour code.
- The registration process must then be implemented

Existing database

- Accidents
- The sixth schedule contains a list substances which are considered “toxic”
- A database of all factories with over 100 employees with names of persons responsible for safety, health and welfare
- A register of all toxic and flammable substances used, manufactured or likely to be formed in the course of the process. This should include names and their quantities.

d) Liquefied Petroleum Gas Regulations, 1997

The regulations control and regulate operations relating to liquefied petroleum gas, LPG. This ranges from the regulation of importation, licensing, movement of containers in and out of Lesotho, duties of dealers and employees, communication of safety information, display of safety procedure to the keeping of records. It also stipulates the penalties, which accompany the contravention, the regulations.

Means of making legislation publicly known:

The legislation is publicized through:-

- Publication in a gazette
- Which is obtainable at a nominal fee from the Government Printer

Administrative procedures

- Issue of letter of approval by Department of Energy
- Registration of applicant as a dealer
-

Mechanism to monitor implementation/ Penalties for contravention of regulations

The regulations are mute on inspection

- However a person who contravenes the regulation 3 is liable to a fine not exceeding M10,000.00 or imprisonment
- A dealer who contravenes regulations 6-14 commits an offence and is liable to a fine not exceeding M20, 000.00 or closure of his business and cancellation of his license or both.
- An employee who contravenes regulation 7, or a person who contravenes regulation 12 (1) commits an offence and is liable to a fine of M600.00 or imprisonment for three months or both.
- A dealer of LPG who contravenes regulation 12 (2) commits an offence and is liable to a fine not exceeding M20,000.00 or imprisonment for a period not exceeding ten years or both.
- LPG imported to Lesotho contrary to regulation 3 shall be confiscated in accordance with section 8 of the Fuel and Services Control Act 1983

Existing Databases

- A list of all wholesalers, dealers and agents is kept by the Ministry of Trade and Industry
- This is a manual system not computerized

e) Ozone Depleting Substances Regulations 2000

These regulations control all the aspects of ozone depleting substances with a great amount of emphasis on the control and ban of ozone depleting substance. It also stipulates the penalties awarded to contraveners of the regulations.

Means of making the legislation known

- Publication as a gazette
- Its date of operation will be published by way of a notice in a government gazette when the Environment Bill of 2000 is published.
- Which is obtainable for a nominal fee from the Government Printer

Administrative procedures

- A person who wishes to import or export ozone depleting substances specified in the first schedule must apply to the authority for a permit; a form is prescribed
- Decision of the Lesotho Environment Authority (LEA) shall be communicated to the applicant in writing
- All ozone depleting substances specified in the first schedule should be labeled according to a prescribed manner
- Custom officials shall once a month, submit to the authority duplicate copies of all ozone depleting substances import and export declarations, inspect all the substances at the port of entry and confiscate all substances without a permit
- Mechanism to monitor implementation/ Penalties for contravention of regulations
- A person who contravenes the provisions of these regulations is liable to a fine not exceeding M100,000.00 or to a period of imprisonment not exceeding 10 years or both
- A person who is convicted of an offence under sub-regulation (1) shall, in addition to a fine provided for in that sub-regulation, be liable to a fine of M5000.00 for each day the offense continues to be committed.

Existing databases

- a list of all banned substances e.g. R-11 and R-12 is compiled
- a list of all importers and exporters of ozone depleting substances is kept by the Authority
- all imported and exported ozone depleting substances is submitted to the Authority on a monthly basis by customs officials

Table 4 B: Overview of Legal Instrument for Management of Chemicals by the Use Category

Category of Chemicals	Import	Production	Storage	Transport	Distribution/ Marketing	Use/ handling	Disposal
Pesticides (Agricultural Public health and consumer use)	-	-	-	-	X	-	-
Fertilizers	-	-	-	-	X	-	-
Industrial Chemicals list in Manufacturing processing facilities	-	-	-	-	X	-	X
Petroleum Products	X	X	X	X	X	X	X
Consumer Chemicals	-	-	-	-	X	-	-
Chemical Waste	X	X	X	X	X	X	X
Pharmaceuticals	X	X	X	-	X	X	X
Radioactive materials & products containing Radioactive	-	-	-	-	-	-	-

KEY: X indicates legislation in place, - indicates there is no legislation

4.3 EXIXTING LEGISLATION BY USE CATEGORY, ADDRESSING VARIOUS STAGES OF CHEMICALS FROM PRODUCTION /IMPORT THROUGH DISPOSAL

There are no laws of Lesotho that targets or deal directly with some categories of chemicals. The analysis in section 4 .2 shows all the relevant laws.

4.4 SUMMARY DESCRIPTION OF KEY APPROACHES AND PROCEDURES FOR CONTROL OF CHEMICALS

Lesotho currently uses very few regulatory and control approach for chemicals management, let alone non-regulatory mechanisms such as voluntary and incentive schemes. However, strict control applies to Liquefied Petroleum Gas and CFCs. There is no legislation or policy whatsoever on pesticides, fertilizers, industrial chemicals, consumer chemical, waste chemicals and radioactive material.

As mentioned earlier the Ministries of Trade and Natural Resources (Department of Energy) are responsible for the control and regulation of LPG while CFCs are the responsibility of Meteorological Services. All dealers in LPG and refrigerants are registered and in the case of dealers in refrigerants, a very tight monitoring mechanism is in place.

In almost all situations where laws exist, with provision for promulgation of regulations, those regulations are never promulgated. This is yet an issue that hampers proper enforcement or even

simple application of the law. There are neither Standards to measure against nor guidelines to assist people in following the requirements of the law.

The enforcement of all the legislations is not effective due to;

- Insufficient human and financial resources
- Inadequate skilled personnel
- Lack of infrastructure and equipment
- Inadequate multi-sectoral collaboration and co-ordination
- The structure and inefficiency of the judiciary system

All these factors imply that environmental policing in all is non existent.

Table 4 C below shows a list of internationally banned/severely restricted chemicals. Lesotho is not yet a signatory to these conventions but it is acting voluntarily to restrict some of these chemicals e.g. mercury and mercuric compounds. In some instance Lesotho is forced to act upon the use of these chemicals by its trade partners like the Republic of South Africa. Some of these conventions are the Persistent Organic Pollutants and the Prior Informed Consent procedure which complement each other quite well because the former addresses the restriction of specific chemicals while the latter deals with the transboundary movement of hazardous waste.

Table 4 C: Banned or Severely Restricted Chemicals: Lesotho Situation

Name of Chemical	Details of Restriction i.e. Reason for control action
Methyl Parathion	Highly toxic
Ethyl parathion	Highly toxic
Aldicarb	Very highly toxic
Captafol	Carcinogenic
Mercury compounds	Persistent toxic substances
*Aldrin	Persistent toxic substances
*Dieldrin	Persistent toxic substances
*DDT	Persistent toxic substances
HCH Mixer Isomers	Persistent toxic substances
Chlordane	Persistent toxic substances
*Heptachlor	Persistent toxic substances
*PCBs, PBBs	Persistent toxic substances
Tris (2,3) dibromopropyl phosphate	Persistent toxic substances

Most of these chemicals are controlled or restricted internationally, through some conventions of which Lesotho may not have adopted yet, however very effective voluntary restriction efforts do exist.

The next two sections are covered adequately under Comments and analysis, following them. It jsust appeared that discussions on regulatory and non regulatory mechanism would be repetition as far as Lesotho's situation is concerned.

4.5 NON-REGULATORY MECHANISMS FOR MANAGING CHEMICALS

See 4.7 below

4.6 REGULATORY INSTRUMENTS FOR RELATED ACTIVITIES WHICH IMPACT ON CHEMICALS MANAGEMENT

See 4.7 below

4.7 COMMENTS/ANALYSIS

4.7.1 Gaps and Weaknesses in the Existing Legislative System for the Management of Chemicals in Lesotho

The following points reflect the deficiencies of regulatory and non regulatory measures in chemicals management in Lesotho;

- At present there is no legislation on fertilizers, pharmaceuticals, industrial chemicals, consumer chemicals, waste chemicals, etc. the only comprehensive legislations are those which control and regulate LPGs and CFCs. These are applied voluntarily and tend not to be regulatory.
- There is no legislation in place on chemical wastes in Lesotho; normally there is no import/export of chemical waste. A chemical waste treatment plant is however being planned for the SADC community of which Lesotho is a member. Even though this is likely to be based in the Republic of South Africa, due to its proximity, Lesotho will benefit the most. However small amounts of chemical waste are produced in Lesotho mainly because of it weak industrial and manufacturing base.
- Pesticides are regulated by international protocols, declarations and guidelines set by organizations like WHO and FAO. Lesotho does not have regulations and/or guidelines of its own. In many instances any pesticide that is allowed in the Republic of South Africa is also given a green light in Lesotho.
- The lack of robust guidelines for pharmaceutical products is a concern. The Dental and Pharmacy order of 1970 is indeed not only weak but also non-specific. It can however be improved and supported with more specific regulations. Issues dealing with sale of drugs in stores and by street vendors need attention.
- One of the few really tight and robust guidelines in chemical management is the Ozone Depleting Substances Regulations 2000 which is published. An authority that deals with ozone depleting substances has been set up and its role includes the screening and processing of applications. Not anyone can import or export such substances. The authority is charged also with registering air conditioning and refrigeration servicing businesses. A person operating such a business would have to undergo training in an institution which is recognized by the authority before registering. The law is very specific because it lists all the chemicals which it regulates e.g. CFC-12(R-12) and CFC-11(R-11). The manufacturing of such chemicals are also forbidden. Labeling requirements as well as duties of customs officials are also clearly set. On the overall, this should serve as model legislation for the other sectors.

- Perhaps one of the little legislation that deal with chemicals quite extensively is the Labour Code Order of 1992 under health, safety and welfare at work section as well as the sixth schedule of the same law. It covers areas such as application, duties of the employer, employees, designers, manufactures, importers, exporters etc., keeping of documents, safety and health officers and committees at work. The provisions of the code give clear guidelines on notification of industrial accidents and dangerous occurrences, fire prevention and fire fighting as well as prohibition of toxic substances. Removal of dust and fumes is also dealt with in the code. Protective equipment and clothing is to be supplied where any substance used is likely to cause a person bodily injury, or impairment of health. The six schedule further deals with labeling and marking of toxic, corrosive or flammable substances as well as their storage. Guidelines stipulating precautionary measures to be taken with regard to explosive or flammable dust, gas, vapour, ionizing and non-ionising radiation are also contained here.
- International laws and conventions, which bind Lesotho, are many but certainly need to be incorporated in the national legislation. As an example POPs Convention and PIC procedure bind Lesotho. The Basel convention was signed in 2000. However, it is almost impossible to prosecute in cases where a breach of these conventions has occurred since there are no local laws that deal specifically with pesticides, PCBs etc. In the case of the Ministry of Agriculture the only guidelines are the South African laws from which most fertilizers and pesticides come. The chemical environment is tightly controlled by wide ranging laws, which also have punitive capabilities. Another good example is Lesotho Pharmaceutical Corporation, the only drug manufacturing organization in the country, which follows guidelines set by Food and Drug Authority (United States of America), MCC (Republic of South Africa) and good manufacturing practice (GMP). These deal with all aspects of chemicals including disposal and analysis.

4.7.2 Areas not covered by present laws

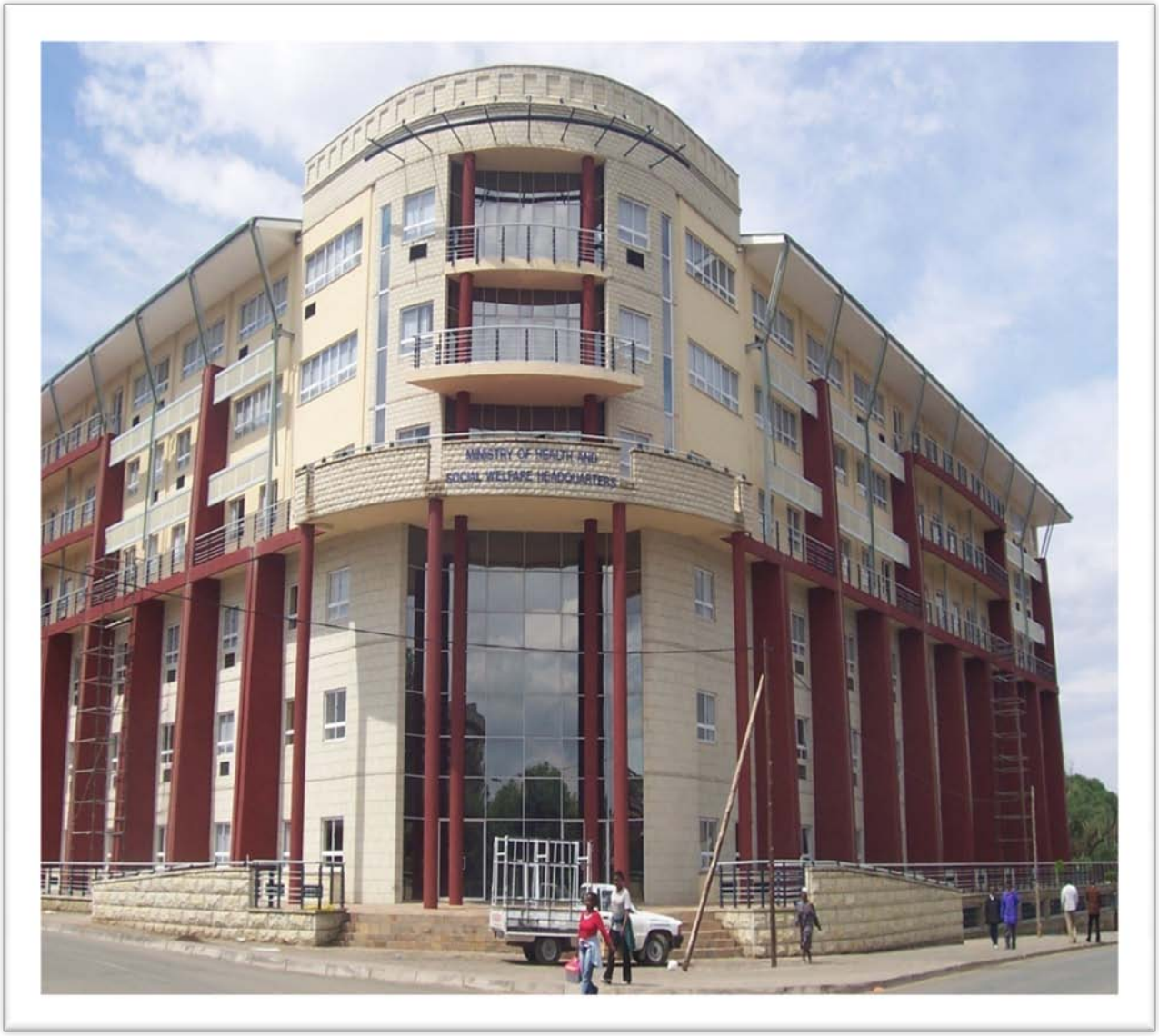
Many areas related to the environment are not addressed at all e.g. air pollution and hazardous waste management. Pesticide control in all its totality is also not covered – in fact all agricultural chemicals including fertilizers are not controlled. The new Environment Act (2008), has the requirement for an Environmental Impact Assessment in the event of risk from chemicals, etc. Such an assessment would therefore among others have to take into consideration the management of the chemicals. Pharmaceutical products on the other hand are not regulated in all their different forms. However, even though chemical waste is not yet a big problem it is not addressed in any way by the present laws.

4.7.3 Recommendations

- Laws dealing with chemicals in specific areas should either be put into place or be reviewed especially those regulating pharmaceuticals, fertilizers and pesticides
- Guidelines dealing specifically with the handling of chemicals in laboratories should be developed; in one instance a laboratory did not have any safety guidelines
- In the case of the labour code and the ozone regulations enforcement is key. This can be better effected if more skilled manpower is employed
- The Chemical Management Committee and Committee on Waste Management should have a legal recognition in order for them to better carryout their mandates
- Periodical review of all legislations which deal with chemicals and their management should be carried out

CHAPTER 5:

MINISTRIES, AGENCIES AND OTHER INSTITUTIONS MANAGING CHEMICALS



5.1 INTRODUCTION

This chapter attempts to describe the situation relating to chemicals management, through both governmental and non-governmental organizations (NGO's). NGO's include industries handling chemicals, user groups, consumer groups, environmental groups as well as trade unions. NGO's and government are forging new relations which can certainly be exploited for the benefit of all as far as the management of chemicals is concerned. The role of government is to implement relevant policies while NGO's act as watchdogs that guards the interests of the general public.

The chapter is not exhaustive due to the recurrent problem of lack of information and no real activities even within the stipulated mandate, of such institution. Hence the chapter gives an overview by introducing these institutions and their mandated roles and how they should be managing chemicals.

5.2 RESPONSIBILITIES OF DIFFERENT MINISTRIES, AGENCIES AND OTHER INSTITUTIONS

Ministries directly involved are:

- Ministry of Tourism, Environment and Culture
- Ministry of Agriculture and Food Security
- Ministry of Health and Social Welfare
- Ministry of Labour and Employment
- Ministry of Trade and Industry, Cooperatives and Marketing
- Ministry of Public Works and Transport
- Ministry of Natural Resources
- Ministry of Education and Training
- Ministry of Finance and Development Planning – LRA/Customs and BOS
- Ministry of Forestry and Land Reclamation

Outside government, there are a number of NGO's coordinated through LCN, and there is an Environmental coordinating desk.

The Lesotho Consumer Association is still in its infant stages, which currently does not have strong programs on the ground. Their major mandate is to protect consumer rights as stipulated in the constitution of the country, through awareness and stewardship. LCO is strongly supported by MITM.

1. Ministry of Tourism, Environment and Culture: This ministry has the overall mandate to oversee all policy matters related to environmental protection. MTEC is not a direct implementer. The Environment Act 2001 called for the establishment of a semi-autonomous Lesotho Environment Authority (LEA). However the act was never functional. The New Bill which is meant to replace the old act is now due to be finalized as the new act and has repealed the concept of independent LEA and provides for all administrative powers to rest on NES. Stronger monitoring and enforcement measures have been possible. The Act calls for further regulations, EIA's, inspections and pollution licenses. These have put a more effective management even in chemicals, though enforcement is still inadequate.

Through its environment wing, NES, the Ministry has set up a number of technical advisory committees, namely:

COWMAN – Committee on Waste Management
CHEMAC – Chemicals Management Committee
CEDAMA- Committee on Environment Data Management

These are the strongest initiatives to date made by the ministry in the efforts to implement provisions of Agenda 21.

2. Ministry of Agriculture and Food Security: The Ministry of Agriculture and Food Security is more concerned with food security and diversification. It is important to note that chemicals play a central role in agricultural production and protection and also that the Ministry is a major importer of agro-chemicals which are used for pest control, veterinary, as well as fertilizers and herbicides for improvement of crop yields.

The Ministry is currently facing a problem of storage and disposal of obsolete chemicals and this constitutes a major problem.

3. Ministry of Health and Social Welfare: The Ministry is concerned with the health impacts of chemicals on the general public. Hence their department of environmental health was established. In some instances they identify risk factors, but in major cases they simply respond to incidences. At present there is no Drug Regulatory Authority and as such there is not much control on pharmaceutical products which are coming in and out of the country. NDSO, TriPharm and other distributing agencies are partially controlled by the ministry.

4. Ministry of Labour and Employment
The ministry is concerned with occupational health and safety issues with regard to the use, storage and handling of chemicals at workplaces. Inspections are carried out regularly as an attempt to enforce regulations.

5. Ministry of Trade and Industry, Cooperatives and Marketing
This Ministry is responsible among other things for setting up a conducive environment for the production of chemicals and their products, and regulation of imports and exports of chemical substances. The Ministries also issues trade licenses and permits. These are now subject to issuance of Environmental Impact license from NES.

6. Ministry of Public Works and Transport
The department of traffic and transport do carry out inspections on the road. Thus in the regulation of transportation and transfer of hazardous substances and chemicals, a good management can be effected from this standpoint.

7. Ministry of Natural Resources
Charged among others with protection and overall management of natural resources; the department of Energy is responsible for controlling trade of petroleum fuels. The water affairs department should be protecting all water bodies/resources – wetlands, springs, to large dams against pollution, and misuse.

8. Ministry of Education and Training

The ministry, through Schools Supply Unit procures and stores large quantities of 'learning, teaching' chemicals to most high schools. None of the high schools have any specific disposal or treatment for any chemical of toxicological importance. The University, on the other hand, attempts to scrub and bury some heavy metallic compound wastes.

9. Ministry of Forestry and Land Reclamation

The ministry is charged with among others with forestry, soil and water conservation, range resources management and nature Conservation, as well as to address the address the problem of Land Degradation. It works with the various ministries and relevant stakeholders to address these issues.

Table 5A: Responsibilities of Government Ministries, Agencies and other institutions

Ministry Concerned	Importation	Production	Storage	Transportation	Distribution and/or Marketing	Use/ handling	Disposal
Environment	X	X	X	X	X	X	X
Health	X		X			X	X
Agriculture	X		X		X	X	X
Labour and employment		X	X	X		X	
Transport	X	X	X	X	X		
Local government				X		X	X
Home affairs							
Justice							
Customs	X						
Finance							
Maseru City Council			X			X	X
NGO's	X		X	X	X	X	X
LCO					X	X	
Forestry and Land Reclamation	X		X			X	

X = involvement

10. Parastatals

Parastals are simply arms of the government with some degree of autonomy with regard to operations. This was traditionally meant to offset the red tape that exists within the pure public sector. These are still meant to provide social services on behalf of the government. In Lesotho, Water supply, at urban and rural settings are dedicated to a parastatal; WASA and RWS. Electricity supply is given to LEC. Theses three are the main relevant institutions on the government periphery that may have some link to natural resources management, which has a bearing on environment and thus chemicals management.

Their main concentration besides supply is pollution; it is incumbent upon them that their operations should not pollute the water. However they cannot monitor themselves and there is stil a need for an

external monitor. In this case it should be Department of Water Affairs of the Ministry of Natural Resources, under which they are also linked.

5.3 COMMENTS/ANALYSIS

- All the priority concerns as reflected in chapter 3 seem to be well covered by the institutional arrangement within the line ministries. As also indicated in Table 5A all life-cycles are covered except production which is very low within the country and is mainly just pharmaceuticals.

- All efforts by the MITM to set up fertilizer and cement manufacturing plants under the industrialization programme seem to have faded. Several industrial activities are proposed and the electrical manufacturing company (by Phillips) has just started production of energy saving mercury bulbs in the country.

- The Ministry of Environment shall have a greater overlap with all other line ministries, particularly because in all cases their mandate includes all their activities. In another way, this may not be seen as an overlap, but rather a call for stronger co-ordination and overseeing that each of the ministries does their jobs. This inter-ministerial coordination has been a major hiccup in effective governance in Lesotho.
- The only unfortunate situation is that none of the institutions are regulating themselves in terms of environmental issues, let alone serious management of chemicals. As an example, in most government departments there are neither guidelines nor administrative provision in regard to dealing with expired chemical stocks. And when the Department of Environment advices on appropriate actions, their advice is not heeded, simply because they are also a department within their ministry and cannot dictate to other departments or ministries.

- The aspect of hazardous waste is also inadequately addressed in the country. Only in so far as the laws are concerned. Administration of the laws is weak. It needs to be dealt with seriously with a view to avoid any possible environmental and health problems.

CHAPTER 6:

RELEVANT ACTIVITIES OF INDUSTRY, PUBLIC INTEREST GROUPS AND THE RESEARCH SECTOR

6.1 INTRODUCTION

Lesotho is currently undergoing a huge transformation. Many government enterprises are being privatized therefore opening the market to more players, local and international; this promises a boom in economic activity. Many more large factories are also being continually setup. There are a number of industrial categories both in the formal and non-formal sectors and these maybe classified as follows:

i) Food Processing Industries: dairy and animal products, beverages, meat products etc.
ii) Cosmetics: essential oils, perfumes and toiletries
iii) Chemical and Process Industries: plastics,
iv) Construction Industries: iron and steel, brick and concrete, glass works
v) Pharmaceuticals and Drugs Veterinary Chemicals,
vi) Pesticides and Agrochemicals
vii) Mining Industry
viii) Textile Industry
ix) Leather and Footwear Industries

Chemicals are generally used in all the sectors listed above, though to a varying degree. The production and distribution of chemical substances are split between the private and the public sector; probably equally. For instance the government either wholly or partly owns many food processing plants and Pharmaceutical organizations while the cosmetic and textile industries are largely in the hands of the private sector. However, the cosmetic industry is totally in the private sector with a huge number of unregistered resellers, distributors and hair salons proliferating. Indications are that the public sector will gradually transfer its stake in industry to the private sector. It is therefore very important that the regulatory environment for these industries is improved especially as far as chemical management is concerned to avoid any health and environmental hazards from occurring.

Chemical storage facilities for goods at sales/distribution depots are poor. Packaging of some of the chemical products are quite suspect. Some of the products are also not properly labeled especially paraffin, detergents and agrochemicals. These pose a constant health hazard in many households. The handling of these chemicals is poorly managed and lacks proper licensing procedures, monitoring and enforcement. Distributors in the villages are the greatest culprits; largely unwittingly.

More and more non-governmental organizations are becoming vocal in these issues, which is good to have environmental and health watchdogs outside government. A good example is the Lesotho Consumer Organization, which is largely concerned with the protection of the consumer as the name suggests. The public must be encouraged to form more of these watch-dog organizations for the protection of their environment and their health. Another downside is that of lack of funding, little expertise and experience as well as lack of proper organization.

Institutions of research and higher learning as well as analytical laboratories have the proper infrastructure and human resources to adequately address issues relating to the management of chemicals. Even though the government owns many of them, they do not have any regulatory or enforcement powers. Generally, there are tight internal controls regarding the handling of chemicals. This is done out of goodwill and their professional obligation. The private sector on the other hand lacks the expertise and training in the handling of chemicals. The will is certainly not there because of

the high capital costs required in training personnel as well as buying safety equipment and hardware. This can only be addressed through the enforcement of such laws as the labour code and the enactment of more stringent laws which are more specific.

6.2 DESCRIPTION OF ORGANIZATIONS/PROGRAMS

Even though mention of non-governmental organizations like Lesotho Consumer Organizations has been made above, its activities in regard to chemicals are not clear. Activities by other non-governmental organizations like Lesotho Council of Non-governmental organizations have also not been documented. Below is a brief description of some organizations involved in chemicals in one form or the other.

Lesotho Council of Non-Governmental Organizations (LCN)

The Lesotho Council of Non-Governmental Organizations (LCN) is a Council of organized non-governmental organizations (NGO's). It was established in May 1990 with the objective of providing supportive services to the NGO Community. The Council does this through networking leadership training and development, information dissemination, capacity building, coordination, advocacy and representation when dealing with the government, and the international Community.

Within LCN are the Agriculture, Environment and Natural Resource Commission (AENR). This is a group of member NGOs committed to sustainable agriculture, food security, sustainable livelihoods and conservation of the natural environment in Lesotho. Some of the member organizations have a specific remit of agriculture and natural resource management, but the majority is NGOs that see the work of the commission as a way of assisting their membership and clients out of poverty. The programme is aimed at assisting member NGOs in sustainable agriculture and land management, environmental justice issues, environmental awareness, use and management of natural resources and sustainable development in Lesotho.

- It is focused on building the capacity of member NGOs to consider and tackle environmental and agricultural projects
- To represent the NGO sector on environmental issues of national interest
- To inform and train NGOs on environmental and agricultural issues, international agreements, environmental law and other pertinent issues pertaining to agriculture, forestry, land reclamation and environmental management and planning.
- To enable NGOs to work in partnership with each other, the Government, international organizations and private sector to influence wide scale change on the ground and informing national policy.
- Yearly Action Planning with all members of AENR Commission to guide future work aspirations

AENR Commission is involved in the following Governmental Committees;

- Lesotho Biodiversity Support Programme
- Lesotho Sustainable Development Technical Committee
- Lesotho Forestry Steering Committee
- COWMAN – Committee on Waste Management
- Padelia – SADC Environmental Law Project in Lesotho

- Lesotho National Wetlands Management Programme
- Lesotho Scaling Up Food Security Task Force
- CEDAMA – Committee on Environmental Data Management

LCN, in its own right, has an Environmental desk, mandated at monitoring environment related activities.

Lesotho Environmental Justice and Advocacy Centre (LEJAC)

LEJAC is a Lesotho based non-governmental organization established in 1987 originally to monitor the Lesotho Highlands Water Project (LHWP) in order to lobby and advocate for improved standard of living of people affected by the project. The primary mission of the Centre is to serve communities affected by planning, operation, and maintenance of Major National Projects with Potential Huge Impacts on People and Environment (MANPPHIPE) and other environmental issues. This is carried out through community organizing, education, empowerment, advocacy and litigation. The ultimate mission is to unite and enhance capacity of the communities to defend their rights and maximize the benefits of the projects themselves.

Transformation Resource Center (TRC)

The TRC is a vibrant NGO with four main projects: the Library, the Democracy project, the Water Project and Work for Justice. The Library has a variety of media from books to periodicals, newspapers and audio-visual material such as videos and DVDs. The two team members responsible for the Democracy Project hold workshops for teachers on education for democracy in the classroom, the constitution, and voter education. The Water Project focuses on the effects of the dam constructions under the Lesotho Highlands Water Project. Two field workers help the affected communities to enable them to express their needs. Work for Justice is currently being developed into TRC`s communication and information department. The core of this work still is the quarterly newsletter Work for Justice. Developing a media policy and a website are the upcoming tasks.

PELUM (Participatory Ecological Land Use Management)

PELUM is a network of Civil Society Organizations / NGOs working with small-scale farmers in East, central and Southern Africa. The Association membership has grown from 25 pioneer members (in 1995) to over 210 members in 2007. Lesotho is one of these members. PELUM started in 2002 in Lesotho, and now has a network of approximately 41 farmers in the country.

SERUMULA

Serumula Development Association (SDA) is a national non-governmental organization (NGO) that currently operates in the Semonkong, Phamong and Botha-Bothe areas. SDA is a service provider and business development service facilitator which delivers and promotes cost-effective and attractive business services to the rural people, mainly to address job creation, environmental restoration and promote self-help against the dependency syndrome.

SDA advocates for employment of integrated approaches to rural development, fusing business principles with rural development initiatives in pursuit of self-reliance of rural communities. To this end

Serumula works in partnership with other development agencies and business enterprises in Sustainable Agriculture and Rural development either as clients, direct partners or associates.
Serumula is an NGO that concentrates mainly on the resource management sector. The emphasis is on projects and processes that promise sustainability, marketability and adaptability to local conditions.

6.3 SUMMARY OF EXPERTISE AVAILABLE OUTSIDE THE GOVERNMENT

Table 6A shows the profile of the non-governmental organizations, which might be available to support national programs and policies, related to the management of chemicals.

Table 6.A: Summary of Expertise Available outside Government

Field of Expertise	Research Institutions	Universities	Industry	Environmental /Consumer Groups	Labour Unions	Professional Org.
Data collection	X	X	X*	X		X
Testing of chemicals	X	X	X*	X		X
Risk assessment	X	X	X*			X
Risk reduction	X	X	X		X	X
Policy Analysis	X+	X+		X		X
Training & Education	X	X	X*	X	X	X
Research on Alternatives	X+	X+	X			
Monitoring	X	X	X	X	X	X
Enforcement			X		X	X
Information to workers	X+	X+	X*	X	X	X
Information to Public	X+	X+	X	X	X	X

+to some extent, *minimum

6.4 COMMENTS/ANALYSIS

There is no government policy on management of chemicals. Formal provisions for Non-governmental Organizations obtaining information related to the management of chemicals are also nonexistent. Currently few institutions, public and private are capable of providing this information: these are National Environment Secretariat, Lesotho Meteorological Services, Department of Labour and the National University of Lesotho. The Lesotho Pharmaceutical Corporation is no longer functional and is therefore no longer a key source of information.

In Lesotho, adequately funded laboratories and libraries capable of handling management of chemicals and related information are located in tertiary education colleges and the university, research institutes, and the Bureau of Statistics. There are a few industries which have some selected/specialized

analytical instruments, such as the Water and Sewerage Authority and Lesotho Police Services as well as Defense Force.

There are a number of non-governmental organizations (NGO's) especially in the agricultural sector which could influence decisions concerning the management of chemicals. GROW and CARE are such organizations which are primarily concerned with the training of farmers and frequently advice on the handling of pesticides, fertilizers and other agro-chemicals. Perhaps these NGO's should be encouraged to also focus on policy issues especially those which deal with chemicals.

Information is not readily available because records are also generally not kept especially by private organizations. The public sector is also to a large extent a culprit in this regard. Perhaps this is all due to lack of compelling laws. This makes it quite difficult to document any constraints, resources, expertise etc. related to the management of chemicals. A national policy on chemicals can surely go a long way towards addressing this glaring problem.

CHAPTER 7:

INTER-MINISTERIAL COMMISSIONS AND COORDINATING MECHANISMS

7.1 INTRODUCTION

Chemicals management in Lesotho has never been an issue outside the environmental perspective. As in many countries of the world this has been slightly addressed under natural resources management, and natural resources management has conceptually been addressed as individual issues (e.g. water, soil, forestry.). It has thus also been institutionally dealt with in a sectorally compartmentalized manner-often at the government department level. The major driving force within individual sectors has been economic growth. These narrow sectoral approaches seem to be failing in broader terms of environment. These sectoral approaches seem to be less tenable and as such a new policy framework was developed further driven by the UNCED conference in Rio, 1992. The national policy proposes a clear course of action based on a set of key principles. Focusing on the three broad priority areas, managing natural resources encompassing pollution control is one of the areas and another is the promotion of community participation- by strengthening the role of NGO's and the business sector.

7.2 COORDINATING MECHANISMS

The Environment Act 2001 has ushered the management of the environment hence that of chemicals. This is a new initiative and is already making strides towards sound management of chemicals. Through the National Environment Secretariat, all line ministries have established environmental Units as the focal point, which works closely with the Ministry of Tourism, Environment and Culture. The EU's further oversee to the developmental programmes of their own ministries and are supposed to ensure that environmental issues are integrated. The members of these units have being technically capacitated through a DANCED project and they include LCN and the National University of Lesotho.

A Principal Secretary, who is a professional executive, heads each ministry. All ministries through a committee of PS's do present programmes in respective sectors and these are scrutinized in line with national policies. Beyond this even at a higher political level, the cabinet of Ministers does the same.

New committees include the Industrialization Committee, which is effectively looking at providing means of support infrastructure such as water and electricity to already approved industrial developments. Following the 1998 riots, the Reconstruction Committee was established and charged with reviewing the damage and setting modalities of rebuilding the towns of the country.

Table 7.A; Overview of Inter-ministerial commissions and coordinating mechanisms

Name of Mechanism	Responsibilities	Secretariat	Members	Legislative Mandate/ Objective	Effective-ness	Relevance to chemical management
National Environment Secretariat	Overall policy making on issue of environment	NES	Department of the MTEC	Co-ordination of all environment issues	Excellent	Very relevant
Industrialization Committee	Advisory role to MTICM	MTICM	Various stakeholders	To initiate facilitate industrialization projects	Adequate	Relevant

Name of Mechanism	Responsibilities	Secretariat	Members	Legislative Mandate/ Objective	Effective-ness	Relevance to chemical management
COWMAN	Advisory role to MTEC on waste management	NES	All Environmental Units	To advise GOL on technical issues related to Waste Management	Excellent	Very relevant
CHEMAC	Advisory role to MTEC on chemicals management	NES	Various Ministries, NGO's, Parastatals etc.	To advice GOL on technical issues related to Chemical Management	Excellent	Very relevant
Lesotho Meteorological Services (LMS)	Policy making and Implementation	LMS	Department LMS	To co-ordinate all issues related to Climate and Weather	Excellent	Very relevant
Governing Boards-LNDC	Policy making and Activities management	LNDC	Various stakeholders	To promote industrial investment	Poor	Relevant
LHDA	Policy making and Activities management	LHDA	Various stakeholders	To develop water trade infrastructure	Excellent	Little relevance
Petroleum Board	Policy making and Activities management	Department of Energy	Various stakeholders	To co-ordinate all activities related to petroleum	Excellent	Very relevant
LEC-Board	Policy making and Activities management	Department of Energy and LEC	Various stakeholders	Distribution of electricity	Poor	Relevant
WASA-Board	Policy making and Activities management	MNR and WASA	Various stakeholders	Distribution of Water	Poor	Relevant
DMA-Board	Activities management	Cabinet	Various stakeholders	To manage all relief activities	Poor	Little relevance
NACOSH	Technical Advisory role to MOEL	MOEL	Various Stakeholders	Technical advisory on issues relating to occupational safety, health and environment	Fair	Relevant

7.3 DESCRIPTION OF INTERMINISTERIAL COMMISSIONS AND CO-ORDINATING MECHANISMS

As identified in table 7.A above, the following coordinating mechanisms in areas related to chemical management exist in Lesotho. While the others reflected on the table do have chemicals management components, their core business has never been on the subject. They are reflected here due to their inherent coordinating role and their potential influence in chemical management if put on the table.

- National Environment Secretariat
- Committee on Waste Management
- Chemicals Management Committee
- Lesotho Petroleum Fund Board
- NACOSH

7.3.1 The National Environment Secretariat is the oldest department of the newly constituted Ministry of Tourism, Environment and Culture. NES is the focal point in matters relating to environmental management. All line ministries, through the Environment Units work hand in hand with NES in ensuring that environmental issues are integrated in all national developmental programmes. On the basis of the Environmental Act 2008, NES covers all issues relating to environment in line with sustainable development principles and consistent with other international agreements and conventions. NES works within the National Environment Policy and Action Plan. EU's are frequently and regularly updated about policy issues and they do meet within mandates of committees under NES.

The only observable weakness that can be cited currently, arise out of inadequate institutional capacity and legislative support. These are both being addressed.

7.3.2 Committee on Waste management is an advisory body to NES on issues of waste management in general. Its terms of reference cut across policy advice down to technical interventions on an ad-hoc basis. The fact that there is no legal standing of the committee has for some time been the hampering factor in realizing its impacts. COWMAN meets bi-monthly and comprises almost all line ministries (inclusive of NGO representative). Problem areas are identified and requisite data collected to facilitate appropriate measures.

7.3.3 Chemicals Management Committee in the same fashion as the above committee was established in line with the recommendations of UNITAR/IOMC following the IFCS forum. The mandate of this committee is narrower than that of COWMAN. There is of course potential for overlaps as was recognized about obsolete/expired stockpiles of pesticides and other agricultural chemicals.

7.3.4 Lesotho Petroleum Fund. One mechanism that should have a strong influence in chemicals management and thus worth noting here is the Lesotho Petroleum Fund. It is constituted of a Board of Directors, namely an Executive Member & Chief Executive, a Non-Executive Chairman, and six (6) Non-Executive Members.

The main responsibility of the Fund is to ensure sustainable supply of petroleum products throughout the country. This is achieved through improvement of distribution of petroleum products in the country and purchasing these products in times of crisis. In order to achieve this sustainable supply, they are able to set the minimum storage capacity that oil companies must maintain. The Fund has also been tasked with the responsibility of setting pump prices of petrol (leaded and unleaded), diesel and the wholesale price of illuminating paraffin and therefore, it can stabilize these prices when necessary. It also sets standards for petroleum installation in terms of safety and can therefore assist in improving safety equipment at these installations. The Fund can undertake research and studies pertinent to the petroleum sub-sector and on a loan basis finance other energy related projects.

7.4 MECHANISMS FOR OBTAINING INPUT FROM NON-GOVERNMENTAL BODIES

The practice of including NGO's in governing or administration boards seem to be by itself some means of allowing public participation. There is no other formal means which non-governmental bodies follow in order have a say in any matters affecting them other than the normal bureaucratic routes. However the role that NGO's have set for themselves, of being watch dogs of the masses has allowed them to impose and input under any circumstance. Unfortunately chemicals management has not been a big issue yet. Furthermore, this stance adopted by NGOs has also posed a problem of employees of Government departments becoming defensive in response to the criticism of NGOs. Rather, an approach of increased participation and constructive criticism must be adopted.

Many NGO's are included in policy-making bodies. These include ALE, LFDU, LCTU, LTUC, LCCI, LCO, NUL, COLETU, NWMGA and FIDA. In many cases CBO's are organized on ad-hoc manner where ever and whenever the communities are being affected. There are a few ones in relation to chemicals management. Those worth mentioning here are those associations of Sheep and Goats farmers, whom in conjunction with the ministry of Agriculture organize for pesticides administration.

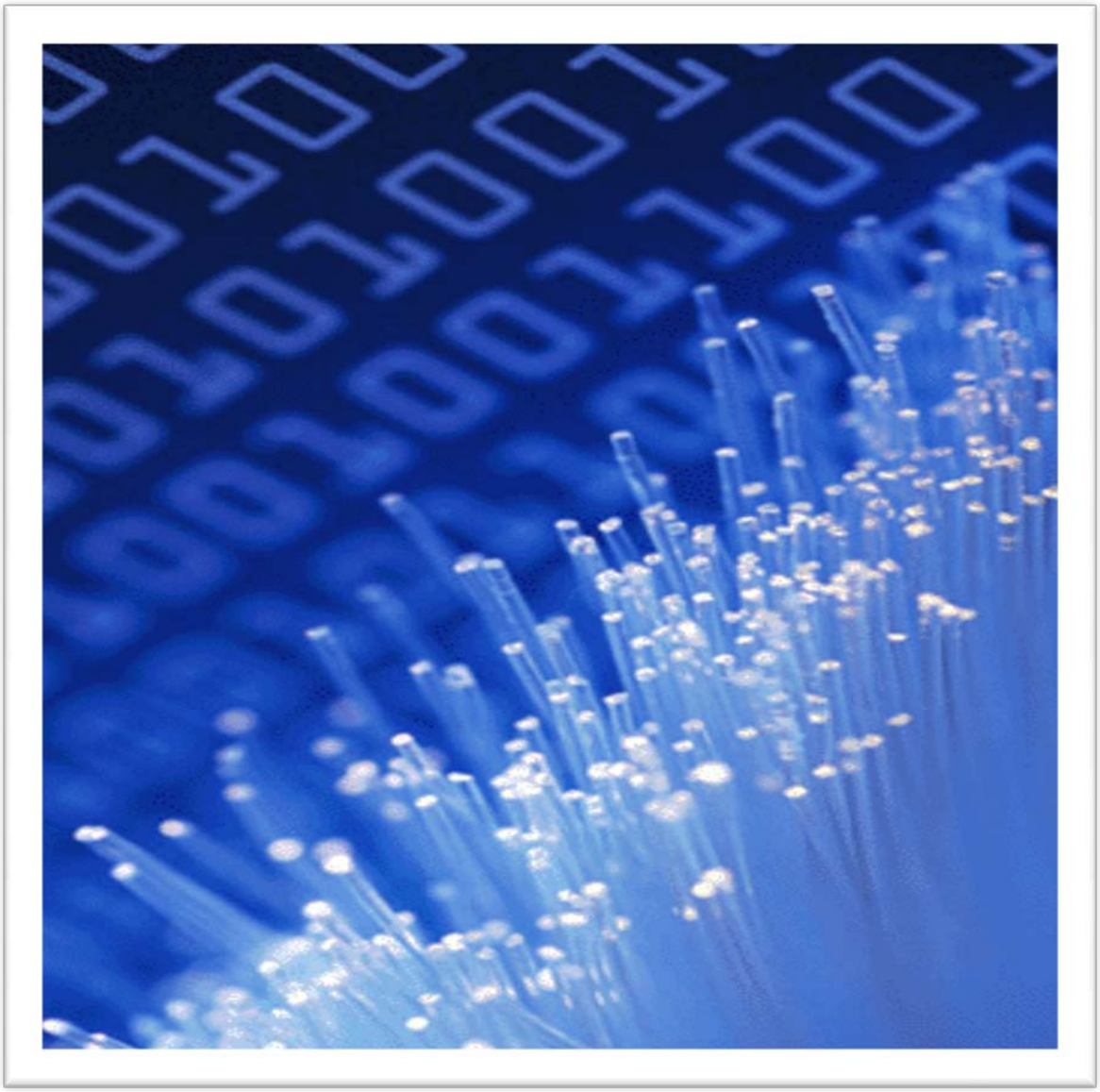
7.5 COMMENTS AND ANALYSIS

What keeps coming back in this analysis is that, under circumstances where the subject of chemicals in general has not come out as presenting a major problem, it has not been given much attention in any form except by the NES and OSH. As a result, the evaluation of chemicals management becomes less objective. When the Environment Bill (2007) is enacted, there will be a dire need for technological capacity, particularly for monitoring as a requisite for effective enforcement.

In most mechanisms (the little that exist), representation may be wanting by a few more agencies which may be able to contribute. Furthermore, the sustainability of these mechanisms is of concern, particularly because the country has developed a habit of unsustainable structures and activities. However all in all there is sufficient contribution and planning from most sectors, the problem always seem to be implementation. In terms of coverage of existing mechanisms, it can be envisaged that it is possible to include all aspects of chemicals in different mechanisms. There should be some overlaps since most of the mechanisms are separate entities without any linkage.

CHAPTER 8:

DATA ACCESS AND USE



8.1 INTRODUCTION

One of the biggest challenges that Lesotho faces is access to all forms of data. This comes as a result of numerous factors. These include inappropriately stored records as a result of negligence by government, business and civil society employees. Furthermore, there remains a regrettable trend of individuals withholding information from those that may require it in fear of the data being used against them, or the hope of attaining financial benefits from the use of the data. As far back as the State of Environment Report in Lesotho, 1997, findings indicated that there are several problems relating to the indicators used there-of. This made it difficult to arrive at a clear picture of the state of the environment. This situation still exists even today; the quality of data sets where available is in most parts not very adequate. The major problem arises from sparse, discrete and simply non-availability of data where it is expected. This chapter discusses the available data in relation to chemicals management, its access and distribution.

8.2 AVAILABILITY OF DATA FOR NATIONAL CHEMICALS MANAGEMENT

As indicative from table 8A below, there exists no data for purposes of decision making with respect to chemicals management. Bureau of statistics is trying hard to collect overall information out of which some sense can be extracted, simply because, as indicated in the previous chapter, the approach or focus is still on information that would help in decisions of economic development. However, officials realized the importance of integrating environmental issues with all national development programmes at the earliest stages.

Table 8.A: Quality and Quantity of Available information

Data needed for/to:	Pesticides (Agricultural, Public health and consumer use)	Industrial chemicals	Consumer chemicals	Chemical waste
Priority setting	None	None	None	None
Assess chemicals impact under local conditions	None	None	None	None
Risk Assessment (Environment/Health)	Little	Little	Little	Little
Classification/Labelling	Fair	Fair	Fair	Fair
Registration	Fair	Fair	Fair	Fair
Licensing	Fair	Fair	Fair	Fair
Permitting	Fair	Fair	Fair	Fair
Risk Reduction Decisions	Little	Little	Little	Little
Accident Preparedness/Response	None	Fair	None	None
Poisoning control	None	None	None	None

Data needed for/to:	Pesticides (Agricultural, Public health and consumer use)	Industrial chemicals	Consumer chemicals	Chemical waste
Emissions Inventories	Little	Little	Little	Little
Inspections and Audits (Environment/health)	Little	Little	Little	Little
Information to workers	Little	Little	Little	Little
Information to the public	Fair	None	little	None

8.3 LOCATION OF NATIONAL DATA

Available data has also been created in a manner that suites specific requirement, as indicated previously. This has meant that formats of available data in the country are difficult to interpret for the use in the management of chemicals. This relates into a problem in the use of chemical related data for use in all forms of reports and research.

While national data banks are regarded to be within the Bureau of Statistics, an assessment of existing data revealed that in real terms the data is far from usable in assessing chemical management or any environmental management issues and impacts. As mentioned in previous sections it was this realization back in 1997 that prompted the establishment of the Committee on Environmental Data Management (CEDAMA). CEDAMA undertook a nationwide survey to identify and locate any data in any form and type so that ways of centralizing and organizing it in a more usable form could be effected. It is therefore capable of pointing towards all data sources. However, the challenge remains of ensuring that all data is up to date, and identifying any data gaps that can assist in further enhancing the data.

Table 8B below thus simply indicates the little that is available through excessive re-organization. In other cases it is in individual format, e.g. to assess poisoning cases in the ministry of Health one has to compile from scratch. In instances where information and data is available it is either written in English, Afrikaans or Chinese and none in the local language (Sesotho).

The forgoing thus suggests that there are no formal mechanisms/procedures for dissemination of whatever data was generated, except the one that BOS has tried to compile.

The Department of Environment undertook an exercise of developing a polluters Data base, which surveyed all point and non point sources of pollution in the country. This was first meant to assess and keep record of the mitigatory actions made. An active use of this database would definitely offer appropriate actions towards a cleaner environment free from chemical contamination and thus free from all risks to health. For no apparent reasons, the database is dormant, neither acted upon nor updated.

Table 8.B: Location of National Data

Type of Data	Location	Data source	Who has access	How to gain access	Format
Production statistics	BOS	Surveys & Customs	Public	On request	Reports
Import statistics	BOS	Customs	Public	On Request	Reports
Export statistics	BOS	MITM/Customs	Public	On Request	Reports
Chemical use statistics	None				
Industrial Accident Reports	OSH	Reported cases	Public	On Request	Records
Transport Accidents Reports	Transport Department	Police reports	Public	By Request	Records
Occupational Health Data (Agriculture)	None				
Occupational Health Data (Industrial)	OSH	Labour Inspectorate	Public	On Request	Records
Poisoning Statistics	Health	Clinics & Hospitals	Public	On Request	Records
Pollutant release and Transfer	None				
Hazardous Waste Data	None				
Register of Pesticides	Customs/BOS/Agric-Crops	Declaration/Customs	Public	On request	Reports
Register of Toxic Chemicals	None				
Register of Producers	BOS	MITM/Labour	Public	On Request	Reports
Inventory of Existing Chemicals	None				
Register of Imports	BOS	Customs	Public	On Request	Reports
PIC decisions	None				
Register of veterinary drugs	Customs/BOS/Agric-Livestock	Livestock	Public	On Request	Records

8.4 PROCEDURES FOR COLLECTING AND DISSEMINATING NATIONAL DATA

Prior to the Environment Act 2001, the laws of Lesotho had not been addressing chemical management issues. This Act provides for establishment of criteria and procedures for measurements of environmental quality. Inclusive of chemicals in general, it further provides for setting of regulations and standards.

The section on pollution control prohibits discharge of hazardous substances, chemicals and materials or oil into the environment- regulations thereof may provide or deal with different life cycle stages of such.

The provision for pollution licensing should have acted as or allowed a basis for more effective chemicals management. However, the Act has been repealed and it cannot be said that it was successful in this regard. The new Environment Act provides for information dissemination to all persons in ways that will be formulated. Currently we cannot identify any formal means of both collecting and disseminating such information.

BOS undertakes regular surveys to update and augment the national data. These surveys have not incorporated chemical management issues yet.

8.5 AVAILABILITY OF INTERNATIONAL LITERATURE AND DATABASES

International literature is available through different media, but in most cases to those who are enlightened about it. The most accessible mode is through libraries that exist of international organs like those of diplomatic missions and United Nations. These are summarized in tables' 8.C and 8.D.

Table 8.C: Availability of International Literature

Literature	Location	Who has access?	How to gain access
Environmental Health criteria Documents (WHO)	WHO library & MOEL	Public	On Request
Health and Safety Guidelines (WHO)	WHO & MOEL	Public	On Request
International Chemical Safety Data Cards (IPCS/EC)	MOHSW	Public	On Request
Decision Guidance Documents for PIC Chemicals (FAO/UNEP)	NES	Public	On Request
FAO/WHO Pesticides Safety Data Sheets	WHO & MOAFS, Industry, Labour	Public, Authorities	On Request
Documents from the FAO/WHO Joint Meeting on Pesticides Residues	WHO	Public	On Request
Material Safety Data Sheets (Industry)	Internet	Public	On Request
OECD Guidelines for Testing of chemicals	NUL library & NES	Public	On Request
Good Laboratory Practice Principles	NUL library	Public	On Request

Literature	Location	Who has access?	How to gain access
Good Manufacturing Practice principles	NUL library	Public	On Request
WHO/UNEP Global Env. Library Network	NUL Library - ISAS	Public	On Request
Ministry of Agriculture	Agric-Research, Library	Public, Authorities	On Request

Table 8.D: Availability of International Databases

Database	Location	Who has access?	How to gain access
IRPTC	Online	Public	On Request
ILO CIS	MOEL	Public	On Request
IPCS INTOX	NES/Online	Public	On Request
Chemical Abstract Services Database	NUL	Public	On Request
Global Information Network on Chemicals (GINC)	Online	Public	On Request
STN Database	NUL	Public	On Request
Relevant Databases from other Countries	Online	Public	On Request

Government departments such as NES have also developed their own databases relating to available information online, especially in relation to Conventions and agreements that Lesotho recognizes, as indicated in table 8.1 below, and also discussed in 8.6.

Table 8.1: Summary of All Conventions that Lesotho Recognizes

Convention/Protocol	Date of Entry into force /Ratification/Accession/ Signing e.t.c.	website
Convention on the High Seas	23/10/1973	http://untreaty.un.org/ilc/texts/instruments/english/conventions/8_1_1958_high_seas.pdfhttp
Convention on Fishing and Conservation of the Living Resources of the High Seas	23/10/1973	http://untreaty.un.org/ilc/texts/instruments/english/conventions/8_1_1958_fishing.pdf
Convention on Continental Shelf	23/10/1973	http://untreaty.un.org/ilc/texts/instruments/english/conventions/8_1_1958_continental_shelf.pdf
Treaty on Principles Governing the Activities of States in the Exploration and Use Outer Space including the Moon and other Celestial Bodies	27/01/1967	http://nti.org/e_research/official_docs/inventory/pdfs/ospace.pdf
Phyto-Sanitary Convention for Africa	21/10/1983	www.africa.union.org
Treaty on the Prohibition of the Emplacement of Nuclear Weapons and Other Weapons of Mass Destruction on the Sea Bed and Ocean Floor and in the Sub Soil thereof.	08/09/1971 Entry into force 3. 4.1973	http://www.google.co.ls/search?hl=en&q=treaty+on+the+emplacement+of+nuclear+weapons
Convention on the Prohibition of Development, Production and Stockpiling of Bacteriological (Biological) and Toxic Weapons and other Destructions	10/04/1972	http://www.opcw.org/html/db/cwc/more/biotox.html
Convention on the Prevention of Marine Pollution by Dumping of Wastes and other Matters	08/01/1973	http://www.imo.org/Conventions/contents.asp?topic_id=258&doc_id=681
Vienna Convention for Protection of the Ozone Layer	23/06/1994	http://www.unep.org/Ozone/pdfs/viennaconvention2002.pdf
Montreal Protocol on Substances that Deplete the Ozone Layer	23/06/1994	http://www.unep.org/OZONE/pdfs/Montreal-Protocol2000.pdf
United Nations Framework Convention on Climate Change	08/05/1995	www.unfccc.int
Convention on Biological Diversity	04/10/1995	www.cbd.int
United Nations Convention to Combat Desertification in those Countries Experiencing Serious Drought and/or Desertification, Particularly in Africa	26/12/1996	www.unccd.int

Basel convention on Transboundary Movement of Hazardous Wastes and their Disposal	29/08/2000	www.basel.int/
Cartagena Protocol on Biosafety	24/08/2001	www.cbd.int
Stockholm Convention on Persistent Organic Pollutants	23/01/2001	www.pops.int
Convention on International Trade in Endangered Species of Wild Fauna and Flora	23/12/2003	www.cites.org
Kyoto Protocol on Climate Change	06/09/2000	www.unfccc.int
Africa Convention on Conservation of Nature and Natural Resources	15/09/1968	www.africa.union.rg http://www.africa-union.org/root/au/Documents/Treaties/Text/Convention_Nature%20&%20Natural_Resources.pdf
Ramsar Convention on Wetlands of International Importance especially as Waterfowl Habitat	01/11/04	www.ramsar.org
Rotterdam Convention on the Prior Informed Consent Procedure for Certain Hazardous Chemicals and Pesticides in International Trade	01/05/08	www.pic.int

8.6 NATIONAL INFORMATION EXCHANGE SYSTEMS

The government of Lesotho has embarked on an IT promotion project that will allow connectivity across ministries and the international world. The national website is already in place and many departments can now enjoy Internet connectivity. Individual departments do subscribe to a few CD ROM databases. As far as inter-ministerial flow is concerned, it has only been an informal agreement between those closely related departments. There has not been a formal exchange system till now, where NES sends out projects briefs for comments of all line ministries. In most cases important activities that are cross-sectoral are work-shopped and this has been the major method of input as well as information sharing. Furthermore, public notices are also utilized as a means of information sharing.

There are numerous libraries in the country, namely schools and government ministries. There is also a national library that has recently been upgraded and opened.

8.7 COMMENTS

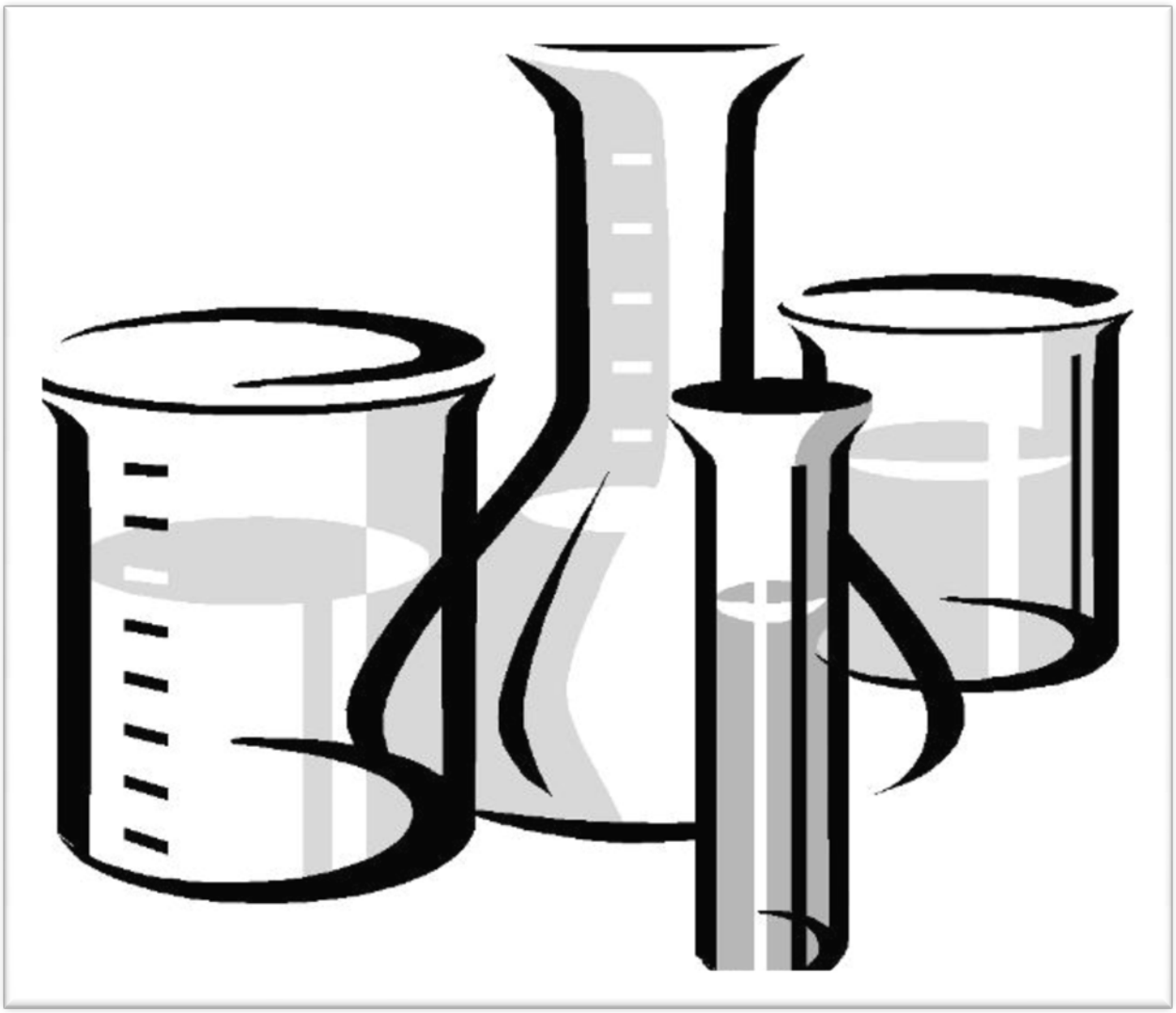
The main visible shortcoming of information availability and flow seem to emanate out of activity or need. This is to say, when no strict attention is given to chemicals management, no one even realizes the need for certain sets of information. Once the need is identified, as started with this profile, then a better networking would be beneficial for overall chemicals management. Action must be taken and someone must pioneer that action.

Government departments acquire data and generate information primarily as a service to the tax-payers. Section 95 of the Environment Act underlines free access of environmental information to the public. However, some data may be sensitive (classified) and consequently may not be released to the public.

It is however important to note that all things considered, there is never a point where information is more than enough, hence an upgrading of existing databases would also strengthen data dissemination. In the interest of improving data sharing, CEDAMA has drafted guidelines in relation to data exchange. These stipulate rules on issues like data formatting, access, transfer, ownership etc. On the other hand the Ministry of Law and Constitutional Affairs through the Law Reform has drafted the Receipt of Information Bill, which also deals with some of the above issues. In Lesotho, the Access and Receipt of Information Bill was before Parliament in 2003-4, but the current status of the legislation is unknown.

CHAPTER 9:

TECHNICAL INFRASTRUCTURE



9.1 INTRODUCTION

Laboratories are central to the management of chemicals in any country. They assist in determining and controlling acceptable and hazardous chemical levels that may have an adverse effect on human life, as well as the overall environment. Capable information systems then provide a means of collating this data in order to ensure an efficient monitoring and evaluation system in order to ensure the most efficient means of management for the country. This section indicates the current state of infrastructure in the country, as well as the status of technical training and education programmes in Lesotho.

9.2 OVERVIEW OF LABORATORY INFRASTRUCTURE

There are a few Laboratories in Lesotho, which are operating without any accreditation, more so because they are not commercial. The Lesotho Pharmaceutical Corporation Laboratory is certified for Good Laboratory Practices as well as Good Manufacturing Practices because they were requisites in the international markets. Unfortunately, the LPC is no longer functional. All Laboratories are accessible to government for regulatory measurements with the exception of Lesotho Flour Mills, which is 100% privately owned.

Table 9.A: Overview of laboratory Infrastructure for regulatory Chemical Analysis

Name/Description of Laboratory	Location	Equipment/Analytical Capabilities available	Accreditation (if yes by whom?)	Certified GLP Yes/No	Purpose
NUL, Chemistry, Biology & Geography, Health Sciences and Agriculture	Roma	GC,HPLC,AAS,ICP-AES, NMR, IR, Wet chemistry and Microbiological analyses	No	No	Teaching, Research and commercial
Water Affairs	Maseru	AAS, UV-Vis Spec, Wet chemical analysis	No	No	Water quality monitoring and Management
Water and Sewage Authority	Maseru	UV-Vis spec, Wet chemistry and Microbiological analyses	No	No	Water quality monitoring
Agric. Research Laboratory	Maseru	AAS and Wet chemical methods	No	No	Agriculture related research
LPC (Now Closed)	Mafeteng	HPLC, UV-Vis, IR, Photometry, Wet chemical methods	No	Yes	Quality control and R&D
Mines and Geology	Maseru	AAS, UV-Vis spec, Wet chemical methods	No	No	Analysis of geological samples

Name/Description of Laboratory	Location	Equipment/Analytical Capabilities available	Accreditation (if yes by whom?)	Certified GLP Yes/No	Purpose
Ministry of Trade	Maseru	Food and Microbiological analysis	No	No	Analysis of food samples
Ministry of Health	Maseru	Medical Pathology and Microbiological analysis	No	No	Analysis of medical samples
Lesotho Brewing Company	Maseru	GC, UV-Vis, Microbiological analysis, Wet Chemistry methods	No	No	Analysis of Beverages samples
Lesotho Flour Mills	Maseru	Microbiological and mechanical analysis	No	Yes	Analysis of flour and flour products
Forensic Lab - LMPS	Maseru	Forensic equipment	No	Yes	Forensic analysis
Animal Disease Laboratory	Maseru	Veterinary and Microbiological analysis	No	No	Veterinary diagnosis

Within the memorandum of understanding between the Governments of Lesotho and that of the Republic of South Africa, under the Lesotho Highlands Water Scheme, there was a provision that a Local Laboratory would be identified and upgraded to meet the required standards in terms of water quality analyses; this included accreditation. The NUL chemistry department laboratories were identified. However, this arrangement has never come to fruition.

There is a further cooperation initiative between the two countries in regard to information sharing in all respects of regional economic development elements.

9.3 OVERVIEW OF GOVERNMENT INFORMATION SYSTEMS

Table 9.B: Computer Capabilities

Computer Systems	Location	Equipment Available	Current Uses
Lesotho Government Computer Center	Ministry of Finance and Development Planning	Several Networked PC's	Financial Systems and Payroll
BOS Database	Ministry of Finance and Development Planning - Statistics	Various PC's	Census and Statistical Data
Government Website	Ministry of Communications	Computer network	Dissemination of information
Lands Survey and	Ministry of Local	Computer network, various	Sharing and

Computer Systems	Location	Equipment Available	Current Uses
Physical Planning	Government	surveying and networking software and hardware	dissemination of survey and mapping information
Human Resource Management Information System	Ministry of Public Service and other Individual Ministries	Several computers on a network, servers, Human Resource Software	Sharing and dissemination of HR and payroll information
IFMIS	Ministry of Finance	Computer Networks with other Ministries	Payments of all Government transactions

Most government offices do have stand-alone computers that can accommodate data management programmes. These can only be effective if connected to a network to enable efficient data access and sharing. There is however, an ambitious drive to get all the Government Departments to get linked on a wide area network (WAN), which would essentially enable all departments to share information and data using computers. The table above indicates those systems, which are considered as networked databases, in government.

9.4 TECHNICAL TRAINING AND EDUCATION PROGRAMMES

A number of training programmes are accessible to governments and parastatal officers. None of these are directly orientated directly towards chemicals management, however there are few that touch on chemicals management by virtue of it being an environmental issue. Both technical and capacity building-oriented programmes are taken both in-country and outside with levels of training varying from short courses to vocational and University education. The Lerotholi Polytechnic used to run a course in Laboratory technician while the National Health Training College has both Medical Laboratory Science and Environmental Health. An Applied Environmental Science programme, which has strong environmental chemistry component, has been adopted by NUL. Also many graduates from NUL now have the opportunity to further their studies in RSA Universities and Technikon programmes.

9.5 COMMENTS/ANALYSIS

The University in its transformation process is emphasizing on broader participation in national issues. To afford all services, including technical ones is among the top priorities. With a fully equipped laboratory and highly qualified staff, the country is in a position of strength. All the laboratories included in table 9.A. have adequate analytical capabilities and personnel to conduct various chemical analyses, though they are currently only limited to their specific needs.

The major set backs experienced by most of them are:

- Difficulty in procuring laboratory supplies, either due to lack of funds or because most chemicals have to be imported from abroad.

- Inadequate maintenance of equipment and supply of spare-parts for the same reasons as above. There is a further lack of technical personnel to repair the specialized high tech equipment hence this involves high shipping costs or high costs of bringing in repairmen from RSA.

- While qualified personnel still exists in many respects, the country is facing a high rate of brain-drain towards RSA.
- A further problem that is emanating is disposal of obsolete chemicals. Disposal facilities are simply not available and chemical and clinical wastes are found in solid waste dumpsites.

Needless to say, like most developing countries, Lesotho is still concentrating on issues of poverty alleviation and combating hunger and joblessness. These have taken up all other facets of life as state priorities.

A few requisites still have to be met. Two more fully equipped laboratories that would cater for robust chemicals analyses from water to persistent organic pollutants would strengthen the countries' monitoring and management of chemicals. However, one laboratory should be dedicated to food and medical analyses.

CHAPTER 10:

CHEMICAL EMERGENCY PREPAREDNES, RESPONSE, AND FOLLOW UP

10.1 CHEMICAL EMERGENCY PLANNING

Emergencies in Lesotho are only known in the Health sector. Even then the way they are treated or attended to do not qualify them as emergencies. An institution that has an emergency response in its center is the Disaster Management Authority. DMA was established through the DMA Act #2 of 1997 and has just drafted its policy. The executive group is made up of five multi-sectoral groups namely; Water sector, incorporating sanitation; Health and Nutrition; Training; Agriculture & Food Security and Food & Logistics.

Upon realization that there exist a gap among response activities, a new group was inaugurated, called Emergency Services. The group incorporates Fire and Chemicals emergencies and like all the other groups, DMA coordinates multi-sectoral role players of private dealers, Parastatals and government entities.

The Authority is taking a new look and approach to Disaster management; planning which is a risk reduction process coupled with preparedness. However, with regard to chemicals, nothing has yet been done, but the ushering of ES is a step in the right direction.

10.2 CHEMICAL INCIDENT RESPONSE

Table 10A: Examples of Chemical Incidents in the Country

Date of incident	Location	Type of incident	Chemical(s) involved	D: Number of Deaths I: Number of Injuries E: Numbers Evacuated	Environmental Contamination or Damage

There has been a single incidence back in the 80's of an explosion of petroleum tanks at the Maseru depot. This was highly localized and did not affect people. Other than that there has never been an incidence that warrants national attention as an emergency. This does not mean there are no such hazards. Little incidences within the laboratories have been managed through standard laboratory procedure top of which is water showers.

10.3 CHEMICAL INCIDENT FOLLOW-UP AND EVALUATION

It is instructive that any accident or incidence is reported as thorough as possible and a follow up be made in order to avoid or mitigate future incidences of similar nature. This is provided for in the Labour Code regulations for workplaces, but in most cases nothing is in place or practiced.

Good practices have globally been triggered by calamitous incidents, after which governments realized the magnitude thus the need for strict regulation and enforcement. Lesotho has not seen that level of hazard occurrences; these have happened in chemical process plants, where leakages and explosions caused intoxications, pollutions and direct deaths. The country has no real experience of these and as such seems to be far fetched to warrant any attention yet.

10.4 COMMENTS/ANALYSIS

Chemistry is the central science; in reality this science as the study of mater and its interactions teaches us that all matte is chemical. More than 80 Percent of these chemicals are friendly to health, yet even then overexposure may be detrimental. It is on this basis alone that basic education, say throughout primary level, must be afforded each and every citizen. Every primary leaving [person should know what H2O is; they should know the basic handling, storage and labeling procedures and they should know the common risks of household chemicals.

The Disaster Management Authority has realized the need to incorporate into their plan of actions issues of chemicals management and environment in general. This is because the Authority has adopted a holistic approach to disaster management, starting with the understanding of the word disaster itself and what management therefore is.

Disaster is defined as a serious disruption of the functioning of a community or a society causing widespread human, material or environmental losses which exceed the ability of the affected community/society to cope using its own resources.

The First step in Disaster management thus is known as Risk reduction. This is a systematic development o and application of policies, strategies and practices to minimize vulnerabilities and disaster risks throughout a society; to avoid (prevention) or to limit (mitigation and preparedness) adverse impacts of hazards within the broad context of sustainable development. Chemicals management constitutes risk reduction, even at this level where there is no production processes.

CHAPTER 11:

AWARENESS/UNDERSTANDING OF WORKERS AND THE PUBLIC; AND TRAINING AND EDUCATION OF TARGET GROUPS AND PROFESSIONALS

INTRODUCTION

In all laws of Lesotho, the word environment, let alone chemicals probably appeared no more than three times. However, the current commitment and concern over environmental issues dates as far back as 1989 when National Environmental Action Plan (NEAP) was formulated. This was soon followed by the implementation of Agenda 21 in 1994.

Developments since then include the establishment of the Ministry of Tourism, Environment and Culture and the enactment of the Environment Act, 2009, which will soon be enacted, having passed all parliamentary stages.

NES has hosted a number of environmental fairs to date and this has become an annual event moving from district to district. NES has a department of outreach for public awareness and participation. Chemical management falls within pollution control and this has been identified in the National Policy as one of the countries environmental problems that needed immediate attention.

11.1 AWARENESS AND UNDERSTANDING OF CHEMICAL SAFETY ISSUES

It is a general 'feeling' of CHEMAC members and relevant stakeholders, in attendance of both National meetings that in the overall, public awareness to environmental issues is very low. There is however, a further qualification to this statement that people are actually aware of the potential dangers posed by known chemicals, but since there has not been any known national disaster, there are no immediate concerns. An example is the low usage of LPG for domestic purposes – most people are afraid to even bring it home to the point of not appreciating that there are safer ways of handling the gas.

Employers are forced by legislation to train their workers on health and safety issues at the workplace through the Labour Code. Furthermore the country manufactures very small quantities of chemicals as a result chemical management issues are only beginning to surface following the enactment of the Environment Bill 2000.

More often than not, awareness-raising methods are not efficiently used. Messages put forth are often ambiguous and do not necessarily deliver the intended message. There is need to design messages that do not have multi meaning, that can be understood by the intended clientele.

Much as the field of information dissemination is so crucial, it is often taken for granted by many. It is wrongly believed that is not a specialized field and therefore anyone can give it an attempt. Use of technical language is common, more especially in print media. This results in messages that are at times not so clear to an ordinary man, even though they would have been very useful, had simple language been used.

There is failure to address the needs of the people at the given time. Some messages are very crucial at certain times, but often there have been delays in giving messages at the time when clients most need them. For example, in health, the issue of HIV & AIDS is the most pressing at the moment, as such people are ready to hear any messages on care and maintenance of this pandemic, thus, if health

tries to convey messages on the control of cholera, people have no interest in such information as that is presently not urgent.
Contemporary methods are not widely used due to the following factors:

1. Lack of necessary skills
2. Lack of necessary equipment
3. Limited financial resources

11.2 EDUCATION AND TRAINING FOR SOUND MANAGEMENT OF CHEMICALS AND WASTE

Three major institutions of higher learning do provide training relevant to chemicals management; these are the NUL, NHTC and LAC. NUL now offers a full degree in Chemical Technology. This is over and above the secondary school curricula that has Physical Chemistry component. Yes, not as directed towards "chemicals management" but affords basic principle of knowledge about chemicals, risk and handling.

Some specialized short courses are run as projects under different departments. Capacity Building in Environmental Management was run for two years through the help of DANCED. HCWM training has just been done to most health care workers of various cadres, with a strong component on chemicals management. Other than that, some workshops are held, which provide for a for thrashing issues. All the above activities are as far as the country has done in terms of education and training.

11.3 COMMENTS/ANALYSIS

A general observation is that while the public and the workers at large maybe aware of dangers posed by some known chemicals, there is still a tendency for people ignore health and safety guidelines in an effort to support their livelihoods. Also people will individually and voluntarily lookout for themselves because there are no regulations which protect them against any malpractices by employers which may pose safety and health risk.

Although Lesotho is behind most of her counterparts in relation to implementation of provisions of Chapter 19 of Agenda 21, there are some initiatives in the form of regulatory and institutional framework aimed at addressing chemical management problems facing the country. It is also worth noting that Lesotho has somehow pre-empted Agenda 21 by identifying chemical management as a problem in her national environment action plan (NEAP) of 1989. The NEAP identifies six environmental problems facing the country, namely overstocking and range management, soil erosion and fertility laws, hazardous agricultural chemicals, pollution of soil, water and air, unplanned urban expansion and settlement and loss of natural and historical heritage. All these have a bearing on chemical management.

On the basis of NEAP the national environment policy was formulated and reviewed in 1998. Although it has been successful in promoting environmental awareness, it did not bring any considerable changes in the development planning process.

Awareness on issues pertaining to POPs is low. According to the Long-man Dictionary of Contemporary English, 'Awareness' can be defined as ***'having knowledge or consciousness'.*** On the basis of this definition it can be argued that the carefree type of attitude that the public have is a true reflection that there is still a long way in educating them such that behavioural change is realized. Human behaviour is indeed a determinant of whether someone is conscious about something, hence can be labeled as being aware or sensitized (Public Information and Awareness Survey on POPs, 2004).

However, there are a lot of factors that can affect change in behaviour. One of such factors is poverty. Poverty is both a cause and effect of environmental problems. According to the Environmental Awareness survey undertaken by NES in 1999, 10% of the Basotho nation are trained on any given environmental training and that the people are largely unaware of any efforts to solve environmental problems. The National Environment Policy lists low level of environmental awareness among policy and decision makers and the general public as one of the principal challenges facing the Basotho nation.

CHAPTER 12:

INTERNATIONAL LINKAGES

INTRODUCTION

Relationships between countries, sub-regions and continents are critical to the success of any global initiative. Countries therefore support one another in the form of skills, knowledge and information. In order for such a process to occur however, countries undertaking specific agreements must agree, and therefore ratify the initiative as a way of indicating willingness and dedication. This chapter highlights the relevant agreements and relationships Lesotho has with various international organizations and countries in relation to the management of chemicals.

12.1 COOPERATION AND INVOLVEMENT WITH INTERNATIONAL ORGANIZATIONS, BODIES AND AGREEMENTS

The purpose of Tables 10A and 10B is to clarify the involvement of Lesotho in international activities and agreements and to allow all concerned parties to know who has the responsibility for contacts with the related international organizations.

Table 12.A. Membership in International Organizations, Programmes and Bodies

International Organization/Body/Activity	National Focal Point/Agency & Primary Contact Point	Other Ministries /Agencies involved	Related National Activities
IFCS	MTEC-NES	MOEL	Participation in International meetings, Preparation of National Profile
UNEP ; IRPTC; IE/PAC	MTEC-NES	N/A	Ratification of International Conventions, new legislation developed
IPCS	MOHSW	N/A	
WHO	MOHSW	N/A	
FAO	MAFS	MFDP	
UNIDO	MTICM	MTEC	
ILO	MOEL	MTICM	
World Bank	MFDP	ALL	
African Development Bank	MFDP	ALL	
OECD	NES	ALL	
SADC-water commission	MNR	ALL	

Table 12.B: Participation in International Agreements/Procedures Related to Chemicals Management

International Agreements	Primary Responsible Agency	Relevant National Implementing Activities
Agenda 21-Commission for Sustainable Development	MTEC-NES	NEAP, Env. Bill 2000, COWMAN, CHEMAC etc
UNEP London Guidelines (voluntary procedure)	MTEC-NES	NEAP, Env. Bill 2000, COWMAN, CHEMAC etc
FAO Code of conduct on the Distribution and Use of Pesticides (voluntary procedure)	Ministry of Agriculture	
Montreal protocol	MNR-LMS	
ILO Convention 170	MOEL-OSH	The Labour Code of 1992,
UN Recommendation for transport of Dangerous Goods	MPWT	
Basel Convention	MTEC-NES	
London Convention		
WCO/WTO agreements (related to chemicals trade)	M/MFDP-Customs	
Chemicals Weapon Convention	MODNS	
SQUAM	MTICM	
CAC-CODEX	WHO, FAO, MTICM	

12.2 PARTICIPATION IN RELEVANT TECHNICAL ASSISTANCE PROJECTS

Table 12.C illustrates the various donor agencies involved in the management of waste in the country, as well as the institutions/government departments mandated to manage the projects.

Table 12.C: Participation as Recipient in Relevant Technical Assistance Projects

Name of Project	International/Bilateral Donor Agency Involved	National Contact Point	Relevant Activities
Capacity Building in Environmental Management	DANCED	NES	Courses administration/delivery to EU's
Solid Waste Management	DANCED	NES-MCC	Design of Landfill, Rehabilitation of Dumpsites, Procurement of collection equipment
POP's and OP's	GEF/UNIDO	NES	Analysis, Inventory, packaging and Disposal
Implementation of Ozone Depletion Substances	UNEP	LMS	Regulation, public awareness, training, policy and legislation reform
National Chemical Profile Development	UNITAR	NES	Preparation of chemical profile
SAICM	UNITAR	NES	Capacity Assessment & Priority Objectives Setting
HCWM	USAID/MCA	MHSW	Training andUpgrading Waste systems
City Council Projects	Habitat	MCC	Removing street vendors in Town

12.3 COMMENTS/ANALYSIS

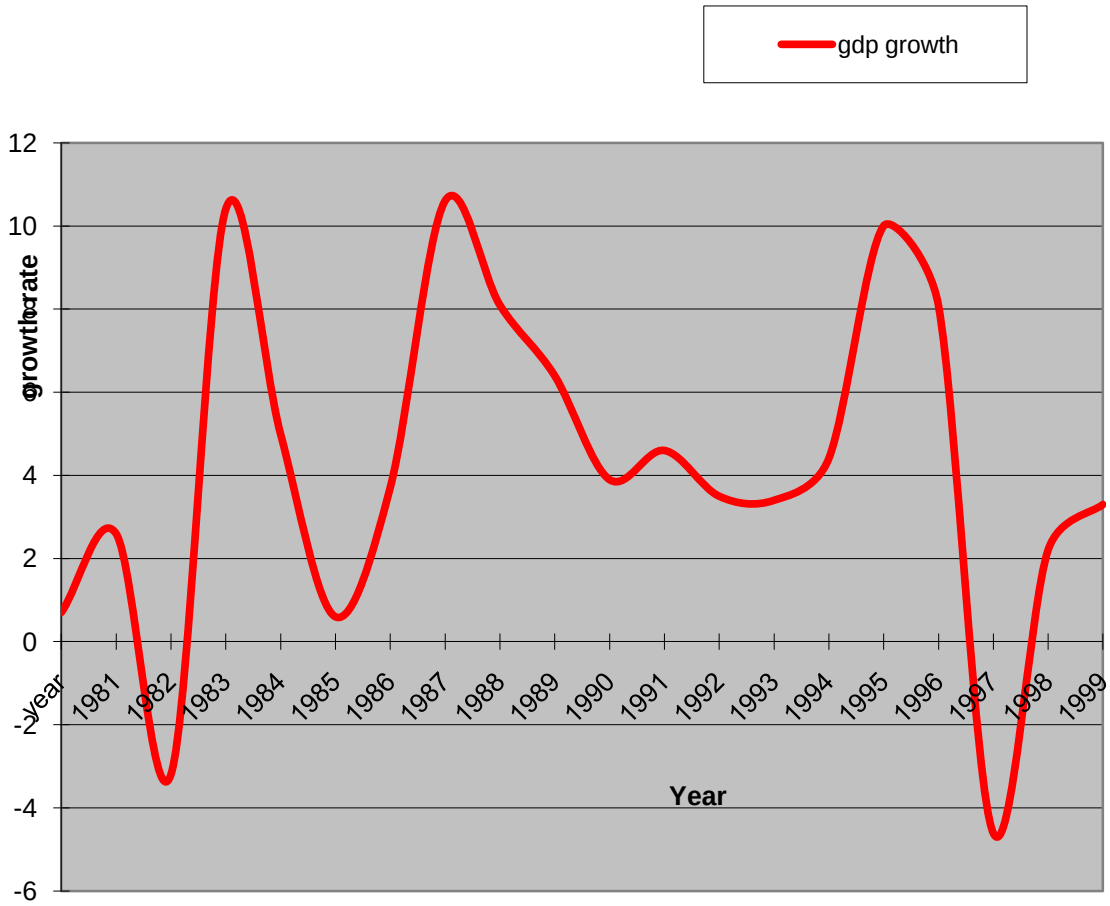
Lesotho does to some extent participate in international agreements and conventions as well as in technical assistance projects. Most of such projects are meant to capacitate the countries in order for them to face up to the provisions of agreements. The problems that seem to dominate in Lesotho, probably as is the case in most developing countries, are seen as:

- Lack of political will
- Lopsided National priorities
- Apathy
- Slow policy making and law enforcement
- Delay in -signing and/or ratification of important international conventions

The above mentioned problems lead in most cases, to the failure of projects that may have had the possibility of being sustainable.

CHAPTER 13:

RESOURCES AVAILABLE AND NEEDED FOR CHEMICALS MANAGEMENT



13.1 INTRODUCTION

Numerous chemicals have entered and remain capable of entering the country with limited government review or regulation. There is little public knowledge of how they are used or the extent of their releases from products and into the workplace and the environment. Concern over these chemical safety information gaps is not merely speculative or hypothetical, but reflects the growing recognition that many of the chemicals in commerce, and not just a few, are likely to constitute some type of hazard.

Research over the last few decades has shown that many chemicals have a wide variety of adverse effects that may be acute, but often may emerge only many years after very low levels of exposure (including carcinogens, mutagens, reproductive toxins, neurotoxins, immunotoxins and others). Various resources are required in order to effectively manage these chemicals. This section highlights the currently existing resources allocated to manage chemicals, as well as any further resources that are needed.

13.2 RESOURCES AVAILABLE AND NEEDED IN GOVERNMENT MINISTRIES

Many Departments of Ministries are in agreement in so far as the fact that they are understaffed. The bureaucracy and the allocations of posts seem to be out of reach for the technocrats. In the table 12A below it could be noted that the financial resource column is not filled. For the reason stated below.

Table 13.A: Resources Available in Government Ministries

Ministry/Agency Involved	Number of Professional Staff involved	Type of Expertise Available	Financial Resources Available (per year)*
Environment	9	EIA, GIS, Pollution control Environment Management & Education etc	
Health	60	Environment specialists, Technicians, Health inspectors & Assistants	
Agriculture	6	Extension, Technicians phyto pathologists, soil scientists, researchers	
Employment & labour	5	OSH inspectors	
Trade & Industry	11	Biologists, chemists	
Transport	12	Inspectors	
MCC	2	Environmental health specialists	
Customs		Customs inspectors	

*Normally there is no separate budget line or vote for the portion which is regarded relevant to chemical management activities and such this can not be quantified even the number of professional staff involved is also a grey area.

13.3 RESOURCES AVAILABLE IN NON-GOVERNMENTAL INSTITUTIONS FOR CHEMICALS AND RELATED WASTE MANAGEMENT

Table 13.B: Resources Available in Non-Government Institutions

Concerned Institution	Specific Responsibilities for which Resources are Allocated	Number of Professional Staff Involved	Type of Expertise Available	Financial Resources Available (per year)
LECONGO				
LEJAC				
TRC				
other				

During the survey, no one within all these institutions could commit to offer a reasonable response to this table, hence attempts are still underway to find reliable data.

The above institutions are the ones which are seen to be involved in environmental management and actually concerned about activities thereof. It was found however that chemicals management has not been regarded on its standalone situation; understandably so as it has not been a major concern in the country. Due to the fact, no special allocations are made for chemicals management.

13.3 RESOURCES NEEDED BY GOVERNMENT INSTITUTIONS TO FULFIL RESPONSIBILITIES RELATED TO CHEMICALS MANAGEMENT

Table 13.C: Resources Needed By Government Institutions to Fulfill Responsibilities Related to Chemicals Management

Ministry/Agency Concerned	Number/Type of Professional staff needed	Training Requirements
Environment	16 Inspectors/Environment Officers and 10 assistant environment officers	Environmental Management and training on chemicals management
Health	182 Health assistants	Specific programmes, Chemicals handling and general chemicals management training
Agriculture	10 Extension Workers and Technicians	IPM, IVM & General Management of Chemicals
Employment & labour	5 Inspectors	Chemical safety, industrial hygiene and safety, general chemicals management training
Trade & Industry	10 technicians	Laboratory management, general chemicals management training
Transport		Chemical safety in Transportation,

		general chemicals management training
Local Government	10 Inspectors	Chemical Waste Management, general chemicals management training
Customs	20 Inspectors	Chemistry and Chemical safety and handling, general chemicals management training

*All the above agencies require general training in chemicals management before receiving more specific training that is in line with mandates.

According to the current financial year's budget speech, a significant recovery has been made in the last ten years since the 1998 riots that destroyed valuable assets and drove away many investors. In 2006, economic growth reached a high of 7.2% and is expected to be around 5.1% in 2007 and 7.0 in 2008. The challenge, according to the Minister of Finance and Development Planning, is to consolidate and make this commendable performance sustainable. The current financial budget indicates that Government Ministries do receive increments on an annual basis (as indicated in table 12.1) However, a financial increment for Ministries does not necessarily mean that departments/sections (dealing with chemicals management) within the Ministries receive increments. In instances that they do, the increments may not necessarily be enough, as indicated in table 12.2.

What is evident in table 13.1 is that Departments such as the Environment (which is central to the management of chemicals) are not indicated under the main headings (i.e. Social Services, Economic Services, etc.). This therefore means that the Department is regarded as Unallocable Expense, and is therefore deemed irrelevant.

Table 13.2 indicates that there are still numerous shortcomings in relation to the management of chemicals in the country. These shortcomings are directly linked to the budgets allocated.

Table 13.1:

Functional Classification of Total Expenditure (million Maloti, current prices)

	Budget 07/08	Budget 08/09	Budget 07/08 (% GDP)	Budget 08/09 (% GDP)	Budget 08/09, percentage change over 07/08	Percentage of 08/09 budget
General Public Services, Public Order, Safety and Defence	**2384.8**	**2702.0**	**20.3**	**20.0**	**13.3**	**29.7**
General Public Services	1490.8	1523.4	12.7	11.3	2.2	16.7
Defence	292.4	364.0	2.5	2.7	24.5	4.0
Public Order, Safety, and Defence	601.6	814.7	5.1	6.0	35.4	9.0
Social Services	**2913.8**	**4193.3**	**24.7**	**31.1**	**43.9**	**46.1**
Public Health Affairs and Services	838.1	940.4	7.1	7.0	12.2	10.3
Social security and Welfare Affairs	499.0	1249.6	4.2	9.3	150.4	13.7
Education, Culture and Recreation	1576.7	2003.4	13.4	14.8	27.1	22.0
Of Which Education	1464.2	1832.1	12.4	13.6	25.1	20.1
			0.0	0.0		
Housing and Community Amenity	**476.2**	**625.6**	**4.0**	**4.6**	**31.4**	**6.9**
Economic Services	**947.3**	**1143.0**	**8.0**	**8.5**	**20.7**	**12.6**
Agriculture	176.9	208.8	1.5	1.5	18.0	2.3
Forestry and Land Reclamation	51.3	59.6	0.4	0.4	16.0	0.7
Natural Resources	52.6	106.8	0.4	0.8	103.3	1.2
Trade and Industry	70.8	102.8	0.6	0.8	45.1	1.1
Tourism: Admin	26.1	32.2	0.2	0.2	23.4	0.4
Other Economic Affairs	569.5	632.9	4.8	4.7	11.1	7.0
Unallocable and other purposes	**511.6**	**431.8**	**4.3**	**3.2**	**-15.6**	**4.7**
Total	**7233.7**	**9095.7**	**61.4**	**67.4**	**25.7**	**100.0**
GDP at market prices	11775	13501				
GNI at market prices	14764	16994				

Source: Budget Speech, 2008/2009

Table 13.2: Requirements and Shortcomings of Departments/Sections working with issues of chemicals management

Department/Section	Responsible Ministry	Current Budget (Mil Maluti)	Requirements	Shortcomings
Environment	MTEC	10, 913,520	Acts, Regulations, Environmental Inspectors, Technical Committees, Training	- Limited regulation - No environmental inspector positions - No training
Environmental Health	MoHSW	Not Available	Acts, Regulations, SHE Inspectors, Technical Committees, Training	- Limited regulation - No SHE Inspector positions - Only one newly appointed technical committee - No training
Occupational Health & Safety	MoLE	Not Available	Acts, Regulations, SHE Inspectors, Technical Committees, Training	- Limited Regulation - Limited number of SHE inspectors (concentrating on Industries) - No training
Community/City Councils	MoLG	Not Available	Waste Management Infrastructure (collection and disposal), Acts, Regulations, Inspectors, Technical Committees, Training	- Weak waste management infrastructure - Limited Regulation - No inspectors - No training
Customs	MoFDP	Not Available	Inspectors, Training, Regulations, Acts	Limited knowledge of inspectors, poor regulations

13.4 COMMENTS/ANALYSIS

Ministries/Departments of the government involved in one form or another of chemicals management are poised towards providing qualified technical staff for all purposes. This has turned out to be a true strength. However, the hardware component (equipment) may very well still lag behind.

As indicated in tables 13A & 13B the existing professional staff involved shall need strengthening, in both numbers and capacity to handle in depth chemical management in general. Areas of training are also stipulated per Ministry. The major one that cuts across all departments concerned delves within accreditation and certification in GLP.]

There is a major requirement to capacitate customs officers in the overall with regard to the number of personnel, legal knowledge, as well as chemicals identification, and of course financial resources allocation may very well be intensified in the whole department, in consideration that most/all chemicals are imported, in one form or another.

These deficits cannot currently be quantified for some departments due to lack of specific chemicals management component in their programmes. However, both technical (human & equipment) and financial resources are wanting.

What is significant in relation to the budget of the Department of Environment is that it has dropped substantially from 47,924,980.00 in 2006/2007, to 10,913,520 in 2008/2009. The most significant reduction within the budget is the running costs of the department.

CHAPTER 14:

CONCLUSIONS AND RECCOMENDATIONS

CONCLUSIONS

The following conclusions are drawn for integrated chemicals management in Lesotho:

- There are insufficient/inadequate legal instruments on import, storage, transport, use and disposal of most chemicals. For those laws that do exist, enforcement is not effective. Non enforcement of laws is in turn caused by lack of staff. The country has a rich inventory of skilled labour, but the system is unable to absorb them, reservedly due to limited financial resources. It was found out that it is not really that finances are limited but rather skewed allocation. In the final analysis, there are no people in place in the government to administer and police these laws, the laws then become toothless.
- There is a weak enforcement of laws in Lesotho. This revolves around the non existence of regulations. Laws are normally enacted by parliament with provisions for Ministers to make regulations. Yet these regulations are never made, as a result the law does not seem to be functional unless a serious breach occurs. With regard to daily administration, monitoring and surveillance, this has become a major bottleneck.
- There is a need for strengthening and improvement of coordination between different stakeholders with regard to chemicals. National coordination remains the biggest problem that compounds to failure of projects, low absorptive capacity and duplication of efforts.
- Expediting enactment of laws and their enforcement is slow. Some laws take decades in the bill form, simply because of the lack of responsibility and commitment to realize the real impact of the existence of such a law. Unless there is external pressure from the international community, nothing happens, or is important.
- Although this country has in principle the capacity in terms of human resources there is still a lack of staff. Many skilled people have fled to the neighbouring South Africa for jobs. In Lesotho, there is adequate technical infrastructure that is unused; the laboratories that exist have adequate equipment for analysis of up the most complex of chemicals. For example, the University has the state of the art GC-MS system.
- Limited participation of the public because of insufficient awareness on environmental issues. Policy making in the country is ignorant of the real impacts of environmental issues, and therefore it can be concluded that the general public is also ignorant as a result. After all policy makers are a sample of the public; they are representatives selected out of this population. It has been said that the general public has been crippled by non responsiveness of the governments for a long time, such that they have developed a passive behaviour to their own detriment.
- Insufficient awareness may cause a greater part of the country's population to be at risk of chemical exposure, to varying degree
- There is a lack of institutions that assist in the reduction and treatment of chemical accidents (such as poison centers and hotlines
- There is a lack of adequate infrastructure (such as disposal sites)
- There is a need for structured and accessible information on chemicals management

RECOMMENDATIONS

Lesotho is very small country, its chemical industry is close to zero, however the use of chemicals is as general as any other country, save for manufacturing. It is therefore regarded that without complicating issues, few concrete recommendations be put forward, which shall form the foundation of a well managed chemicals future.

On the basis of the Profile and capacity assessment report; issues that have been identified have been upraised and prioritized; what is left is to incorporate these issues in Ministerial plans of action and daily business. But for this to happen, a deep commitment is required within each ministry. For a commitment to be concrete, a strong Inter-Ministerial coordinating mechanism has to be set in motion.

Due to the eminent apathy among stakeholders and the public at large, the Ministry should start serious campaigns and projects which are implemented as of essence to recoup the interest of people in national issues. People have lost hope and trust in the present government.

Unfortunately there are more pressing issues in the third world, pertaining to human survival such that even Millennium Development Goals are not all attended to.

It is however still instructive to capacitate the public and policy makers on important issue of environment and health risks

The country need to undertake real hazard identification and risk assessment for the population in order to be able to reset national priorities.

The only bottleneck is effective Governance; proper financial allocations, responsiveness to national needs and pride in national building and dedication to TRUTH.

ANNEXES

Annex 1: Glossary of Terms

Chemical: means a chemical substance whether by itself or in a mixture or preparation, whether manufactured or obtained from nature and includes such substance used as industrial chemicals, consumer chemicals, pesticides, pharmaceuticals and radioactive materials

Consumer chemicals: a chemical substance/product containing chemicals which is consumed directly such as detergents, paints, cosmetics, etc.

Agricultural chemical: a chemical used for agriculture or horticultural purposes

Industrial chemical: a chemical used in industrial processes

Pesticide: Includes insecticides, fungicides, herbicides, rodenticide, mulluscides, and other substances used to control pests in agriculture, forestry, animal husbandry, the public health sector, and in commercial and domestic premises.

Urban: A town area as gazetted by the government of Lesotho

Rural: The rest of the countryside not falling within gazetted urban areas.

Annex 2: List of Legal Documents Touching on Aspects of Chemicals Management

1. Public Health Order of 1970
2. The Medical, Dental and Health order of 1970
3. Customs and Excise Order of 1970
4. Road Transport and Transport Order of 1970
5. International Health Regulations
6. Trading Enterprises Act 1999
7. Road Traffic Act 1991
8. Labour Code Order 1992
9. Liquefied Petroleum Gas Act 1997
10. Liquefied Petroleum Gas Act 1999
11. Ozone Depleting Substances Regulations 2000
12. The Environment Bill 2007
13. Access to Information Bill, [Draft Bill]

Annex 3: Names and Addresses of Key Individuals and Organizations

#	Name & Surname	Where from	Contact #	e-mail

1	Mokitimi Thekiso	MOHSW	22326405/58996696	blessmokitimi@yahoo.com
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3	T.C. Mohale	MOET – SSU	22337204/58843656	tspmhl@yahoo.com.au
4	Bahlakoana Shelile	LRA	22313829/58756694	b.shelile@lra.org.ls
5	Tabai Motuba	LEC	52272210/58859722	motuba@lec.co.ls
6	Kelebone Mahlehle	TSAWU	22311985	
7	'Majoel Lephoto	Mohloli	22327762	lesga@datacom.co.ls
8	Lekunutu Khesa	WASA	22313943	khesa@wasa.co.ls
9	Vuyani Monyake	DWA	22318048	vuyani@dwa.gov.ls
10	Nthabiseng Sekokotoana	Law Office	22312736	nthabisengsekokotoana@yahoo.co.uk
11	Marupinyane Nkotsi	Consumer Protection Association	58975487	
12	Thabo T'sasanyane	NES	22311767	tsasanyanetk@hotmail.com

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19. The 1998 Crisis Could Have Been Avoided, 2008, Intelserv (www.intelserv.co.ls)

20. Enabling Activities to Facilitate Early Action on the Implementation of the Stockholm Convention on Persistent Organic Pollutants - Public Information and Awareness Survey, GOL, 2004

21. Lesotho Budget Speech, 2008/2009, Finance Minister Timothy Thahane, 2008