MINISTRY OF NATURAL RESOURCES, ENERGY AND ENVIRONMENT

NATIONAL PROFILE TO ASSESS THE NATIONAL INFRASTRUCTURE FOR MANAGEMENT OF CHEMICALS

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Introduction to the National Chemicals Profile

In 1992, after the Rio Conference, Heads of States of governments from more than 150 member countries of the United Nations adopted Agenda 21, a comprehensive document outlining responsibilities of states towards the achievement of sustainable development. Chapter 19 of Agenda 21 is entitled "Environmentally Sound Management of Toxic Chemicals, including Prevention of Illegal International Traffic in Toxic and Dangerous Products".

In 1994, the International Conference on Chemical Safety brought together high level representatives from more than 100 countries to identify priorities to implement chapter 19 to establish mechanisms for the implementation of its recommendations. The Stockholm Conference established the Inter-governmental Forum on Chemical Safety (IFCS) through which countries now regularly discuss their activities and priorities for the sound management of chemicals. The Stockholm Conference adopted a "Priorities for Action" plan to implement their recommendations of Chapter 19 of Agenda 21.

Malawi developed its first national chemicals profile in 1997, in response to this. The purpose of the National Profile was to establish and document all existing structures, shortfalls and capacities pertaining to management of chemicals.

The first national chemicals report highlighted the following:

(a) That 98 percent of all chemicals used in Malawi were imported, of which 86 percent of the chemicals were petroleum products, 13 percent fertilizers, and the remainder industrial chemicals and pesticides used in agriculture, public health and consumer use;
(b) That there were two primary sectors of the economy: the industrial sector (manufacturing and fabrication of products such as textiles, leather products, sugar and timber products); and the agricultural sector (commercial and subsistence farming);
(c) That the priority problems associated with chemicals are: air pollution, pollution of water (surface and ground), residues of pesticides and heavy metals in food, storage and disposal of obsolete chemicals and hazardous waste, occupational hazards, inadequate supply of information, limitation of funds, inadequate disaster preparedness and rehabilitation, inadequate human resources and illegal importation of dangerous chemicals;
(d) That the coordination and cooperation of government institutions was weak and there were overlaps in other areas due to fragmented legislation for chemicals management; and
(e) That there was inadequate public awareness on chemical use.

Malawi signed a Memorandum of Agreement with United Nations Institute for Training and Research (UNITAR) in 2008, whose objectives are;

(a) Updating the national chemicals management profile of 1997;

(b) Developing a national SAICM capacity assessment; and
(c) Holding of a National SAICM priority setting workshop in Malawi.

In accordance with the Memorandum of Agreement mentioned above, Malawi has prepared this national chemicals profile to allow it to better understand: problems relating to chemicals management in the country, what mechanisms are available to address these problems, and strategies needed to strengthen the management of chemicals. The purpose of undertaking a second national chemicals profile was also to assess Malawi's performance in chemicals management since completion of the first profile.

This profile has been prepared based on an extensive chemicals survey conducted by the National Coordinating Team (NCT) in all the regions of the country between the 12th and the 18th July 2009. This survey involved key institutions, which included chemical companies, estates, academic and research institutions and government line ministries and departments. The NCT was composed of government officials, representatives of the civil society and the private sector. A full list of all partners who were involved in and contributed to the preparation of this profile is attached in Annex 3.

The project "National Profile to Assess the National Infrastructure for Management of Chemicals" was developed with 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.

EXECUTIVE SUMMARY

Agriculture is the most important sector of Malawi's economy. Agricultural crops such as maize, tobacco, tea, coffee and sugar, account for approximately 40 percent of GDP and 90 percent of export earnings. In order to realize maximum production, the agricultural sector demands extensive use of agro-chemicals, fertilizers and improved seed. Agriculture contributes 60-70 percent of the inputs to the manufacturing sector through the provision of agricultural-based raw materials including cotton for textiles and sugar cane in the sugar industry. Generally, industry contribution to GDP increased from 11.8 percent in 2007 to 13 percent in 2008.

Therefore, chemicals used in Malawi are mostly imported. Production of chemicals is very minimal.

Malawi has several concerns about chemical production, import, export, storage, use, quality, treatment and disposal. These concerns have been prioritized based on various factors including; a comparison of socio-economic impact imposed by different types of chemicals; severity and magnitude of effects of chemicals on people and the environment; the extent to which the impact is irreversible and the permanent nature of the problems and associated effects. The identification of priority concerns related to chemicals production, import, export and use indicated that Malawi is mostly concerned with the following issues, in order of ranking: hazardous waste, treatment and disposal, contamination of drinking water, occupational health and safety for the industrial sector, public health, chemicals in food and ground water pollution.

The analysis of national legal and regulatory infrastructure illustrated that currently there is no single legislation dealing with and managing chemicals. Legislation dealing with different aspects of chemicals is fragmented and uncoordinated. Draft legislation is currently being prepared in Malawi which does not specifically deal with chemicals; however it will have relevance on chemicals management. This draft legislation includes the review of the Environment Management Act and Regulations on Waste Management and on Chemicals and Toxic Substances.

The analysis of ongoing governmental programmes and inter-ministerial cooperation revealed that management of chemicals in Malawi is characterized by a fragmented institutional arrangement; whereby there is no nationally designated institution specialized in coordination of all chemicals management issues, as such institutions operate in broad mandates. The implementation of institutional mandates is also narrow and limited; as such implementation of mandates is not efficient. This is attributed to lack of infrastructure and resources, in most institutions, necessary to enforce laws under their jurisdiction. The work that the institutions are currently doing is not of adequate standards due to lack of central coordination and constraints such as inadequate funding, inadequate remuneration for qualified staff, poor administration and lack of monitoring equipment.

Expertise to support national efforts to manage chemicals outside Government exists. This expertise however, is varied and not registered. Most of it lies in universities, research institutions, professional and industrial organizations, NGOs and private consultancy. Research institutes, universities, industry and to a larger extent, the labour unions have expertise in the

various practices including data collection, risk assessment, risk reduction, training and education, research on alternatives, monitoring, enforcement, information to workers and information to the public. The labour unions also indicated that they had expertise in policy analysis, while the environmental/consumer groups indicated that they only had expertise in the fields of disseminating information to workers and the public.

The country has laboratories established for specific functions, basically for quantitative and qualitative analyses related to the particular mandate of the institution. Some of the sectors hosting these laboratories include; academia, water department, agricultural research institutions, Malawi Bureau of Standards (MBS), Geological Survey, health sector and various industries. These laboratories utilize internationally recognized procedures and compare results with accredited laboratories. Efforts are being made to improve the quality and accreditation of laboratories through formal programmes of cooperation to share facilities with other countries. Examples are MBS and Agricultural Research and Extension Trust, who are in the process of accrediting their laboratories.

The government of Malawi currently does not have a nationally recognized chemical information management system, because there is no designated institution to coordinate chemical management issues. As such, capabilities, access to international databases and implementation of government policies and programmes related to chemicals management is done at institutional level in a variety of ways. This means that all institutions having a stake in chemicals management are custodians of their data, consequently, access to data is through visiting websites of specific institutions. All line ministries have computers and are able to access electronic mail and the internet.

An analysis of the implementation of international policy initiatives and technical assistance projects indicated Malawi is involved in various international organizations, programmes and bodies, including organizations that deal with various aspects of chemicals management. Malawi has also participated in technical assistance projects. The integration of the activities of international organizations and the national implementation of activities of the international agreements have enjoyed some success in some sectors but in other sectors they have not functioned as expected due to failure to sustain them and poor coordination at national level. There is poor coordination between ministries, departments and agencies at national level with respect to chemicals management and the implementation of international activities and agreements.

An analysis of national awareness raising and education programmes for workers and the public showed that the Occupational Safety, Health and Welfare Act, 1997 contains provisions regulating the control, use, handling and processing of chemicals in the workplace, including, hazardous substances. It also contains provisions for the protection of the workers against adverse effects of chemicals. All relevant provisions of the legislation as well as general information on safety and health are disseminated to -the public and to employees and employers.

Programmes to provide workers with information to protect their safety and health from the risks of chemicals include workers education programmes, circulars, radio programmes and

publications. The Malawi Congress of Trade Unions (MCTU) which was formed to 'protect and defend human and workers rights' has a membership of over 120,000 people. The MCTU undertakes various programmes to provide information to workers and the public on chemicals. Individual companies including tea and sugar estates have put in place training programmes on handling, use and disposal of chemicals.

The country has a number of strengths as regards chemicals management. Some of the notable strengths include;

- Political will - The Government has a very high political will towards management of chemicals and science in general. This is evidenced by the fact that science and technology have been included in nine of the key government priorities. This provides a very conducive environment for investment in science and for addressing some of the problems which had little attention previously.
- Majority allocation of budgetary resources to the agricultural sector - The economy of Malawi is based on agriculture, as such this sector gets majority share of the budgetary allocation. This means that there is already commitment of government to invest in this sector, which provides raw materials to the industrial sector. These two sectors are the principal users of chemicals; as such it provides a window of opportunity to raise the profile of chemical management in these sectors.
- Availability of capacity building personnel and existence of Institutions specializing in Science - The country has highly qualified personnel up to doctorate level in fields of pathology, chemistry, toxicology and environmental science who have the capacity to build upcoming scientists. The country also has a number of institutions specializing in science as outlined above, thereby providing a good environment for investing in chemical management.
- Availability of Laboratories and Research Institutions - The country has a number of institutions hosting laboratories in various disciplines of science. This provides an opportunity for further investment in chemical research and capacity building.

Despite having all these strengths, the country faces some challenges as outlined below:

- Lack of specific policy and institution mandated to coordinate chemical management issues - Lack of a specific institution to coordinate chemical management creates a gap in addressing needs of the country as regards chemicals management. This is because institutions involved operate under broad mandates; as such there is no strict follow up of chemical issues.
- Lack of national chemical information system - This creates a problem in accessing chemical information and dissemination.
- Limited financial resources - Due to fragmented management of chemical issues, the profile of chemicals is undermined; as such allocation of resources to such supplementary functions becomes baseless.
- Limited access to updated technology - There is a gap in tools and methods that are used in some of the institutions compared with what is used worldwide, as such management and analysis of some data is difficult.

Management of chemicals requires a well defined regulatory and institutional framework coupled with adequate infrastructure, human, and financial resources. In Malawi, allocation of financial resources depends on approval by the parliament for line ministries. With the absence of a nationally designated government institution to coordinate chemicals management issues, it is difficult for the parliament to allocate adequate resources specifically for chemical management. This does not give chemicals management the priority that it deserves as it does not feature highly on government agenda.

Follow up actions recommended to implement the major findings of the national chemicals profile include:

- the development of legislation dealing with chemicals;
- establishment of a nationally designated government institution to coordinate chemical management issues to ensure parliament allocates adequate resources specifically for chemical management; and
- the creation of a national chemicals information system.

Chapter 1: National Background Information

This chapter provides a general background on Malawi. The outlined information covers physical and demographic information, political and geographic structure, and a summary of the industrial and agricultural sectors. The major source of statistical information provided in this chapter has been obtained from National Statistical Office (NSO), Zomba, publications. This information therefore provides the context in which the issues of chemical management are discussed in the subsequent chapters.

1.1 Physical and Demographic Context

This section covers size, government and population, education and employment information in Malawi (NSO 2008).

1.1.1 Size of Malawi

Malawi is located in southern Africa and is bordered by Tanzania in the north, Mozambique in the east, south and southeast, and Zambia in the west (see Figure 1). It lies between latitudes 9022' and 17003' S and longitude 330 40' and 330 55' E. The total area of Malawi is 11.85 million hectares, of which 2.43 million hectares is covered by water. About 60 percent of the country has been modified by human activity with only 36 percent under natural vegetation, 20 percent in game reserves, national parks and forest reserves. It also has remarkably diverse flora and fauna, of which the uniquely rich and diverse fish resources stand out.

The major water body in the country is Lake Malawi. The location of Lake Malawi reflects its positioning in the great African rift valley system, characterized by being a long, relatively narrow, and deep water-body. Its catchment area, where the six drainage basins are located, comprises inland ancient plateau and associated mountains, rift valley escarpment, and the lakeshore flood plains. Metamorphic and igneous gneiss, schist and granite dominate the drainage basins.

Figure 1: Map of Malawi indicating major administrative divisions

1.1.2 Form of Government

For thirty years (from independence in 1964 to 1994) Malawi had one party political system, which governed the country. The multi-party democratic government was introduced in 1994. The Head of Government is the President, elected into office by majority popular vote, with a maximum of two consecutive 5-year terms.

There are three independent arms of government: the Executive, Legislature and Judiciary. Each branch of government has got its own distinctive functions: the Executive initiates policies and legislation and it implements laws; the Legislature enacts laws which reflect the interest of the people of Malawi and the Judiciary interprets, protects and enforces the Constitution and all laws in an independent and impartial manner. The National Assembly, under the Legislature, is made of parliamentarians from various parties elected from constituencies distributed throughout the country.

1.1.3 Official and Local Language

The official language is English while Chewa, Lomwe, Ngonde, Sena, Tonga, Tumbuka, and Yao are among the local languages used for communication by a large percentage of the population in such areas as media, education, health and agriculture.

1.1.4 Population

The 2008 National Statistical Office (NSO) Year Book - Population and Housing Census revealed a total population of about 13.1 million with a national annual population growth rate of 2.8 percent. The population has increased from 9.9 million in 1998 giving an overall population increase of 32 percent. The population of 18 years and over is 6,216,432, of whom 3.2 million are female and 3 million are male.

The urban population constitutes 17 percent from 8.5 percent of the 1994 estimated total population while 83 percent represents rural population. In Malawi, urban means a government declared planning area for development. The declared planning areas include cities, municipalities, town and district assemblies. In such areas, employment, water services, electricity, postal services, bus services and businesses are most prominent.

The proportion of people living in the urban areas increased from 6 percent in the 1970s to 24 percent in 1999, and is mostly concentrated in Blantyre, Lilongwe, Mzuzu and Zomba. Rapid urbanization has put pressure on the limited social amenities like water supply, health facilities and waste disposal facilities.

1.1.5 Birth and Death Rate and Life Expectancy

The crude birth rate is 43.6 per 1000 population, while the mortality rate is 79.7 per 1000 live births. Life expectancy is 47.6.

1.1.6 Literacy Rate and Average Education Level of Population

Literacy is defined as the ability to read and write. Close to 64 percent of the population in Malawi is literate. Among males, almost 76 percent are literate while half of females are literate. Urban literacy is much higher at about 86 percent compared to 61 percent for rural.

The highest certificate attainable from the primary level is Primary School Leaving Certificate, whilst the highest certificate obtainable at secondary level is the Malawi School Certificate of Education (equivalent to General Certificate of Education - Ordinary Level). The tertiary level offers a range of courses from Craft Certificates, Diploma, Degree, Masters to Doctorate (PhD). The majority of the literate section of the population has attained the Primary School Leaving Certificate. In an effort to improve the literacy level, government introduced free primary school education and has included Education, Science and Technology in the Malawi Growth Development Strategy.

1.1.7 Unemployment Rate

According to the National Statistical Office (NSO) yearbook 2008, the employment rate for Malawi was 96.9 percent in 2007 and the unemployment rate was 3.1 percent in 2007.

1.1.8 Percentage of Women Employed Outside the Home

The percentage of women working outside the home currently stands at 16 percent.

1.1.9 Political Structure of the Country

Malawi adopted a decentralized policy in 1997 and enacted the Local Government Act in 1998 which provides for political and administrative structure at district, town, municipal and city assembly levels. There are 28 districts in Malawi as per Figure 1, a map indicating major administrative divisions. Administratively, there are 28 district assemblies, 8 town assemblies and 4 city assemblies, headed by District Commissioners, Town and Chief Executives respectively.

The Act provides for the creation of committees under the assemblies at Area, Ward or Village level to facilitate participation of the people in the assembly's decision-making in all matters including environment and natural resources management. Following decentralization, some functions of the environment and health line ministries have been devolved to the local assemblies, including planning, implementation, public awareness, monitoring and inspection.

1.2 Geographic Structure of the Country

Variations in altitude in Malawi lead to wide differences in climate. The vast water surface of Lake Malawi has a cooling effect, but because of the low elevation, the margins of the lake have long hot seasons and high humidity, with a mean annual temperature of 24°C (75°F). Precipitation is heaviest along the northern coast of Lake Malawi, where the average is more than 163cm (64in) per year; about 70 percent of the country averages about 75 - 100cm (30 -

40in) annually. In general, the seasons may be divided into the cool (May to mid-August); the hot (mid-August to November); the rainy (November to April), with rains continuing longer in the northern and eastern mountains; and the post-rainy (April to May), with temperatures falling in May. Lilongwe, in central Malawi, at an elevation of 1,041m (3,415 ft), has a moderately warm climate with adequate rainfall. The average daily minimum and maximum temperatures in November, the hottest month, are 17°C (63°F) and 29°C (84°F), respectively; those in July, the coolest month, are 7°C (45°F) and 23°C (73°F). **(***http://www.nationsencyclopedia.com/Africa/Malawi-CLIMATE.html*)

The vegetation of Malawi is associated with its six drainage basins, the vegetation is predominantly a mixture of woodlands (evergreen, brachystegia woodland, etc.). Most of the gentler slopes are under cultivation. It is mostly the hillsides that are forest covered. Forest resources are generally declining (47 percent to 28 percent between 1975 and 2000) due to deforestation at a national average of 2.8 percent.

Malawi is divided into five zones: Rift Valley Floor, Rift Valley Scarp zone, Plains, and High Plateau. Variations in altitude and latitude have given rise to a wide range of climate, soil and vegetation types. Malawi therefore has diverse topographical features: very low lying areas in the lower Shire basin to high hilly areas in the Northern region and parts of the Southern and Central region. The low-lying areas support cotton production while the hilly areas support production of coffee and tea.

Malawi has a wide diversity of vegetation largely due to physiography, climate and edaphic factors. The major types of biotic communities of Malawi are montane evergreen forest/grassland, closed canopy woodlands (tall brachystegia / jubernadia / isoberlina), mopane woodland, sand dune vegetation, grasslands (seasonally perennially wet/swamp), lakes (fresh/ saline lake waters) and islands.

Soil is a critical resource for Malawi whose economy is mainly agricultural based. However, it is estimated that soil is eroding at an alarming rate of 20t/ha/yr mainly due to deforestation and poor land resources management. This results in sedimentation of rivers, which leads to increased incidents of flooding and filling of dams. Sedimentation has also been associated with declining capacity of hydroelectricity generation on Shire River. Malawi has four main classes of soils, latosols, lithosols, calcimorphic and hydromorphic soils. Most of the soils in the rift valley are alluvial, rich in soil nutrients and ideal for agriculture.

The major sources of water are natural rainfall, rivers, streams, lakes, groundwater and artificially impounded water such as dams, dugouts and reservoirs. Naturally, rainfall is the single source of water that feeds all the other sources. Lake Malawi is the largest reservoir of water in Malawi and it is harnessed in the production of electricity along the Shire River, which is the major outlet of the lake. The other extensive water bodies are Lake Chilwa, Lake Chiuta and Lake Malombe. Malawi depends on the water resources for various purposes such as domestic use, industrial development, hydropower generation and irrigation. Lake Malawi and the Shire River also serve as cheap means of transport.

1.3 Industrial and Agricultural Sectors

Agriculture is the most important sector of Malawi's economy. Agricultural crops such as maize, tobacco, tea, coffee and sugar, account for approximately 40 percent of GDP and 90 percent of export earnings. In order to realize maximum production, the agricultural sector demands extensive use of agro-chemicals, fertilizers and improved seed. To undertake this, the government in the recent past, introduced the fertilizer subsidy programme, which affords targeted low-income families access fertilizer at a reduced price. This programme has substantially increased importation and use of fertilizers.

Agriculture contributes 60 - 70 percent of the inputs to the manufacturing sector through the provision of agricultural-based raw materials including cotton for textiles and sugar cane in the sugar industry. Generally, industry contribution to GDP increased from 11.8 percent in 2007 to 13 percent in 2008.

Mining is sector is emerging as an important economic drive for Malawi anchored by the uranium ore mining in the northern district of Karonga in addition to coal mining. There are also prospects of mining of other important rare earth metals.

Below, in Table 1.A, is an Overview of the National Economic Sectors

Table 1 A: Overview of the National Economic Sectors

ISIC Rev. 4 Code	Economic Sectors and Related Activities	Contribution to GDP (percent)	Output Value (USD)	Growth Rate Over Past 3 years (percent)
Sector of Agriculture, Forestry and Fisheries				
A 01	Crop and animal production, hunting and related service activities			
A 02	Forestry and logging			
A 03	Fishing and aquaculture			
TOTAL FOR AGRICULTURE, FORESTRY AND FISHERIES		39.2		
Sector of Mining and Extraction				
B 04-09	Coal/Oil/Natural Gas/Minerals/Metals			
Sector of Manufacturing/Industry				
C 10	Food products			
C 11	Beverages			
C 12	Tobacco Products			
C 13-15	Textiles/wearing			

	apparel/leather			
C 16	Wood and of products of wood and cork			
C 17	Paper and paper products			
C 18	Paper and recorded media			
C 19-22	Coke, refined petroleum products, chemicals, pharmaceutical products, plastic products			
C 23	Non-metallic mineral products			
C 24-25	Basic metals and fabricated metal products			
C 26	Computer, electronic, and optical products			
C 27	Electrical equipment			
C 28-30	Machinery and equipment, motor-vehicles, other transport equipment			
C 30-33	Others			
TOTAL FOR MANUFACTURING AND INDUSTRY		16.8		
Sector of Services				
D	Electricity, gas, steam and air conditioning Supply			
E	Water supply, sewerage, waste management			
F	Construction			
G	Wholesale and retail trade, repair of vehicles and motorcycles			
H	Transportation and storage			
I	Accommodation and food services activities			
J	Others service activities (dry cleaning)			
TOTAL FOR SERVICES		44		

Source for Total Figures: CIA World Fact Book

Table 1.B gives a Summary of the Structure of the Manufacturing/ Industrial Sectors

Table 1.B: Summary of the Structure of the Manufacturing/ Industrial Sectors

Sector	Micro Farms/ Facilities (percent)	Small Farms/ Facilities (percent)	Medium Farms / Facilities (percent)	Big Farms/ Facilities (percent)
Industrial/ Manufacturing				
Agricultural Sector				
TOTAL				

Tables 1.C and 1D below give breakdowns of agricultural and industrial production by region.

Table 1.C: Breakdown of Agricultural Production by Regions

Regions	Major Crops	Total value of Crop	Total number of Employees	Size of Productive Areas (no. of hectares)
South	Maize	464401		518,868
	Rice	17817		19,130
	Groundnuts	9489		26,196
	Tobacco	1628743		7,346
	Cotton	16277		39,319
	Cassava	92608		42,771
	Pigeon peas	41735		93,490
	Sorghum	19668		60,836
	Millet	3414		10,688
	Pulses	58830		175,607
Central	Maize	732430		590,565
	Tobacco	27734967		43,783
	Cassava	84240		21,483
	Groundnuts	17668		53,128
	Pulses	32394		87,056
	Beans	12566		48,613
North	Maize	135664		116,147
	Tobacco	2956875		3,578
	Groundnuts	3507		10,049
	Cassava	151576		30,397
	Pulses	8548		31,680
	Sweet potatoes	39490		6,231
	Millet	7053		10,149
Total		34269960		2,047,107

Source: Ministry of Agriculture and Irrigation

Table 1.D: Breakdown of Industrial Production by -Product

Region	Major Products	Total Value of Production(MKm)	Number of industrial facilities	Number of Employees
	Tobacco	3,600.0		
	Tea	269.3		
	Sugar	421.1		
	Cotton	38.7		
	Groundnuts	10.5		
	Rice	8.0		
	Coffee	143.0		
	Pulses	14.4		
	Maize	16.8		
Total		**4,521.8**		

Source: Ministry of Agriculture and Irrigation

1.4 Industrial Employment by Major Economic Sectors

Table 1E gives an overview of the Releases by Type and Media for Major Economic Sectors

Table 1E: Overview of the Releases by Type and Media for Major Economic Sectors

ISIC Rev. 4 Code	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 Fisheries				
A 01	Crop and animal production, hunting and related service activities	Unknown	Air, Water, Soil	Unknown
A 02	Forestry and logging	Unknown	Air, Water, Soil	Unknown
A 03	Fishing and aquaculture	Unknown	Air, Water, Soil	Unknown
Sector of Mining and Extraction				

B 04-09	Coal/Oil/Natural Gas/Minerals/Metals	Unknown	Air, Soil, Water	Unknown
Sector of Manufacturing/Industry				
C 10	Food products	Unknown	Air, Soil, Water	Unknown
C 11	Beverages	Unknown	Air, Soil, Water	Unknown
C 12	Tobacco Products	Unknown	Air, Water, Soil	Unknown
C 13-15	Textiles/wearing apparel/leather	Unknown	Air, Water, Soil	Unknown
C 16	Wood and of products of wood and cork	Unknown	Air, Water, Soil	Unknown
C 17	Paper and paper products	Unknown	Air, Water, Soil	Unknown
C 18	Paper and recorded media	Unknown	Air, Water, Soil	Unknown
C 19-22	Coke, refined petroleum products, chemicals, pharmaceutical products, plastic products	Unknown	Air, Water, Soil	Unknown
C 23	Non-metallic mineral products	Unknown	Air, Water, Soil	Unknown
C 24-25	Basic metals and fabricated metal products	Unknown	Air, Water, Soil	Unknown
C 26	Computer, electronic, and optical products	Unknown	Air, Water Soil	Unknown
C 27	Electrical equipment	Unknown	Air, Water Soil	Unknown
C 28-30	Machinery and equipment, motor-vehicles, other transport equipment	Unknown	Air, Water, Soil	Unknown
Sector of Services				
D	Electricity, gas, steam and air conditioning supply	Unknown	Air, Water, Soil	Unknown
E	Water supply, sewerage, waste management	Unknown	Air, Water, Soil	Unknown
F	Construction	Unknown	Air, Water, Soil	Unknown
G	Wholesale and retail trade, repair of vehicles and motorcycles	Unknown	Air, Water, Soil	Unknown
H	Transportation and storage	Unknown	Air, Water Soil	Unknown
I	Hospitality Industry /	Unknown	Air, Water,	Unknown

	Tourism and food services		Soil	
J	dry cleaning, telecommunications	Unknown	Air, Water, Soil	Unknown

Unknown information on Tables- No such studies have been conducted/ practices have been observed but they have not been quantified because there is weak monitoring. Available data is not consolidated and is scanty.

1.5 Comments/ Analysis

An estimate of Malawi's population in urban areas as of 2008 is at 15.3% an increase from 14.0% in 1998. A significant number of the manufacturing industries are located in the cities and urban areas, where such amenities as electricity, water, and communication facilities are available. The majority of the population living in rural and semi-urban areas is mostly engaged in the agricultural sector. There are also a few industries such as mining, sugar industry that are located in semi urban or rural areas. In essence the whole country is susceptible to chemical exposure be it from industry or agricultural sectors.

The main drainage pattern of most rivers in the north and south is towards Lake Malawi which occupies about one third of the country. Any chemical runoffs into the catchment areas of these rivers therefore present substantial danger to the water species in the lake. Urbanization has put pressure on the limited social amenities like water supply, health facilities and waste disposal facilities because cities and slums are not planned and there is dumping of waste within dwelling areas that cause contamination to surface/groundwater water. Additionally, Water Boards treat water with chemicals.

The political governance of Malawi plays a big role in aspects of chemicals and waste management. Local authorities, such as City Assemblies, are mandated to implement pollution control and waste disposal although the actual operations on the ground are not adequate for reasons ranging from limitation of resource and technical resources. It therefore remains a challenge for the waste management sector in the country.

Chapter 2: Chemical Production, Import, Export, Storage, Transport, Use and Disposal

2.0 Past issues related to Chemical Production, Import and Export, Storage, Transport, Use and Disposal

There are various past issues related to chemicals import, storage, transport, use, and disposal that have current relevance for the management of chemicals and particularly Persistent Organic Pollutants (POPs) in Malawi. The Malawi National Implementation Plan (NIP) for Management of Persistent Organic Pollutants Report was prepared by the Government of Malawi in 2005 after surveying 211 sites to allow Malawi effectively manage Persistent Organic Pollutants (POPs) and other persistent toxic substances (PTSs) consistent with the requirements of the Stockholm Convention on Persistent Organic Pollutants (POPs), which Malawi signed in 2002 and ratified in 2009.

A survey on the presence and uses of POPs pesticides in Malawi included chemical companies, estates, academic and research institutions, Agricultural Development and Marketing Corporation of Malawi markets, super markets and produce markets. The findings of the survey showed that aldrin, dieldrin, endrin, DDT and toxaphene have been used in agriculture mainly for the control of insect pests in crops and livestock. These pesticides were also utilized together with heptachlor in forests for termite control. Chlordane was found to be the commonly used POPs pesticide in Malawi. Up to 1.546 metric tonnes of chlordane, fifty liters of toxaphene and less than 10 kg of DDT were recorded. Chlordane is used to control termites in the construction industry, tea and coffee estates. The survey report also recorded 310.894 metric tonnes of obsolete pesticides. These included organophosphates, carbamates and pyrethroids.

During the survey, it was observed that Malawi does not manufacture pesticides. All pesticides that are marketed in the country are imported either from the neighbouring countries or from overseas. However, there is a high demand for pesticides and as a result illegal trade of pesticides takes place.

Though the use of POPs pesticides was banned in the country, illegal use and trade of POPs continues to take place. There are a lot of unlicensed dealers and vendors selling pesticides and other chemicals on the open markets especially in the districts along the borders (Mozambique, Zambia and Tanzania). This has led to the uncontrolled entry as well as accumulation of stockpiles and obsolete pesticides in the country including POPs. These pesticides are commonly used to protect plants from plague insects. The POPs pesticides being traded include aldrin, dieldrin, endrin, heptachlor, mirex and toxaphene and DDT. Their exact quantities could not be established during the surveys.

The inventory on polychlorinated biphenyls (PCBs) established that the Electricity Supply Corporation of Malawi (ESCOM) is the major importer of PCBs through transformers. However, the management of PCBs-containing oil and equipment is poor and there is little public awareness on the dangers posed by PCBs. During the inventory some sites were designated as contaminated by PCBs and some of these sites were located close to fragile

ecosystems, such as water bodies, flora and fauna, food processing units and schools thereby posing risk of exposure to the general public and the environment.

The inventory on dioxins and furans showed that the main media of release of dioxins and furans in Malawi were air and land through emissions and residue deposits respectively. Management of dioxins and furans is a new issue in the country hence, the need for more studies on their emissions.

The surveys showed that very little public information; awareness and education exist on POPs and other toxic substances in the country. Limited awareness on use and risks associated with POPs has resulted in poor management of the chemicals consequently affecting human health and the environment. It was further established that very limited information on human health impacts directly linked to POPs in the country is available. Capacity to assess human exposure to POPs in the country was also found to be limited. Since POPs have been used and unintentionally produced in the country for a long time, it can be envisaged that quite a large percentage of the Malawian population has been exposed to POPs. No studies have been conducted on causes of certain diseases and their linkage to POPs.

Furthermore, no specific regulatory framework for the management of POPs and PCBs in particular exists in the country. POPs are being used without any management measures being enforced.

2.1 Chemical Production, Import and Export

The chemicals used in Malawi are mostly imported. Economic activity is dominated by agriculture, which employs about 90 percent of the total working population, and contributes about 40 percent of the Gross Domestic Product. This being the case, agricultural chemicals in form of fertilizers and pesticides constitute a large percentage of the chemicals imported.

There are no major chemicals produced in Malawi except for minor petrochemicals produced in the form of cosmetics. Although production of chemicals is very minimal, there is a substantial amount handled in various industries. The industries include textile, sugar processing, paint formulation, pharmaceuticals, and soap making to mention but a few. The data in terms of the tonnage being used or handled is not available.

It is difficult to quantify the informal economic sector such as those businesses that are engaged in the illegal import and use of narcotics. An interview with the Ministry of Health indicated that the legal importation of precursors for heroin, cocaine, mephetamines and amphetamines which are then diverted to illicit use is becoming more prevalent in Malawi. Such chemicals include Acetic Anyhydride, Acetone, Sulphuric acid, Hydrochloric acid and Ephedrine.

Several studies in Malawi have provided evidence of DDT accumulation in water and sediments in rivers in Malawi (Kangera, 2002, Mandala, 2002 and Banda, 2004). Studies done at Makoka Research Station have also revealed that water and fish at the farm's dam contained residues of DDT, DDE and DDD well after the DDT ban in 1985. This shows that despite the ban, DDT and its metabolites exists in vegetables, water and soil sediments in the country. DDT is still being

used and kept in Malawi. The Pesticides Control Board has not processed any permits to import DDT. The presence of some DDT in the country is due to illegal importation and trading since DDT is not officially imported into Malawi. Movement across the boundaries thus accounts for the amount of DDT obtainable in Malawi. The country has limited personnel to monitor the movement of these pesticides into and across the country. Strengthening enforcement of the 1985 ban by Malawi government is necessary.

2.2 Chemical Use by Category

Chemicals are categorized as pesticides for agriculture, public health, and consumer use. Others are fertilizers, petroleum products such as fuel and lubricants; and industrial chemicals for consumer use and manufacturing such as dichloromethyl for control of mosquitoes, bedbugs etc. However, mechanisms to collect information on quantities are not in force. The complexity also arises, amongst others, due to illegal cross border trade.

2.3 Storage of Chemicals and Related Issues

Malawi does not have national facilities for storage of chemicals in bulk. However, individual enterprises do own facilities for bulk storage of chemicals including chemicals, fertilizer and sulphuric acid.

2.4 Transport of Chemicals and Related Issues

Malawi imports more chemicals than it produces. Malawi imports chemicals by road, rail and air. The points of entry for chemicals are the borders located in Mwanza, Songwe, Dedza, Mchinji, Mloza and Nayuchi. The Malawi Revenue Authority keeps a record of the quantity and nature of chemicals imported into Malawi. However, these records have not been captured in a user friendly database.

There is currently no legal framework that regulates the transportation of hazardous chemicals within Malawi. However, some companies transporting hazardous chemicals use international safety/transportation codes of practice which are currently not monitored.

There is a registration system for transportation of bulk chemicals e.g. from the point of importation or manufacture to the end user. However, there is no information on whether there has been an inventory on transportation of bulk chemicals from the point of importation to the end user.

There is currently no chemicals waste transportation infrastructure.

There is transportation for local distribution facilities within individual enterprises and small scale use transport of chemicals to local domestic markets.

2.5 Chemical Waste

Industrial activities, which are regarded as main polluters, are concentrated in two major urban areas of the country. Most industries are situated in Blantyre, the commercial city followed by Lilongwe, the capital city. Every year thousands of tonnes of industrial wastes are improperly discharged and emitted, consequently the quantity, complexity and toxicity is increasing. Industrial wastes in liquid form are usually discharged in the sewerage systems or rivers as effluent while waste is either dumped in the landfills or in pits within the workplace premises. These are major sources of pollution of natural resources. On the other hand, emissions of gaseous pollutants from cement plants, foundries, steam boilers and chemical industries pose a threat to the surrounding community and the environment at large. Due to a number of reasons including lack of organized systems, the extent of pollution is yet to be established.

Urban areas have inadequate sewerage system, waste collection and disposal facilities. In some cases these facilities are non-existent. This implies that quantification of the waste involved is practically impossible.

In the rural areas the major polluter is the agriculture sector. Pollution of natural resources is a result of large use of quantities of chemicals such as fertilizers and pesticides. The residual waste is however not quantified.

2.6 Overview of Technical Facilities for Recycling of Chemicals

There are currently no facilities in Malawi for recycling or recovery of chemicals and related waste.

2.7 Overview of Capacity for Disposal of Chemicals

There are a few facilities for disposal of chemicals and related waste in the country. There are various types of disposal facilities used in the country and they include land dumping, small scale incineration of medical wastes, impounding and permanent storage. Landfill waste and domestic waste is normally burnt. There are also some incidents of illegal water dumping. There is not a lot of information on processes such as biological and physico-chemical treatment.

2.8 Stockpiles, Waste Deposits, and Contaminated Sites

As mentioned above, the Malawi National Implementation Plan (NIP) for Management of Persistent Organic Pollutants Report was prepared to allow Malawi to effectively manage Persistent Organic Pollutants (POPs) and other persistent toxic substances (PTSs) consistent with the requirements of the Stockholm Convention on Persistent Organic Pollutants (POPs), which Malawi ratified in 2009. Article 6 subparagraph 1b and annex A & B of the Stockholm Convention requires Parties to ensure that stockpiles consisting of or containing chemicals listed either in Annex A or Annex B and wastes, including products and articles upon becoming wastes, consisting of, containing or contaminated with a chemical listed in Annex A, B or C, are managed in a manner protective of human health and the environment, each Party shall identify,

to the extent practicable, stockpiles consisting of or containing chemicals listed either in Annex A or Annex B on the basis of the strategies referred to in subparagraph (a).

The inventory revealed that (i) 18 sites had 1.246 metric tonnes of chlordane, 50 liters of toxaphene and 10 kg of DDT. These POPs pesticides are still being used in the country in the agriculture, forestry and construction industries. (ii) Malawi has 310.9 tonnes and 67,000 litres of obsolete non- POPs pesticides, which are improperly stored in most of the estates and warehouses, (iii) residue deposits of wastes constitute important sources of dioxins and furans, (iv) DDT and its derivatives were used in the major cotton growing areas of Malawi such as Karonga, Henga valley, Salima and the Shire valley, and (v) limited personnel and expertise exists for the management of the stockpiles, articles in use and wastes.

An inventory of PCBs was carried out in the industries that use materials likely to contain PCBs according to the general application and typical locations. The inventory in Malawi revealed that of a total of 189 sites, which were identified as contaminated: nearly 51 percent are in the South Region, 37 percent in Central and 12 percent in Northern Regions. Nearly 82.5 percent of the contaminated sites have transformers which were manufactured between 1936 and 1989 and are prone to contamination. Blantyre, the main commercial and oldest industrial city has the highest concentration of transformers (78); Blantyre also houses ESCOM, the electricity supplier. While Lilongwe recorded 24 transformers, Chikwawa, Zomba, Mwanza and Dedza had a total of twelve transformers. In an attempt, to reduce contamination from leakages, ESCOM stores waste oil in tankers, which until now was being used as a fuel. Currently waste oil from ESCOM transformers is being stored in drums stockpiled in the open in ESCOM premises. This has resulted in leakages hence the predominance of contaminated sites in ESCOM premises.

Malawi identified quite a number of contaminated sites during the initial POPs inventory. Sites were reported contaminated with pesticides upon:

(i) Use of POPs pesticides in garden fields, and
(ii) Spillage of POPs pesticides in warehouses, stores and in the environment.

The NIP revealed that sites were labeled contaminated with dioxins and furans if the sites showed evidence of by-products of combustion or any chemical process involving raw material emitting dioxins and furans. The inventory revealed that the main source of furans and dioxins in Malawi is bush burning and incineration of domestic and health care waste.

Used lubrication oils (motor and industrial) are categorized as hazardous waste in many countries because they contain polycyclic aromatic hydrocarbons (PAHs) and heavy metals. Malawi has no treatment or recycling facilities for these oils. Currently, they are either disposed of indiscriminately or burnt in furnaces.

The influx of computers, cell phones and other electronic equipment has resulted in a lot of electronic waste. Electronic waste contains hazardous heavy metals. Non functional electronic gadgets are usually cannibalized and functional parts are reused. Non functional parts are dumped indiscriminately as non-hazardous waste.

Batteries (primary and secondary) contain heavy metals. Currently, batteries are handled as non-hazardous waste.

Tyres are usually burnt in cities and townships. This action releases large amounts of hazardous air pollutants.

Medical and pharmaceutical waste is either burnt in simple and improper incinerators or dumped in local and usually illegal dumpsites.

2.9 Unintentionally Generated Chemicals

Unintentionally generated chemicals, such as dioxins, furans, are important for the National Profile, and have been included and discussed in the Malawi NIP. The NIP has been discussed extensively above.

2.10 Comments/ Analysis

Malawi has data dealing with the import, storage, transportation, use and waste disposal of some chemicals. However this data is fragmented, handled by different institutions. It is usually not in electronic format and it is not consolidated into one comprehensive database. The submission of information is not well organized. For example, despite the fact that importers are required by law to submit information to responsible ministries and institutions there is a lot of noncompliance with this requirement.

There are significant gaps in data collection including information on chemicals used by the informal sector. Some of the data collected is not up to date and needs to be updated. Efforts and initiatives to improve the quality of existing databases are not currently being undertaken.

With regards to dioxins and furans it is common for hospitals to burn obsolete drugs. This is due to lack of access to technologies on the safe disposal of hazardous wastes. An important problem concerns lack of facilities and expertise to monitor dioxins and furans. Malawi does not currently have hazardous waste incinerator facilities. About 30 percent of hospital waste incinerators are in operation and these do not have any installation of air cleaning equipments (NIP, 2002). This is further exacerbated by the fact that Malawi does not have emission limit values for unintentional POPs by-products such as furans and dioxins. Malawi is unable to indicate the extent of illegal trafficking and smuggling of chemicals and related wastes and possible origins.

Chapter 3: Priority Concerns Related to Chemical Production, Import, Export and Use

3.1 Prioritising Concerns related to Chemicals Import, Production, and Use

Malawi has several concerns about chemical production, import, export and use. These concerns have been prioritized based on various factors including; a comparison of socio-economic impact imposed by different types of chemicals; severity and magnitude of effects of chemicals on people and the environment; the extent to which the impact is irreversible and the permanent nature of the problems and associated effects. The identification of priority concerns related to chemicals production, import, export and use indicated that Malawi is mostly concerned with the following issues, in order of ranking: hazardous waste, treatment and disposal, drinking water contamination, occupational health and safety for the industrial sector, public health, chemicals in food and ground water pollution. A summary of priority concerns is given in Table 3.A.

3.1.1 Hazardous Waste Treatment, and Disposal

Collection and handling of hazardous waste has not been controlled for a long time. There are large amounts of industrial effluents that have been partially treated or not treated before disposal. This is due to lack of effective control systems such as hazardous waste treatment plants both at enterprise as well as out of enterprise.

3.1.2 Drinking Water Contamination

According to 1985 figures, 65 percent of Malawi's population had access to clean or safe potable water (World Bank 1990). The breakdown shows that 85 percent of the urban population had access to safe drinking water while 45 percent of the rural population had access to clean water. Both rural and urban water suppliers face operational problems. It is currently estimated that only one third of the rural population that survive on untreated water have access to improved water supplies such as boreholes. Similarly, recent surveys indicate that the figure for urban areas is in the range of 60 – 70 percent.

3.1.3 Occupational Health - Industrial

The Occupational Safety and Health Directorate in the Ministry of Labour, is mandated under the Occupational Safety, Health and Welfare Act, 1997 to carry out routine inspections of industries with an aim to improve working conditions. However, the quantitative and qualitative analyses to determine the nature and level of chemicals present in the working environment is hampered by lack of monitoring and laboratory equipment. One of the consequences of this is that there is inadequate monitoring of workers exposed to dangerous chemicals.

3.1.4 Chemical Residues in Food

Chemicals like DDT do not disintegrate easily. Use of this particular chemical is strictly restricted in Malawi. However, prior to the ban, DDT was extensively and intensively used in

agriculture as a pesticide. The minute quantities find their way in fish, which is one of the major sources of protein. The severity of the problem has not yet been established and documented.

Preservation of maize grains, which is the main staple food in Malawi, is done using chemicals such as Actellic. The processing of the grain to flour in most cases does not remove the chemical completely.

The other source of chemical residues in food is the direct intake of nutrients by plants from the soil or remains on plant as a result of chemical spraying. The existence of this problem is, however, not quantified.

3.1.5 Occupational Health - Agriculture

The Occupational Safety, Health and Welfare Act addresses, amongst other things, the use of personal protective clothing. This is as a result of the non-adherence to rules requiring the use of appropriate protective clothing during use, handling and application of chemicals.

3.1.6 Chemical Exposures - Industrial

Chemical exposures may lead to either acute or chronic effects. The former involves short-term high concentration and immediate result culminating either into illness, irritation or death. In contrast, the latter is characterised by slow development, which may be evident through symptoms or disease of long duration or frequent recurrence.

In Malawi, a few cases of acute effects of chemical exposure have been reported to the Occupational Safety and Health Directorate. These include exposure to ammonia, which lead to death as a result of pulmonary oedema and poisoning as a result of mishandling and abuse of temik (a very toxic pesticide). However, the chronic effects are strictly due to non-availability of environmental monitoring and surveillance interventions. This has left most of the chronic effects undiagnosed and undocumented.

3.1.7 Chemical Accidents - Transport

Most accidents associated with transportation are mainly encountered in the petro-chemical industry. Apart from spillage, management of tankers may not be properly done resulting in contamination of petrol/paraffin.

Table 3.A below gives a summary of the description of problem areas

Table 3A

Nature of problem	**City/Region**	**Description**	**Pollutants**
Water			
Pollution of waterways	All cities	Oil spills and discharge of wastes	Petroleum products,
Marine pollution	Lake shore areas	Oil spills and discharge of wastes	Petroleum products

Ground water pollution	Countrywide	Hardness, alkalinity and acidity	Agrochemicals
Drinking water contamination	Countrywide	Proliferation of nutrients	Agrochemicals
Water treatment and disposal	Countrywide	Failure to separate waste	Industrial chemicals
Water storage and disposal of chemicals	Countrywide	Failure to separate waste	Industrial chemicals
Ground water contamination	Blantyre city	High levels of organochlorides	Pesticides residues in agriculture
Air			
Spilled acid at uranium mine premises, H_2O_2, NaOH, lime	Karonga	Contamination of the soil	Sulphuric acid, H_2O_2, NaOH, lime
Chemicals in foods	Countrywide	High levels of some insecticides	Dieldrin, DDT, Dimethoate in vegetables
Soil contamination and human health	Countrywide	High levels of poly chlorinated biphenyls disposed by different industries	Poly chlorinated biphenyls, transformer oils
Forex shortage	Countrywide	Untimely supply of agrochemicals	All agro chemicals
Illicit use of chemicals	Countrywide	Legal importation of precursors of cocaine, heroin, mephatimines and amphetamines	Acetic Anyhydride, Acetone, Sulphuric acid, Hydrochloric acid and Ephedrine
Air pollution	Mzuzu City	Emissions from burning of waste	Burning of polymers and fumes from industries
Health hazards	Mzuzu City	Headaches, skin diseases, respiratory diseases	Pesticides, fumigants and dust formulation
Air pollution	Central region (Dwangwa)	Emissions from burning of cane and aerial spray of herbicides	Carbon dioxide and herbicides
Inadequate training in pesticide handling i.e. application, equipment calibration	Countrywide	Poor handling, dilution and application of pesticides	Fumigants, Equipment Calibration and dust formulations
Inadequate protective clothing	Countrywide	Exposure to hazardous chemicals	Pesticides
Poor storage of chemicals	Countrywide	Failure to contain the chemicals leading to human health and environmental pollution	Chemicals
Human health hazard	Countrywide	Increased use of melamine in milk	Melamine

		products	
Occupational Health and Safety	Countrywide	Incorrect usage and handling of chemicals	Chemicals
Air pollution	Countrywide	Burning of coal	Carbon dioxide
Soil contamination	Countrywide	Seepage of petroleum products due to leakages	Petroleum products and biofuels
Near end-life chemicals	Central Africa	Supply of chemicals that are about expire	All chemicals
Lack of standardized labels	Countrywide	Poor and inappropriate labeling of chemicals	All chemicals
Air pollution	Countrywide	Chemicals drift on windy days	Dimethoate, copperoxychloride
Water pollution	Countrywide	Run off	Dimethoate, copperoxychloride
Soil contamination	Countrywide	Persistence and adsorption	Nematicides,
Health hazard	Countrywide	Incorrect use of chemicals	All chemicals
Loss of biodiversity	Countrywide	Destruction of non-target organisms from use of broad spectrum chemicals	metamidophos

Below, in Table 3.B is a summary of priority concerns related to chemicals

Table 3B

Nature of problem	**Scale of problem**	**Level of concern**	**Ability to control problem**	**Availability of stats data**	**Specific chemicals creating concerns**	**Priority ranking**
Air pollution	Regional	High	Insufficient	Insufficient	Polychlorinated biphenyls, Carbon dioxide, pesticides, Herbicides, Phosphine	3
Pollution of inland waterways	National	High	Insufficient	Insufficient	Petroleum products, Polychlorinated biphenyls, Sulphuric acid, sodium hydroxide	3
Marine pollution	National	Low	No data	No data	Polychlorinated biphenyls, Petroleum products	3
Ground	National	Medium	Insufficient	Insufficient	Polychlorinated	3

water pollution					biphenyls, Chemical fertilizer, Sulphuric acid, sodium hydroxide,	
Soil contamination	National	Low	Sufficient	Insufficient	Ethylene dibromide (EDB), industrial discharges Petroleum products, Polychlorinated biphenyls, Actellic super dust, Sulphuric acid, sodium hydroxide,	3
Chemical residues in food	National	Low	No data	Available	Polychlorinated biphenyls, (aldecarb)	3
Drinking water contamination	National	Medium	Insufficient	Insufficient	Polychlorinated biphenyls, Fertilizers	3
Hazardous waste	National	High	Insufficient	Insufficient	Polychlorinated biphenyls	2
Treatment/ disposal	National	High	Sufficient	Insufficient	Polychlorinated biphenyls, industrial chemicals, Sulphuric acid, sodium hydroxide	2
Occupational health: agriculture	National	High	Insufficient	Insufficient	Agro-chemicals	3
Occupational health: industrial	National	High	Insufficient	Insufficient	Industrial chemicals, Petroleum products, Polychlorinated biphenyls, Sulphuric acid, sodium hydroxide	3
Public health	Local	Low	No data	Insufficient	Petroleum products, Polychlorinated	3

					biphenyls, domestic and industrial chemicals, pesticides, Sulphuric acid, sodium hydroxide	
Chemical accidents: industrial	Local	Low	Insufficient	Insufficient	Petroleum products, Polychlorinated biphenyls, sulphuric acid, sodium hydroxide	3
Chemical accidents: transport	National	Low	Sufficient	Insufficient	Petroleum products, industrial chemicals	3
Unknown chemical imports	National	Low	Insufficient	No data		3
Storage	National	High	Insufficient	Insufficient	Obsolete stocks, pesticides, polychlorinated biphenyls, domestic and industrial chemicals	2
Disposal of obsolete chemicals	National	High	Insufficient	Insufficient	Obsolete stocks, pesticides, polychlorinated biphenyls, domestic and industrial chemicals	2
Chemical poisoning/ suicides	National	Low	Insufficient	Insufficient	Phosphine, Sulphuric acid, sodium hydroxide, $Fe(SO_4)_2$, aldecarb	3
Persistent Organic Pollutants	National	High	Insufficient	Insufficient	DDT, PCB, dioxins and furans, chlordane, aldrin, heptachlor,	2
Others: cosmetics	National	Low	Insufficient	Insufficient		4

1 = Most severe problem, 2 = Second most severe problem, 3 = Third most severe problem, 4 = Fourth most severe problem, 5 = Least severe problem

3.2 Comments / Analysis

The lack of quantitative and qualitative chemical analysis procedures has prevented the determination of drinking water contamination, chemical residues in food, environmental contamination, occupational and chemical exposures in workers. Such procedures are necessary for developing strategies and mechanisms to reduce such problems.

Chapter 4: Legal Instruments and Non-Regulatory Mechanisms for Managing Chemicals

4.1 Overview of National Legal Instruments which Address the Management of Chemicals

There is no single legislation that deals specifically with chemicals management in Malawi. Instead there are various pieces of legislation, regulations and standards which address different aspect of chemicals management. However, legislation, regulations and standards dealing with chemicals management are fragmented and uncoordinated.

Find below a summary of all relevant legal instruments for the management of chemicals in Malawi.

Natural Resources Legislation

4.1.1 The Environment Management Act, 1996 (Cap 60:02)

The Environment Management Act No.23 of 1996 (EMA) which was enacted to make provision for the protection and management of the environment and the conservation and sustainable utilization of natural resources does not have a definition of 'chemicals'. The Act refers to chemicals indirectly by providing for the management of 'hazardous substances'. A hazardous substance is defined as "*any chemical, waste, gas or gaseous matter, medicines, drugs, plant, animal or micro-organism which is injurious to human health or the environment*".

Section 39 contains provisions on importation and exportation of hazardous substances and states that '*no person shall import or export any hazardous waste or substance, except under a permit issued by the Minister subject to such conditions as the Minister may determine, and in the case of exportation, the exporter shall, before a permit is issued, produce to the Minister written confirmation from an appropriate authority of the receiving country that the hazardous waste or substance may be exported to that country*'.

Section 40 provides for the classification of pesticides and hazardous substances and empowers the Minister responsible for agriculture to make rules for classifying pesticides and hazardous substances, and for determining their toxicity. The rules may make provisions:

a. requiring the registration, labeling and packaging of pesticides and hazardous substances;
b. for measures for controlling the manufacture, importation and exportation of pesticides and hazardous substances;
c. for the distribution, storage, handling and transportation of pesticides and hazardous substances;
d. for monitoring the impact of pesticides and hazardous substances and their residuary effect on public health, the environment and natural resources; and
e. for restricting or banning pesticides and hazardous substances.

The EMA also refers to chemicals indirectly by providing for pollution control and the management of pollutants. Pollution is defined as '*any direct or indirect alteration of the physical, thermal, chemical, biological, or radioactive properties of the environment caused by the discharge, emission or deposit of waste or a pollutant into the environment in such amounts and for such duration and under such conditions as to cause an actual or potential danger to the environment*'.

A pollutant is defined as **"***any substance whether in a liquid, solid or gaseous form which directly or indirectly:-*

(a) adversely alters or destroys the quality of the environment; or

(b) is dangerous or potentially dangerous to public health, plant or animal life,

and includes objectionable odours, radioactive substances or particles, noise, vibration, or any substance or particle that causes temperature change or physical, chemical or biological change to the environment".

According to sections 42 and 43 of the EMA no person can discharge or emit any pollutant into the environment except in accordance with the provisions of this Act which require a person to have a licence to conduct these activities. The section also places a duty on every person to prevent the discharge or emission of any pollution into the environment except in accordance with EMA.

The EMA contains provisions on waste management and licences for wastes. According to the Act, waste includes "*domestic, commercial or industrial waste whether in liquid, solid, gaseous or radioactive form which is discharged, emitted or deposited into the environment in such volume, composition or manners as to cause pollution*". Hazardous waste is defined as "*waste which is poisonous, corrosive, noxious, explosive, inflammable, radioactive, toxic or harmful to the environment*". Arguably, these definitions can also indirectly refer to chemicals. The Minister responsible for the environment is empowered to make regulations controlling the management, transportation, treatment, recycling and safe disposal of waste. The EMA also provides that a licence is required to "*handle, store, transport, classify or destroy waste, other than waste*".

4.1.2 Water Resources Act (Cap 72:03)

The aim of the Water Resources Act is to make provision for the control, conservation, apportionment and use of the water resources of Malawi. The Act makes provision for the establishment of a Water Resources Board. There are also provisions relating to pollution control. According to section 16 any person who fouls any public water shall be guilty of an offence. For the purposes of the section the polluting or fouling of public water means the discharge into, or in the vicinity of any matter or substance likely to cause injury whether directly or indirectly to public health, livestock, animal life, fish, crops or gardens which are irrigated by such water or any product in the processing of which such water is used or which is likely to cause a nuisance.

4.1.2.1 The Water Resources (Water Pollution Control) Regulations

The Water Resources (Water Pollution Control) Regulations provide for the control of water pollution discharge of effluent into public water and analysis of water and effluent.

4.1.2.2 The Water Resources (Controlled Water Areas) Order 1993

Section 6 of the Water Resources (Controlled Water Areas) Order 1993 lists prohibited activities in a controlled water area. These activities include "*the carrying out of any agricultural or veterinary activities within 100 m from the body of water…..the discharging of effluent whether industrial or domestic or any other form of waste, whether fluid or solid, into a dam, river or other body of water or a tributary thereof unless authorized in writing ….the application of any pesticides otherwise than in accordance with the specifications and requirements prescribed or approved by the Authority…the carrying out of any industrial process or activity unless authorized in writing by the Authority*". The list of the controlled areas is attached in the first schedule to the Order.

4.1.3 Fisheries Act, 1974 (Cap 66: 05)

The Fisheries Act provides for the prohibition of the acquisition and possession of explosives and poisons for fishing.

4.1.4 Control of Animal Diseases Act, 1967 (Cap 66: 02)

The Control of Animal Disease Act provides for the control of animal diseases.

Legislation on Pesticides and Fertilizers

4.1.5 The Pesticides Act, 2002 (Cap 35: 04)

The Pesticides Act No.12 of 2002 provides for the importation, exportation, manufacture, distribution, storage, disposal, sales, repackaging and use of all pesticides in Malawi. The Act defines a pesticide as "*any substance or mixture of substances intended to be administered on animals, plants, or humans for preventing, destroying or controlling any pest and includes any substance intended for use as a plant growth, regulator, defoliant, desiccant or agent for thinning fruit or preventing the premature fall of fruit, and substances applied to crops either before or after harvest to protect the commodity from deterioration during storage and transport*".

Section 17 of the Pesticides Act stipulates that "*no person shall import, manufacture or sell a pesticide, which has not been registered under this Act*". It further stipulates that an unregistered pesticide may be imported under an import permit issued under Section 20 for the purpose of analysis, registration or research, or under a pest emergency permit issued under Section 52; and manufactured for export in accordance with a licence to manufacture issued under Section 24. This means that only those pesticides that are registered under this Act can be imported or sold without a permit.

Section 34 of the Pesticides Act which is in line with the Occupational Safety, Health and Welfare Act, places the responsibility for the safety, health and welfare of employees, including providing and the requirement that employees use facilities, equipment and clothing conducive to the safe handling of pesticides on the employer.

Section 37 of the Pesticides Act prohibits the disposal of any pesticides container or packaging in a manner that is unduly hazardous to human or animal health or the environment or that is contrary to any written law.

Other important regulatory frameworks containing provisions for management of pesticides include the Pharmacy, Medicines and Poisons Act of 1988 (Chapter 35:01 of the Laws of Malawi) implemented by the Ministry of Health and Population; the Plant Protection Act of 1957 (Chapter 64:01) implemented by the Ministry of Agriculture and Food Security in which fumigants are regulated; the Seeds Act of 1996 (Chapter 67:02) which regulates seed treatment with pesticides; The Occupational Safety, Health and Welfare Act (1997) under the Ministry of Labour which deals with the safety and welfare of employees handling hazardous substances; the Ministry of Industry and Trade in conjunction with the Malawi Revenue Authority, which is responsible for the clearing of imports and exports of all commodities including chemical substances; and the Decentralization Act (2002) which empowers local authorities, City, Town and District Assemblies, to set up appropriate infrastructure for collection, categorizing, recycling and disposal of municipal waste.

4.1.6 Fertilizers, Farm Feeds and Remedies Act, 1997 (Cap 67: 04)

The Fertilizers, Farm Feeds and Remedies Act provides for the control of the sale of fertilizers and feeds.

Legislation on Health and Medicines

4.1.7 The Pharmacy, Medicines and Poisons, 1988 (Cap 35: 01)

The Pharmacy, Medicines and Poisons Act No.15 of 1988 provides for the establishment of the Pharmacy, Medicines and Poisons Board and for the registration and disciplining for pharmacists, pharmacy technologists and pharmacy technicians. The Act refers to 'substances' which are defined as "*any natural or artificial substance, whether in solid or liquid form or in the form of gas or vapour*". The Act also refers to 'medicinal products' which are defined as a substance or article administered to a human being or animal for a medicinal purpose, that is, to treat, prevent, or diagnose disease; for contraception; or to induce anesthesia.

In terms of the Act a license is required for the sale, supply, export, import, or manufacture of any medicinal product except in certain cases.

4.1.8 The Public Health Act, 1982 as amended (Cap 34: 01)

The Public Health Act, 1982 as amended creates the legal framework for the protection of public health in Malawi and provides for powers of the administration to regulate and control issues such as animal and food production and handling, food and water supply and sewerage.

Part 9 deals with sanitation and housing and contains provisions prohibiting nuisances. A nuisance, according to section 62, includes;

- any noxious matter, or waste water, flowing or discharged from any premises, wherever situated, into any public street, or into the gutter or side channel of any street, or into any gully, swamp, or watercourse or irrigation channel not approved for the reception of such discharge;
- any collection of water, sewage, rubbish, refuse, odour, or other fluid or solid substances which are offensive or which are dangerous or injurious to health or which permit or facilitate the breeding or multiplication of animal or vegetable parasites of men or domestic animals, or of insects or of other agents which are known to carry such parasites or which may otherwise cause or facilitate the infection of men or domestic animals by such parasites;
- any factory or trade premises causing or giving rise to smells or effluvia which are injurious or dangerous to health;

Part 10 of the Act provides for the conservation of water, drainage, and sewerage. Part 13 deals with water and food supplies, and contains provisions placing a duty on local authorities to take measures for preventing any pollution dangerous to health, of any supply of water which the public within its district has right to use, and does use for drinking or domestic purposes; and to take measures against any person so polluting any such supply or polluting any stream so as to be a nuisance or danger to health.

4.1.9 Dangerous Drugs Act, 1982 as Amended (Cap 35: 02)

The Dangerous Drugs Act controls the importation, production, possession, sale, distribution, and use of dangerous drugs.

Energy Legislation

4.1.10 Energy Regulation Act, 2004

The Energy Regulation Act, 2004 establishes the Malawi Energy Regulatory Authority to regulate the energy sector, to define the powers and functions of the Authority and to provide for licensing of energy undertakings.

4.1.11 Liquid Fuel and Gas (Production and Supply) Act, 2004

The purpose of the Liquid Fuel and Gas (Production and Supply) Act, 2004 is to provide for production, extraction, conversion, importing, transforming, transporting, storing, distributing and selling liquid fuels and gas in a liberalized market.

Labour and Consumer Rights Legislation

4.1.12 The Occupational Safety, Health and Welfare, 1997 (Cap 55: 07)

The Occupational Safety, Health and Welfare Act of 1997 contains provisions regulating the control, use, handling and processing of chemicals in the workplace, including, hazardous substances.

Section 13(1) places a duty on every employer to ensure the safety, health and welfare of all his employees at work. Section 13(2)(6), requires the employer to make arrangements for ensuring safety, and absence of risks to health, in connection with the use, handling, storage and transportation of articles and substances.

Section 51(1) requires manufacturers, importers and suppliers of hazardous substances used at workplaces, including those in the agricultural section, to provide sufficient information on such substances as well as the precautions to be taken. Section 51(3) requires hazardous substances to be clearly labeled giving their relevant characteristics and instruction on their use. Section 51(4) requires containers of hazardous substances to carry, or be accompanied by, instructions for the safe handling of the contents and procedures to be followed in case of spoilage.

Section 81(7) stipulates that where the use of hazardous chemicals is likely to penetrate the skin and cause rash, skin contact with hazardous chemical shall be avoided and personal hygiene and the type of clothing worn shall be such as to enable rapid removal of any chemical from skin contact.

4.1.13 Consumer Protection Act No. 14 of 2003

The Consumer Protection Act protects the rights of consumers and addresses their interests and needs. Section 4 of the Act places a duty on the Government to make an undertaking to the consumers in terms of policies, laws and administrative measures including the adoption, maintenance and enforcement of standards. The Act provides for a Consumer Protection Council whose mandate is to oversee the enforcement of this legislation.

4.1.14 Malawi Bureau of Standards Act, 1987 (Cap 51:02)

The Act is implemented by the Ministry of Industry and Trade through the Malawi Bureau of Standards (MBS). Its objectives include providing for the testing of locally manufactured or imported commodities with a view to determining whether such commodities comply with the provisions of the Act, the Merchandise Marks Act or any other law relating to standards of quality. Thus, the Bureau inspects, tests, and certifies imports and exports of all commodities including chemicals.

Further, the MBS under section 20 of the MBS Act may by General Notice published in the Gazette, declare any specification or code of practice framed, developed or prepared by the Bureau to be a Malawi Standard and shall in like manner give notice of any replacement or abolition of a Malawi Standard so declared. The Malawi Bureau of Standards has therefore the duty and obligation to develop standards that will prohibit production and use of chemicals.

Table 4A below contains a summary of references to existing legal instruments which address the management of chemicals in Malawi.

Table 4A: References to Existing Legal Instruments, which Address the Management of Chemicals

Legal Instrument (Type, Reference, Year)	Responsible Ministries or Bodies	Chemical Use Categories Covered	Objective of Legislation	Relevant Articles/ Provisions	Enforcement Ranking
Environment Management Act, 1996	Ministry of Natural Resources, Energy and Environment	General	Protection and Management of Environment	Sections 37, 38, 39, 40, 41, 42, 43,44	3
Water Resources Act, 1969	Ministry of Water and Irrigation (Water Resources Board)	Agriculture, Industrial, Domestic and Consumer products	Management of Water Resources	Sect.16,17,	3
The Water Resources (Water Pollution Control) Regulations	Ministry of Water and Irrigation		Management of Water Resources		
The Water Resources (Controlled Water Areas) Order 1993	Ministry of Water and Irrigation		Management of Water Resources		
Fisheries Act, 1974	Ministry of Agriculture and Food Security	Explosives and poisons	Prohibits acquisition and possession of explosives and poisons for fishing	Sections 35, 36, 37	3
Control of Animal Diseases Act, 1967	Department of Animal Health and Industry	Pesticides	Control of animal diseases		2
Pesticides Act No.12 of 2000	Ministry of Agriculture and Food Security , Ministry of Trade and Industry, Environmental	Agriculture and Domestic Pesticides	Control of import, export, manufacture, distribution, storage and disposal of pesticides	Sections 17-24,37,52	3

	Affairs Department				
Fertilizers, Farm Feeds and Remedies Act, 1997	Ministry of Agriculture and Food Security	Fertilizers and Farm Feeds	Controls sale of fertilizers and feeds	Sections 3 a), b), c), d)	3
Pharmacy, Medicines and Poisons Act, Amended 1982	Pharmacy, Medicines and Poisons Board	Pharmaceuticals and poisonous drugs, Cosmetics, Detergents and Household Pesticides	Controls the profession of pharmacy and the trade in drugs and poisons	Sections 20, 21, 22, 23	2
Public Health Act, Amended 1982	Ministry of Health	Pesticides	Prevention of infectious diseases, sanitation and housing, sewerage and drainage	Sections 96, 99, 100, 101, 102	2
Dangerous Drugs Act, Amended 1982	Ministry of Health	Dangerous drugs	Controls the importation, production, possession, sale, distribution, and use of dangerous drugs	Part III, Sec. 11, 12 Part VI, Sec. 13, 12	2
Energy Regulation Act, 2004	Malawi Energy Regulatory Authority	Liquid fuels and gas	Regulates the energy sector	Sections 3-31, 37-39.	2
Liquid Fuel and Gas (Production and Supply) Act, 2004 and Regulations	Malawi Energy Regulatory Authority	Liquid fuels and gas	Provides for production, extraction, conversion, importing, transforming, transporting, storing, distributing and	Sections 4-40, 60-90	2

			selling liquid fuels and gas		
Occupational Safety, Health and Welfare Act, 1997	Ministry of Labour	Industrial chemicals and pesticides	Regulates and controls use, handling and processing of chemicals in the workplace	Sections 66, 67, 68	3
Consumer Protection Act, 2003	Consumer Association of Malawi	Agriculture, industrial, domestic and consumer products	Provides for protection of rights of the consumer	Sect 40,41	3
Malawi Bureau of Standards Act, 1974	Ministry of Industry and Trade	All chemicals		Sect.20	1

Key: Effective (1), Fair (2), Weak (3)

4.2 Summary Description of Key Legal Instruments Relating to Chemicals

Means for making legislation publicly known

There are various methods that are used to make legislation available to the public. The Government Printers Office sells copies of legislation and these are made available to members of the public upon payment. Furthermore, some libraries keep copies of the bound texts and volumes of the Laws of Malawi and members of the public can request to view such legislation at the libraries. The agricultural sector has also used journals and agricultural extension workers to inform people about legislation. The members of the public who have access to the internet can use the internet to access and download legislation.

Other methods that have been used to make legislation available to members of the public include radio and television. Radio is a medium that is used frequently to inform the public about legislation, particularly legislation on agriculture. This information is passed to the public through farmer's education programmes on the radio. Radio is also used to inform the public of consumer protection legislation and environmental issues through various programs that deal with these issues.

Television is also used as a medium to inform the public about legislation on chemicals management. Various shows including discussion programs are shown on television, which inform the public about issues that include consumer rights, environmental issues and pesticides.

The print media through newspapers, journals and magazines is another method used to inform the public about legislation on chemicals management. Some newspapers contain specific

columns that deal specifically with environmental issues and there are even journals dedicated entirely to discussing environmental issues including chemicals management.

Information concerning legislation that affects employers and workers is made known through workshops targeting workers and employers.

The Laws of Malawi have still not been translated into vernacular languages for the benefit of those that cannot read and understand English. A method used to offset this problem is the formulation of suitable explanatory abstracts in vernacular languages.

Brief Description of Administrative Procedures Included Under the Legal Instruments and Management Schemes

Some of the legislation mentioned above refers to some of the administrative procedures used in Malawi. For example some of the legislation requires persons to apply for licences or permits to undertake certain activities. When applying for such licences, the persons are required to submit relevant information to the issuing authority on the kind of activity that will be undertaken.

In the industrial sector, chemical users are advised to request for Material Safety Data Sheets from the suppliers and to have containers clearly and properly labeled. Efforts have been made to take corrective measures through routine workplace inspections during which workers are taught the meaning of symbols among other safety measures.

In the agricultural sector, the Department of Agricultural Research Services has consulted recognized pesticides dealers and made efforts to ensure the following:

- proper and affordable packaging materials;
- properly labeled packages with instructions in a manner that can be understood by the user

The types of management schemes that have been used in Malawi include registration of pesticides and licencing and permitting schemes. For example, the PCB has established a process that must be followed currently if an industry wants to import a pesticide into Malawi. If a pesticide is one which has never been used in Malawi it is not allowed in Malawi unless it is registered. To be registered a pesticide must undergo tests. A dossier is prepared which contains information on the chemical such as its uses, sources, environmental impact and toxicological information. Samples of the pesticide are then taken and sent to the Board which also considers which other countries within the region are using the chemical. If the pesticide is a new product the PCB advocates trial by a research institute for a minimum period of three years. The results of the trial are then sent to the PCB. If the pesticide is an old product which was used before but has different concentrations or has changed, the PCB advocates efficacy trials for a season. The results of the efficacy trials are sent to the PCB.

Mechanisms to Monitor Implementation Procedures

The various pieces of legislation mentioned above lay down specific audit procedures and reporting requirements. For example, section 27 of the EMA requires the developer to keep records and deliver reports to the Director of Environmental Affairs when required to do so. Section 28 of EMA empowers the Director of Environmental Affairs to take such measures as are necessary for ensuring implementation of any project commenced before the entry into force of the Act complies with the provisions of EMA.

Existing Databases Created as a Result of such Instruments

Various institutions maintain databases for legal instruments. The PCB, for example, has a database of registered pesticides.

Provisions for Protection of Proprietary Information

EMA makes reference to "proprietary information" which is defined as "*any proprietary information protected by law or by any international treaty or convention to which Malawi is a party*". Section 52(2) of EMA states that "*no person shall be entitled to have access to proprietary information (to which the Trade Mark Act or the Patents Act applies) submitted to or received by the Director under this Act unless with the prior written consent of the owner of the proprietary information.*"

The Patents Act No. 13, cap. 49:02 and the Trade Marks Act No. 14, cap. 49:01 provides for the protection of proprietary information.

4.3 Existing Legislation by Use Category Addressing Various Stages of Chemicals from Production/Import to Disposal

Chemicals management falls under various ministries and departments. Find below Table 4.B which provides a strategic overview of the legal instruments that regulate each stage of chemicals from production to disposal.

Table 4.B: Overview of Legal Instruments to Manage Chemicals by Use Category

Category of Chemical	Import	Production	Storage	Transport	Distribution/ Marketing	Use/ Handling	Disposal
Pesticides (agricultural, public health and consumer use)	*	-	*	*	*	*	*
Fertilizers	*	*	*	*	*	*	-
Ind. Chemicals (used in manufacturing/	*	-	*	*	*	*	*

processing facilities							
Petroleum products	*	-	*	*	*	*	*
Consumer Chemicals	*	*	*	*	*	*	-
Chemical Wastes	-	*	*	*	-	*	*

Key: * = legal instruments exist, - = legal instruments do not exist

4.4 Summary Description of Key Approaches and Procedures for Control of Chemicals

In Malawi, chemicals management is fragmented. Different ministries and departments are responsible for different aspects of chemicals management. However, there is no coordination on chemicals management. The Pesticides Control Board is mandated to deal exclusively with pesticides, however in Malawi there is no specific body, ministry or department that has been mandated to manage chemicals.

Table 4C below contains a summary of Severely Restricted Chemicals.

Table 4C: Severely Restricted Chemicals

Name of Chemical	Level of Restriction (ban (B) or Severe Restriction (SR)	Details of restriction
DDT*	B	Persistence in environment and health hazard
Chloroform	SR	Carcinogenic, Ozone Depletion
Dieldrin and Aldrin		Persistence in environment and health hazard
Thiodan	B	Residue in Plant which can poison humans
Tamaton	B	Residue in Plant which can poison humans
Methyl Bromide	B	Very Persistent
Aldo Aldicarb (Temik)	SR	Highly Toxic
Phosphine	SR	Highly Toxic
Arsenic	B	Stays longer in the soil. Difficult to manage.
Sulphate of Ammonia	SR	Acidifying soil.
PCB in transformer Oil	SR	Transformer oil must not contain more than 50ppm
Sulphuric Acid (100-400 l)	SR	Precursor used in the illicit

		manufacture of cocaine
Ascetic Anhydrine (100-400 l)	SR	Precursor used in the illicit manufacture of cocaine
Petroleum Permanganate (20kg)	SR	Precursor used in the illicit manufacture of cocaine and heroin
Acetone, Hydrochloric acid	SR	Precursor used in the illicit manufacture of cocaine and heroin hydrochloride
Phenylacetic acid (400kg)	SR	Precursor used in the illicit manufacture of Amphetamines
Ephedrine/Pseudoephedrine (150kg)	SR	Precursor used in the illicit manufacture of Metamphetamines
Ergotamine (5kg)	SR	Precursors of substances of abuse. Lysgic Acid-LCD
Anthromic Acid Powder	SR	Precursors of substances of abuse -Methaqualone

*Use of DDT is allowed for Disease Vector Control

4.5 Non-regulatory Mechanisms for Managing Chemicals

Malawi has put in place non-regulatory mechanisms for managing chemicals. These include;

- Voluntary mechanisms by the Pesticide Suppliers Association of Malawi (PSAM): This mechanism involves training of extension staff, farm hands and supervisors in the safe and effective use of all agrochemicals. The main objective is to ensure that pesticides are stored, transported, used and disposed of safely by following all recommended safety practices. The Association is responsible for implementation in coordination with government and private estates. So far, farm supervisors have been trained to deal with pesticides in coffee, tea and some tobacco estates. Plans are underway to conduct similar courses in the smallholder sector starting in the cotton growing areas.

- Voluntary Mechanisms for the industry: Legal instruments mainly target industries, as these are major users of chemicals. Much as industries are governed by statutory requirements, non-regulatory mechanisms for safe usage of chemicals exist within their set-up. The following are some of the initiatives adopted by the industry:
    - provision of in-service training to workers on the safe use of chemicals;
    - formation of safety committees to look into matters of occupational safety, health and welfare which includes chemical safety;
    - formation of umbrella organisations mandated to coordinate policy issues related to safety and health;

- formation of bipartite fora to develop measures for proper management of chemicals without risking efficiency; and
- introduction of incentive schemes for voluntary compliance.

4.6 Regulatory Instruments for Related Activities which Impact on Chemicals Management

There are many areas of legislation that are not specifically concerned with chemicals directly but which may have an important impact on life cycle management of chemicals. These include:

4.6.1 The Explosive Act, 1968 (Cap 14: 09)

The Explosives Act regulates and controls the acquisition, manufacture, sale and use of explosives. The Act falls under the management of the Department of Mines. Sections 6, 7 and 8 of the Act are particularly relevant to chemicals management.

4.6.2 Customs and Excise Act, 1968 (Cap 42: 01)

The Customs and Excise Act provides for the administration, management and control of customs and excise, the imposition and collection of customs duty. Part IV is relevant to chemicals management.

4.6.3 The Road Traffic Act, 1997 (Cap 69: 01) and Road Traffic (Carriage of Hazardous Cargo) Regulations of 2000

The Road Traffic Act provides a legal framework for the road transport industry. Under this Act, the Directorate of Road Traffic is charged with the responsibility to administer regulatory provisions governing motor vehicle administration, driver licensing administration, operator authorization and permit control and other issues related to traffic management control. The Directorate's authority is further derived from the provisions of the National Transport Policy Document (November 2000). Parts I, II, III, IV, V, IV are relevant.

The Road Traffic (Carriage of Hazardous Cargo) Regulations of 2000 apply to the carriage or conveyance of hazardous cargo in or on a vehicle along a public road and the loading and unloading of hazardous cargo on or from a vehicle. The Regulations define hazardous cargo as explosives, motor spirit, acid, any gas which is under pressure and likely to explode if exposed to heat and any gas which is poisonous. The Regulations place an obligation on persons engaged in the conveyance of hazardous cargo to observe every reasonable precaution for preventing fire, explosion or other damages to persons or property and lays down specific provisions for handling the different types of hazardous cargo being conveyed.

4.6.4 The Public Roads Act (Cap 69: 02)

The Public Roads Act (Cap 69.02) deals with all matters relating to public roads, construction and maintenance.

4.6.5 The Roads Authority Act of 1997

The Roads Authority was established by the Road Authority Act of 1997. Among its core values is to ensure compliance with environmental and road safety regulations. The Environmental and Social Management Unit was established within the Roads Authority with the mandate of integrating environmental issues into road sector activities. The Unit collaborates with the Environmental Management Task Force in promoting environmental planning and management in Road Infrastructure Development. To this end, the Roads Authority has produced Environmental and Social Management Guidelines in the Road Sector (2007), and Draft Environmental Review Guidelines and Best Practices in the Malawi Road Sector.

Land Legislation

4.6.6 The Registered Land Act (Cap. 58: 01)

The Malawi Registered Land Act was enacted in 1967 and was amended by the Registered Land Amendment Act 1970 and the Adjudication of Title Act 1971. It established a complete code of property law, which provides the machinery for registration as well as all that is considered necessary for the practical needs of land owners in regard to security and proof of title, and the creating and transfer of interest in land. It is not purely procedural but also provides the substantive law needed for land dealing. This replaces the archaic and often complicated provisions of the English land law applicable to unregistered land. The Act specifically provides for the respective rights and remedies of the borrower and lender, and of the lessor and lessee.

The Registered Land Act became operational in 1972 when the first land registry was opened in Lilongwe to deal primarily with land titles in the Lilongwe Land Development Programme area. This area covered over a million acres of land held under customary tenure. At the end of 1981, over one quarter of the area was registered under the provisions of the Registered Land Act.

In 1974, the application of the act was extended to the capital city area in Lilongwe, where the capital city of Lilongwe land registry was established, covering a registration district of approximately 87 square miles at present. The Act falls under the Ministry of Lands, Housing and Surveys.

http://www.unu.edu/unupress/unupbooks/80604e/80604E09.htm

4.6.7 Adjudication of Title Act (Cap. 58: 05)

In 1971, the Adjudication of Title Act was passed. The objects of the act are to provide for the adjudication of rights and interests in land, other than customary land, and to enable such adjudicated titles over land to be entered in the land register established under the provisions of the Registered Land Act. The adjudication of such documentary titles over land, not being customary land, is a part of the process of the conversion from deeds registration to registration of titles. The Act falls under the Ministry of Lands, Housing and Surveys.

http://www.unu.edu/unupress/unupbooks/80604e/80604E09.htm

4.6.8 Customary Land (Development) Act, 1967 (Cap. 59: 01)

Almost the whole procedure and administrative provisions, including the declaration of areas, appointment of officers, notices, and so on, of the above-mentioned act and the Adjudication of Title Act are virtually identical except for the appointment and functions of the land committees. Further, the word "allocation" is used in substitution for "adjudication" in order to emphasize the redistributive rather than the adjudicative aspect of the proceedings. The emphasis is also on development, as the title of the act indicates, rather than adjudication. The act gives full power for the redistribution of land, but in practice the allocation process is based on the land which was previously used under custom. The Act falls under the Ministry of Lands, Housing and Surveys.

http://www.unu.edu/unupress/unupbooks/80604e/80604E09.htm

4.6.9 Local Land Boards Act, 1967

There is only one local land board at present in Malawi. This deals with all land matters arising within the Lilongwe Land Development Programme under the Customary Land Development Act.

The land board deals with matters such as applications to change the family representative, boundary disputes, complaints about non-authorized cultivation of family land, and inspection of newly completed demarcation maps.

The issue of title to the small land owners creates a danger of agricultural indebtedness and also subjects them to all manner of unscrupulous transactions. The act is to protect the landowners and also the land from dealings which may adversely affect its use. These considerations are taken into account by the land board when considering applications for consent. The Act falls under the Ministry of Lands, Housing and Surveys.

http://www.unu.edu/unupress/unupbooks/80604e/80604E09.htm

4.6.10 The Local Government Act (1998) (Chapter 22:01).

The Act allows cities and district assemblies to promulgate by-laws, particularly solid waste management by-laws. Subsequently, local authorities have personnel involved in promoting and safeguarding public health through the enforcement of the Public Health Act of 1944. However, there is need for provision of appropriate infrastructure for collection, categorizing, recycling and disposal of municipal waste as well as trained personnel for categorizing, recycling and disposal of municipal waste compounds efficiently.

4.6.11 Town and Country Planning Act (Cap. 23: 01)

This Act controls development in urban and rural areas, the acquisition of land, and compensation due to use of land. The Act falls under the under the Ministry of Lands, Housing and Surveys.

4.6.12 The Land Survey Act (Cap 59:03)

In terms of this Act, before any survey is done in accordance with the provisions of the Land Survey Act (Cap.59:03) it is usual practice to carry out preliminary investigations involving demarcation and/or the preparation of sketch plans. That procedure is, in any case, required in respect of all land to which either the Adjudication of Title Act (Cap.58:05) or the Customary Land (Development) Act (Cap.59:01) applies. In either case demarcation involves preliminary survey of land to be adjudicated or allocated and in particular, the determination of boundaries thereof, adjustment of those boundaries, reallocation (where necessary) of parcels between different claimants, resolution of incidental disputes, reservation of land for public purposes, and the preparation of a demarcation map.

The Department of Surveys, under the Ministry of Lands, Housing and Surveys, provides a service for cadastral surveys on public and customary land mostly where government issues leases on land in these two categories. It is a statutory requirement that land be surveyed before title can be granted. Survey requests for public and customary land normally come through the Department of Lands, although some private landholders have asked the Department of Surveys to carry out surveys on their freehold land because the rates are cheaper than those charged by the private sector.

nacal.nibr.no/.../Saidi+Commission+Volum+I+Main+Report.pdf

4.6.13 Building regulations

Malawi currently does not have National Building Regulations. However as mentioned above the Malawi Bureau of Standards formulates national standards (Malawi Standards) in all fields of interest. The standards act as a base or guideline for measuring the quality, performance or fitness for intended use of a product or service.

The formulation of standards is done through Technical Committees (TCs) which are made up of representatives from the industry, government ministries and departments, professional organizations and bodies, among others. The Standards Development Department provides the secretariat for these committees. These TCs are grouped under three divisions including the Engineering and Materials Division. The TCs under this division are responsible for the development of standards covering civil, electrical and mechanical engineering, information technology, renewable energy, building materials, etc.

4.6.14 Environmental quality control

4.6.15 Environmental Impact Assessment Guidelines

The purpose of these Guidelines for Environmental Impact Assessment (EIA) in Malawi is to facilitate compliance with Malawi's EIA requirements by Government, project developers, donors and the general public. The guidelines help to integrate environmental concerns in

national development and will be applicable to all types of projects, in the public and private sectors, for which EIA studies may be or are required.

http://www.saiea.com/calabash/html/Malawi.html

4.6.16 EIA Process, Roles and Responsibilities

The EIA process is managed by the Director of Environmental Affairs in the Environmental Affairs Department. EIA requirements apply to both public and private-sector development projects, which are, prescribed under Section 24 of the Environment Management Act (EMA) and listed in Appendix B of the Guidelines.

As provided for in Section 26 of the EMA, a prescribed project cannot receive the required authorization to proceed from the relevant licensing authorities unless and until the Director has issued a certificate stating that an EIA is not required or, on the basis of an EIA report he/she has approved the project. Under the EMA, the Director is empowered to require changes to a project to reduce its environmental impact and to reject a project if, in his/her view, it will cause significant and irreparable injury to the environment. Decisions of the Director may be appealed to the Environmental Appeals Tribunal (EAT), established under Section 70 of the EMA.

http://www.saiea.com/calabash/html/Malawi.html

4.7 Comments/ Analysis

There is no single legislation dealing specifically with chemicals, and the management of chemicals. Legislation dealing with different aspects of chemicals is fragmented and uncoordinated. There are overlapping functional responsibilities among the various institutions, and the lack of coordinating mechanisms means that cross-sectoral environmental issues, such as chemicals, are not effectively managed.

The draft legislation on Environment Management that is currently being prepared in Malawi does not specifically deal with chemicals. However, the draft legislation will have relevance on chemicals management in Malawi. In order to narrow the gap between the degradation of the environment and natural resources on one hand and sustainable production and economic growth on the other, the Ministry of Natural Resources, Energy and Environment decided to review the Environment Management Act in order to make it more responsive to effective environment and natural resources management.

There is a need to carry out a feasibility study to deal with chemicals management.

Chapter 5: Ministries, Agencies and Other Institutions Managing Chemicals

5.1 Responsibilities of Government Ministries, Agencies and Other Institutions

Management of chemicals in Malawi rests with various government institutions depending on their respective mandates. This is done to ensure that chemicals do not negatively affect human beings and the environment. Major instruments applied to achieve this objective include legislation, guidelines, policies and other measures.

These institutions are involved in chemicals management at various stages of the chemicals lifecycle ranging from production, importation, transportation, distribution, marketing, use/handling, storage as well as disposal. There are however, specific ministries that ensure that there is minimal damage to the environment from chemicals. These include Ministries responsible for Environmental Affairs, Agriculture and Food Security, Irrigation and Water Development, Labour, Health and Local Government.

Table 5.A below provides a general overview of ministries in Malawi with their respective responsibilities and roles related to chemical management for each stage of the chemical life cycle.

Table 5.A: Responsibilities of Government Ministries, Agencies and Other Institutions

Stage of Life-Cycle	**Importation**	**Production**	**Storage**	**Transport**	**Distribution / Marketing**	**Use / Handling**	**Disposal**
Ministry concerned							
Environment							
Health	X	X	X		X	X	X
Agriculture	X	X	X	X	X	X	X
Labour			X	X		X	
Industry and Trade	X						
Finance(Customs)	X						
Transport							
Internal Affairs				X			
Water & irrigation	X		X	X		X	X
Justice							
Foreign Affairs							
Mines	X		X	X	X	X	X
MBS						X	
Local Government							X

Key: “X” = institution has a role to play, “blank” = institution does not have a role to play

Table 5B below is a summary of the responsibilities of other institutions involved in Chemicals Management.

Table 5B: Responsibilities of Other Institutions involved in Chemicals Management

Stage of Life-Cycle	**Importation**	**Production**	**Storage**	**Transport**	**Distribution/ Marketing**	**Use/Handling**	**Disposal**
Institution concerned							
MERA	X		X-	X	X	X	-X
PCB	X		X			X	X
PMBP	X		X		X	X	X

Key: "X" = institution has a role to play, "blank" = institution does not have a role to play

5.2 Description of Ministerial Authorities and Mandates

Various ministries and institutions are mandated by law to perform different duties as regards chemicals management. A brief overview of functions of specific institutions is provided below:

5.2.1 Ministry of Agriculture and Food Security

The Ministry of Agriculture and Food Security provides advisory services in the use of fertilizers and pesticides with regard to efficient usage for farmers to maximize crop yields. In the case of pesticides, the Ministry in conjunction, with farmers jointly conducts sprays for migratory pests such as locusts and army worms. For non-migratory pests, farmers are informed of their control through training sessions, posters, radio and pamphlets in local languages.

5.2.2 Ministry of Industry and Trade

This Ministry is responsible for the promotion of both internal and external trade. Apart from other functions it is responsible for the administration of the Control of Goods Act, 1968 which regulates importation and exportation of certain goods including chemicals.

5*.2.3 Malawi Energy Regulatory Authority (MERA)*

Malawi Energy Regulatory Authority is a parastatal organization responsible for the importation and distribution of various petroleum products into the country i.e. Petrol, Diesel, Paraffin, greases, Jet M and Avgas.

5.2. 4 Local Authorities

The Ministry of Local Government is responsible for local authorities. Local Authorities refer to City, Municipal, Town and District Councils. These organizations offer a range of services within their areas of jurisdiction. Among the services offered under the Local Government Act and waste bye-laws is the control and management of wastes.

5.2.5 Ministry of Labour

This Ministry is responsible for the administration and enforcement of the provisions of Occupational Safety, Health and Welfare Act, 1997 through the Occupational Safety and Health Directorate. The legislation is aimed at protecting workers against occupational accidents and diseases. This is promoted through systematic and ad hoc inspections of all - workplaces.

5.2.6 Ministry of Health and Population

This Ministry provides preventive health and medical services. In preventive health care, pesticides are used for the control of vectors such as mosquitoes for malaria control. The Ministry through the Pharmacy, Medicines and Poisons Board regulates traders in medical products and raw materials in the field of pharmacy in Malawi.

5.2.7 Malawi Bureau of Standards

The Bureau is mandated to promote standardization in industry and commerce through preparation of modification, amendment of specification and codes of practice. The Bureau also provides facilities for testing and calibration of precision of instruments, gauges and scientific apparatus. In particular the Bureau makes sure that imports, exports and use of chemicals are done according to the standards through the testing and issuing of certificates before the chemicals reach the user.

5.2.8 Ministry of Justice

The Ministry of Justice is responsible for the provision of legal services to all government ministries and departments. Apart from other functions such as conducting criminal prosecutions; provision of legal aid to the public; administration of deceased estates; and registration of companies, births and deaths; the main functions of the Ministry in relation to chemicals management pertain to its responsibility to provide legal advice to, and to draft legislation, regulations and agreements on behalf of all government institutions. To that end, the ministry is directly involved in the provision of legal services at different stages of chemicals management to institutions such as Pesticides Control Board, Ministry of Agriculture and Food Security, Environmental Affairs Department and Ministry of Labour just to mention a few.

5.2.9 Ministry of Natural Resources, Energy and the Environment

The Ministry is composed of the following; Environmental Affairs Department, Mines Department, Forestry Department, Climate Change and Meteorological Department and Geological Surveys Department.

This Ministry, through Environmental Affairs Department, has responsibility to promote sustainable, social and economic development through the sound management of the environment. The above responsibility is implemented through the Environment Management Act (EMA) 1996. The Act provides for the creation of regulations on all aspects of environmental management including chemicals and waste management.

Mines Department and Geological Surveys have the responsibility, amongst other things, to manage chemicals used in mineral exploration and processing.

5.3 Comments/Analysis

Management of chemicals in Malawi is characterized by a fragmented legal and institutional framework, whereby there is no institution or legislation with an overarching mandate over all aspects of chemicals management. Consequently, though it is always clear which ministry or institution is responsible for fulfilling mandates set out in legal instruments, oversight over chemicals management by the institutions is inadequate and inefficient because institutional mandates are narrow and limited. The Malawi Energy Regulatory Authority has responsibilities in disposal of chemicals under its mandate, but so far nothing has been done in that respect.

Even where specific mandate exists, most institutions fail to enforce the laws adequately and efficiently due to lack of infrastructure and human resources, lack of central coordination, inadequate funding, and inadequate remuneration to attract/retain qualified staff, poor administration, lack of monitoring equipment and weak penalties.

Chapter 6: Relevant Activities of Industry, Public Interest Groups and Research Sector

There are various activities and programmes being conducted by non-governmental bodies and entities which support the national efforts to manage chemicals. Expertise outside Government and in quasi government exists to support national efforts to manage chemicals. The available expertise however, is varied and not registered. Most of it lies in universities, research institutions, professional and industrial organizations, NGOs and private sector.

6.1 Description of Organization/Programmes

The available professionals and industrial organizations involved in chemicals management in their various capacities are nationally spread as follows:

6.1.1 University of Malawi

The University of Malawi through its constituent colleges is involved in the provision of academic studies related to chemicals. Laboratory facilities are available for practical sessions and research. Contact addresses are as listed below:

Head of Chemistry Department
Chancellor College
P.O. Box 280
Zomba
Telephone: +265 (0) 1 522 222
Fax: +265 (0) 1 522 046

Head of Basic Sciences Department
Bunda College
P.O. Box 2l9
Lilongwe
Telephone: +265 (0) 1 277 222
Fax: +265 (0) 1 277 364

Head of Environmental Science and Technology
The Polytechnic
Private Bag 303
Chichiri
Blantyre 3
Telephone: +265 (0) 1 870 411
Fax: +265 (0) 1 870 578

The College of Medicine
Private Bag 360
Chichiri

Blantyre 3
Telephone: +265 (0) 1 871 911

6.1.2 Research Institutes

Agriculture Research Institutes

The overall objective of agricultural research institutes in Malawi is to plan and conduct applied or production-oriented research that will generate information and technologies which can be directly utilized by estates and smallholder farmers to solve their technical production problems. They provide information and technologies that minimize production risks and the deterioration of natural resources, including that from chemicals.

Chitedze Research Station
P.O. Box 158
Lilongwe
Telephone: +265 (0) 1 707 222
Fax: +265 (0) 1 707 041

Bvumbwe Research Station
P.O. Box 5748
Limbe
Telephone: +265 (0) 1 606 802

Makoka Research Station
Private Bag 19
Thondwe
Telephone: +265 (0) 1 535 304

Lunyangwa Research Station
P.O. Box 59
Mzuzu
Telephone: +265 (0) 1 310 016
Fax: +265 (0) 1 310 687

Forestry Research

Forestry Research Institute of Malawi (FRIM)

This research institute is responsible for conducting forestry-related research. The research involves studies on seed germination, tree propagation, tree feed improvement, breeding and plantation management.

Forestry Research Institute of Malawi
P.O. Box 270
Zomba

Telephone: +265 (0) 1 524 866

Tobacco Research

Agricultural Research and Extension Trust (ARET)

This institution concentrates its activities in tobacco research and management, although it has recently diversified into livestock and farm mechanisation.

Agriculture Research Extension Trust (ARET)
P. O. Box 9
Lilongwe
Telephone: +265 (0) 1 761 148
Fax: +265 (0) 1 761 615
Email: aret@malawi.net

Tea Research

Tea Research Foundation of Central Africa (TRF)

The TRF is a non-profit organization that is mainly funded by the Tea Associations of Malawi and Zimbabwe. It conducts research in tea, coffee and other plantation tree crops in Malawi, Zambia, South Africa and Zimbabwe.

Tea Research Foundation of Africa
P.O. Box 51
Mulanje
Telephone: +265 (0) 1 467 293
Fax: +265 (0) 1 467 209
Email: trfca@africa-online.net

6.1.3 Other Institutions

Malawi Bureau of Standards

The Malawi Bureau of Standards is mandated to promote standardization of commodities and of their manufacture, production, processing or treatment; and further to deal with any matters connected with standardization. Specifically, MBS objectives are:

- To promote standardization in industry and commerce;
- To prepare, frame, modify or amend specifications and codes of practice;
- To make arrangements or provide facilities for the testing and calibration of precision instruments, gauges and scientific apparatus for the determination of their degree of accuracy by comparison with standards approved by the Minister on the recommendation of the Board, and for issue of certificates in regard thereto;

- To make arrangements or provide facilities for the examination and testing of commodities and any material or substance from or with which they may be manufactured, produced processed or treated, and of the manner in which this may be done;
- To provide for co-operation with the representatives of any branch of industry, ministry, government department, local authority or any statutory corporation or with any person with a view to bringing about standardization in connection with commodities;
- To provide for the testing of locally manufactured or imported commodities with a view to determining whether such commodities comply with the provisions of the Standardization Act or any other law relating to standards of quality.

Malawi Bureau of Standards
P.O. Box 946
Blantyre
Telephone: +265 (0) 1 870 488
Fax: +265 (0) 1 870 756
Website: www.mbsmw.org

Malawi Industrial Research and Technology Development Centre (MIRTDC)

This Center was established under the Ministry of Industry and Trade to be the Malawi focal point for technology development and transfer, including that of chemicals. Its main objectives are:

- To conduct industrial research in the areas of testing, analysis and evaluation of raw materials and intermediate products;
- To carry out technical investigations to improve the quality of finished products and increase process efficiency;
- To conduct development work in the areas of new and indigenous technological processes for new products;
- To provide technical information services on local, regional and international sources of technical consulting services, suitable technologies, testing and research and development facilities and other relevant information; and
- To conduct, identify and appraise technological needs.

Malawi Industrial Research and Technology Development Centre
P.O. Box 357
Blantyre
Telephone: +265 (0) 1 823 805
Fax: +265 (0) 1 834 446
Email: mirtdc@malawi.net

Central Veterinary Laboratory

The laboratory is involved in research and development, and specializes in toxicological analysis to check for poisoning of human beings and animals.

Central Veterinary Laboratory
P.O. Box 527
Lilongwe
Telephone: +265 (0) 1 766 341

Central Water laboratory

The Central Water Laboratory is a government-owned facility mandated to carry out testing of water quality to ascertain safety for drinking. Other functions include monitoring water pollution levels arising from various activities including that from chemicals, giving technical advice to various organizations on water quality and pollution related-issues, and training of personnel from water suppliers on water treatment.

Central Water Laboratory
Private Bag 390
Lilongwe 3
Telephone: +265 (0) 1 755 572
Fax: +265 (0) 1 774 737

6.1.4 Public Interest Group

Malawi Congress of Trade Unions (MCTU)

Malawi Congress of Trade Unions is an umbrella organization embracing all representatives of workers with the aims of promoting, protecting, uniting and strengthening human rights standards and social welfare of workers at the work place. The organization, amongst others, assists in policy formulation relating to chemicals management. MCTU organizes and secures support to prevent social and economic exploitation of workers, as well as conducting civic education, social and communal welfare activities in order to safeguard and advance the economic security and social welfare of all people of the country in general and workers in particular.

Malawi Congress of Trade Unions (MCTU)
P.O. Box 1271
Lilongwe
Telephone: +265 (0) 1 755 614
Fax: +265 (0) 1 752 162

Employers Consultative Association of Malawi (ECAM)

This is an organization representing employers whose objective is to provide leadership and guidance on employment, labour and social policy in Malawi.

Employers Consultative Association of Malawi
P.O. Box 2134
Blantyre

Telephone/Fax: +265 (0) 1 830 151
Email: ecam@malawi.net

Wildlife and Environmental Society of Malawi (WESM)

The mission of Wildlife and Environmental Society of Malawi is to create awareness and action on environmental issues at all levels of society and to influence government policy and action in areas of community participation, environmental education and the management of natural resources, including chemicals management.

Wildlife and Environmental Society of Malawi
P.O. Box 578
Limbe
Telephone: +265 (0) 1 843 502
Fax: +265 (0) 1 843 765
Email: wesm-hq@africa-online.net

Coordination Union for the Rehabilitation of the Environment (CURE)

The Coordination Union for the Rehabilitation of the Environment's mission is to assist NGOs enhance the impact, gender equity, and sustainability of community based natural resource management interventions through capacity building, coordination, information exchange and advocacy by providing technical support and improving networking amongst NGOS, the Government, Donors and other organizations or individuals working in the area of environment.

CURE
P.O. Box 2916
Blantyre
Telephone/Fax: +265 (0) 1 845 757
Email: cure@sdnp.org.mw

Consumer Association of Malawi (CAMA)

Consumer Association of Malawi works hand in hand with the Malawi Bureau of Standards and its main focus is on consumer safety and fair practices.

Consumer Association of Malawi
P. O. Box 5992
Limbe
Blantyre
Telephone/Fax: +265 (0) 1 844 639
Email: camamalawi@hotmail.com

6.2 Summary of Expertise Available Outside of Government

Table 6.A below summarizes the expertise available outside of Government

Field of Expertise	Research Institutes	Universities	Industry	Environmental/ Consumer Groups	Labour Unions	Professional Organizations	Others (Faith Based Groups)
Data collection	X	X	X	X	X	X	X
Testing of chemicals	X	X	X			X	X
Risk Assessment	X	X	X	X		X	X
Risk Reduction	X	X	X	X	X	X	X
Policy Analysis	X	X	X	X	X	X	X
Training and Education	X	X	X	X	X	X	X
Research on Alternatives	X	X	X	X	X	X	X
Monitoring	X	X	X	X	X	X	X
Information to Workers	X	X	X	X	X	X	X
Information to the Public	X	X	X	X	X	X	X

From the table above, it is noted that research institutes, universities, industry and to a larger extent, the labour unions have expertise in the various practices including data collection, risk assessment, risk reduction, training and education, research on alternatives, monitoring, information to workers and information to the public. The labour unions also indicated that they had expertise in policy analysis, while the environmental/consumer groups indicated that they only had expertise in the fields of disseminating information to workers and the public.

6.3 Comments/Analysis

Non-Governmental Organizations (NGOs) play a very important role in managing programmes that aim at reducing impacts of improper handling and management of chemicals through enhancing education and raising awareness among the public. NGOs help in facilitating development and implementation of policies, programmes and action plans including advocacy roles through their advocacy programmes.

NGOs in Malawi fall generally into three categories of faith-based institutions, sector-specific institutions, and those having a broad mandate handling various thematic areas. The latter are often international NGOs based in Malawi or those having local affiliates. The development of NGOs of Malawi origin in the area of chemicals and waste management is still minimal. Some NGOs however, are familiar with chemicals management programmes because they were involved in the implementation of the enabling activities programmes for the development of a national implementation plan for the management of Persistent Organic Pollutants (POPs) in Malawi in 2005.

It has been established from the study that some of the non-governmental entities have long been advocates of chemicals management programmes. They have been involved in Decentralized Environmental Management (DEM) and Community Based Natural Resource Management (CBNRM) programmes. These are two key concepts in the environment and natural resources

management (ENRM) sector, which put emphasis on working with communities in implementing programmes and projects. Working with communities as their core clients, these NGOs have striven to address the challenge to balance sustainable use of chemicals for improved livelihoods and exercising community responsibility for sound chemicals and waste management, especially in the agricultural sector. NGOs are well leveraged to stimulate change, because they work directly with communities. Their role will become valuable at implementation level particularly with regard to building district and community level capacity and skills in chemicals management.

The NGOs, in assisting the government in the implementation of chemicals and waste management programmes, have defined five core strategic areas of focus: capacity building services to strengthen community structures and organizations in the area of chemicals and waste management, provision of technical chemicals and waste management skills services, the networking of communities to external development agencies on chemicals and waste management programmes and assistance to channel resources to fund community activities in the area of chemicals and waste management.

The Malawi Government has the responsibility of developing chemicals and waste management codes for the private sector. However, there are weak monitoring mechanisms or incentive packages to ensure compliance with the Environment Management Act codes of conduct including those dealing with chemicals and waste management.

The Government of Malawi continues to consolidate its co-operation with the private sector and fosters the establishment of venture capital funds for sustainable development projects and programmes in chemicals and waste management through the POPs enabling activities programme, among others. The private sector cooperates with Government in ensuring sustainable management of the environment and is encouraged to support small and medium-scale entrepreneurs engaged in waste and chemicals management for sustainable development activities as it continues to participate in procurement, marketing and use of various chemical substances for the development of the agriculture and construction sectors.

Chapter 7: Inter-ministerial Commissions and Coordinating Mechanisms

7.1 Inter-ministerial Coordinating Mechanisms

There are various inter-ministerial commission and coordinating mechanisms that have been established with the mandate of dealing with the management of specific chemicals. These mechanisms are in the form of boards, councils and technical committees. Membership is from government, private sector and the civil society. Their functions range from management and control of pesticides, pharmaceuticals and poisonous drugs, and policy guidance among others. Below in Table 7.A is a summary of the inter-ministerial coordinating mechanisms in Malawi.

Table 7.A Inter-ministerial Commissions and Coordinating Mechanisms

Name of Mechanism	Responsibilities	Secretariat	Members	Legislative Mandate / Objective	Coordinating mechanisms
Pesticides Control Board	Control and management of all pesticides in Malawi	Registrar of Pesticides Control Board	Environmental Affairs Department, Agricultural Research Service, Dept. of Animal Health & Livestock Development, Ministry of Health, Malawi Revenue Authority, Malawi Bureau of Standards, Ministry of Industry and Trade, Consumers Association of Malawi, Malawi Police Services , Agriculture Research Extension Trust, Farmers	Provides for importation, exportation, manufacture, distribution, storage, disposal, sales, repackaging and use of all pesticides in Malawi	

			Union of Malawi, Croplife Malawi, Bunda College, Illovo Sugar, Ministry of Justice, National Smallholder Farmers' Association of Malawi, Pharmacy, Medicines &Poisons Board		
Pharmacy, Medicines and Poisons Board	Management of pharmaceuticals and poisonous drugs	Registrar of Pharmacy, Medicines and Poisons Board,	Ministry of Agriculture and Food Security, Ministry of Health and Population, Pharmacy Association, Central Medical Stores, Medical Council of Malawi, representative from veterinary surgeons, representative from Nurses and Midwives	Registration and control of pharmaceuticals and poisonous drugs	
National Council for the Environment	Ensure integration of environmental consideration in socio-economic development.	Environmental Affairs Department	secretary for the Office of the President and Cabinet, Principal Secretaries for all ministries responsible for defence, justice, tourism,	Protection and Management of environment	

			gender, agriculture & food security, Industry and trade, land, housing and surveys, transport and public works, labour, irrigation and water development, health and population, education and human resources, natural resources, energy and environment, MBS, National Herbarium and Botanical Gardens, University of Malawi representative, Malawi Confederation of Chambers of Commerce and Industry representative, NGO representative		
Water Resources Board	Protection and Management of Water Resources	Ministry of Irrigation and Water Development	Ministry of Labour, Environmental Affairs Department, Ministry of Industry and Trade	Protection and Management of Water resources	No

Technical Committee for the Environment	To provide technical and scientific advice to	Environmental Affairs Department	Experts from various line agencies depending on expertise required	Protection and Management of Environment, examine scientific issues referred to it regarding protection and management of the environment	
Malawi Energy Regulatory Authority	Energy Licensing and Technical Committee	Providing advice to MERA Board on i. licence applications for energy undertakings; ii. fees, charges, levies or rates; iii. performance and safety standards; iv. Granting, revoking or amending licenses v. tariffs, and prices of energy sales and services. Considering and reviewing technical specifications and standards for specific energy systems and equipment, monitoring and enforcing compliance for technical specifications and standards in line with Energy	Malawi Energy Regulatory Authority	Ministry of Lands, Housing and Urban Development, Ministry of Natural Resources, Energy and Environment, Department of Energy Affairs, Ministry of Industry and Trade, Department of Environmental Affairs, Malawi Bureau of Standards, Ministry of Labour and Vocational Training and Road Traffic Department.	

		Laws and By-Laws, considering technical recommendations by the Executive Management regarding new public and private investments for the growth of the energy sector ad undertaking specialized studies to stimulate investment in the energy sector			
Malawi Energy Regulatory Authority Board	To regulate the activities of energy industry in Malawi	Malawi Energy Regulatory Authority	Chairperson, Vice Chairperson, Three Ex-Officio Members, Principal Secretary responsible for Energy Affairs, the Director of Energy Affairs and the Chief Executive of the Authority.		

7.2 Description of Inter-ministerial Coordinating Mechanisms

The various inter-ministerial coordinating mechanisms involved in management of chemicals in Malawi include Pesticides Control Board, Pharmacy, Medicines, and Poisons Board, National Council for the Environment, Technical Committee on the Environment, Water Resources Board, Malawi Energy Regulatory Authority, National Commission on Science and Technology and Malawi Law Commission. These are described in detail below.

7.2.1 Pesticides Control Board

This Board comprises members from government and private sector. These members are from Environmental Affairs Department, Agricultural Research Service, Department of Animal Health & Livestock Development, Ministry of Health, Malawi Revenue Authority, Malawi Bureau of Standards, Ministry of Industry and Trade, Consumers Association of Malawi, Malawi Police Services, Agriculture Research Extension Trust, Farmers Union of Malawi, Croplife Malawi, Bunda College, Illovo Sugar, Ministry of Justice, National Smallholder Farmers' Association of Malawi, and Pharmacy, Medicines, and Poisons Board. The Secretariat is the Registrar of the Pesticides Control Board.

The mandate of the Board is driven from the Pesticides Act No. 12 of 2000. It is responsible for the importation, exportation, manufacture, distribution, storage, disposal, sales, repackaging and use of all pesticides in Malawi. Other responsibilities include registering pesticides, maintaining a register of pesticides, issuing of certificates and permits.

The Board meets four times a year to review progress on management of pesticides. The Board is also serviced by committees to look at specific issues of pesticides management.

The weaknesses of the board are:

- Public awareness is not adequately undertaken
- delays in development of guidelines on the environmentally sound management of handling and use of pesticides
- the board is inadequately funded to carry out its mandate
- enforcement of the legislation is very weak

7.2.2 Pharmacy, Medicines, and Poisons Board

The Board is responsible for licensing of traders in medicines and poisons, and control and regulation of profession of pharmacy in Malawi. Membership of the board includes a member from Ministry of Health, 3 pharmacists, 1 medical practitioner, 1 veterinary surgeon, and one nurse/midwife.

The Board meets four times a year with ad hoc meetings held at any time to consider specific issues. The functions of the board are to control sale, supply, import, export, manufacture of medicinal products; including maintaining a register of practitioners. Committees such as pharmacy, poisons and medicines committees service the board, including any others as need arises.

The weaknesses of this board include monitoring and enforcement of registered practitioners and availability of unregistered drugs on the open market.

7.2.3 National Council for the Environment

This council is made up of principal secretaries from all line ministries. These ministries are office of the president and cabinet, ministries responsible for defence, justice, tourism, gender,

agriculture & food security, industry and trade, land, housing and surveys, transport and public works, labour, irrigation and water development, health and population, education and human resources, natural resources, energy and environment. Other members are from Malawi Bureau of Standards, National Herbarium and Botanical Gardens, University of Malawi, Malawi Confederation of Chambers of Commerce and Industry, and NGO/civil society. The mandate of the council is to provide policy guidance to minister responsible for environment and natural resources including guidelines on specific issues such as environmental impact assessments (EIAs).

The Council meets quarterly but also ad hoc meetings take place.

The weaknesses of the council are:

- junior representation at this high level council, therefore delaying decision-making
- inadequate financing for monitoring activities under their mandate.

7.2.4 Technical Committee on the Environment

This committee's membership is made up of experts from various line agencies depending on expertise required and meets quarterly including holding ad hoc meetings to review technical documents and discuss issues pertaining to the environment. The function of the committee is to provide technical advice to the NCE on various issues of environment such as EIAs on development projects. The TCE meets at least twice before the NCE holds its scheduled meetings.

The weaknesses of this committee include:

- failure to employ provisions of terms of office where members stay more than the required 3-year-term. As such, there is complacency in coming up with technical decisions.
- conflict of interest where expert members, now-turned-politicians, represent institutions and fail to make appropriate decisions
- conflict of interest in that there is no effective independence

7.2.5 Water Resources Board

Membership: Environmental Affairs Department, Ministry of Water Development

Mandate: protection and management of water resources. The board meets quarterly and also holds ad hoc meetings.

7.2.6. Malawi Energy Regulatory Authority

Malawi Energy Regulatory Authority regulates the activities of the energy industry in Malawi.

The Energy Licensing and Technical Committee is made up of representatives from Ministry of Lands, Housing and Urban Development, Ministry of Natural Resources, Energy and Environment, Department of Energy Affairs, Ministry of Industry and Trade, Department of

Environmental Affairs, Malawi Bureau of Standards, Ministry of Labour and Vocational Training and Road Traffic Department. The committee has energy licensing and technical functions. The Energy Licensing functions include processing of licence applications from energy industry investors and making recommendations to the Authority, advising the Authority on Licensing Guidelines and instruments to be used in the issuance of energy licenses under the Energy Laws, advising the authority on applicable energy license fees, managing a computerized licensing database for all licenses and licensees considered by the Authority, monitoring validity of licenses, monitoring compliance of energy licensing requirements by licensees in relation to the existing regulations and Energy Laws and appropriate remedies and penalties to be imposed on licensees for license non-compliance.

The technical functions include, in liaison with the Malawi Bureau of Standards considering and reviewing technical specifications and standards for specific energy systems and equipment and monitoring and enforcing compliance for technical specifications and standards in line with Energy Laws and By-Laws, considering technical recommendations by the Executive Management regarding new public and private investments for the growth of the energy sector, undertaking specialized studies to stimulate investment in the energy sector, advising the Authority on the appraisal and selection of new investments in the energy sector in line with the provisions of the National Energy Policy and liaising with other local and international technical groups to Lobby MERA's interests.

7.2.7 Malawi Energy Regulatory Authority Board

The Malawi Energy Regulatory Authority Board is responsible for the regulation of activities relating to the energy sector in Malawi. The members consist of a Chairperson, Vice Chairperson, three Ex-Officio Members, Principal Secretary responsible for Energy Affairs, the Director of Energy Affairs and the Chief Executive of the Authority. The board meets quarterly.

7.3 Description of Mechanisms for Obtaining Information from Non Government Bodies

Mechanisms to obtain information from non governmental bodies include inclusion of NGOs in the Boards and Committees and participation in EIA process through public hearings.

7.4 Comments/Analysis

Inter-ministerial commission and coordinating mechanisms exist. However, there is little or no coordination between these various commissions thereby creating duplication of efforts and ineffectiveness in carrying out mandates.

While there are several instruments that provide for carrying out public awareness on chemicals, these are uncoordinated and inadequate. As such, the public is unaware of the dangers in chemicals and its role in chemicals management.

Efforts to register and license various chemicals are there, but compliance monitoring is weak which has led to availability of unregistered chemicals on the open market, hence endangering the public.

Most of the boards and committees rely on funding from the government, which is inadequate. As a result, this constrains their operations in areas of chemicals management.

Chapter 8: Data Access and Use

Malawi has data dealing with different aspects of chemicals management. However that data is not consolidated into one comprehensive database. Table 8A below gives a summary of the quality and quantity of available information on data access and use.

Table 8.A Quality and Quantity of Available Information

Data needed for/to:	Pesticides (agriculture, public health & consumer use)	Industrial Chemicals	Consumer Chemicals	Chemical waste
Priority setting	X			
Assess Chemicals Impact under Local conditions	X			
Risk Assessment (environment/health)	X			
Classification/Labeling	X	X	X	
Registration	X		X	
Licensing	X	X	X	
Permitting	X	X	X	
Risk Reduction Decisions	X	X	X	
Accident Preparedness/Response	X			
Poison Control				
Emission inventory				
Inspections and Audits (environment/health)	X			
Information to workers	X	X	X	
Information to the public	X	X	X	
Inspection & audit of manufacturing plants (Medicines)			X	

Table 8.B provides a summary of information on national data related to chemicals management.

Table 8.B: Location of National Data

Type of Data	Location(s)	Data Source	Who has access?	How to gain access	Format
Production Statistics	National Statistics Office	Individual manufacturers, Government and Malawi Revenue Authority	Public	Internet/on request and purchase	Database, hard copy
Import Statistics	National Statistics Office	Ministry of Industry and Trade, Malawi Revenue Authority	Public	Internet/on request and	Electronic, hard copy

				purchase	
Export Statistics	National Statistics Office	Private Sector, Ministry of Industry and Trade, Malawi Revenue Authority, Pesticides Control Board	Public	Internet/on request and purchase	Electronic, hard copy, publications
Chemical Use Statistics	National Statistics Office	Industrial users, Private Sector, Government, Pesticides Control Board	Public	Internet/on request and purchase	Electronic, hard copy
Industrial Accident Reports	Ministry of Labour	Industries, Media	Interested and /or affected members of the public	On request	Register
Transport Accident Reports	Road Traffic Commissioner	Police, Media, Industries	Public, interested and /or affected members of the public	On request and purchase	Files Bulletin, press releases, police reports
Occupational Health Data (Agriculture)	Ministry of Labour	Ministry of Agriculture and Food Security, Ministry of Health, Malawi Congress of Trade Unions, Private Sector, Media	Interested Parties	On request	Publications
Occupational Health Data (industrial)	Ministry of Labour	Malawi Congress of Trade Unions, Private Sector, Media	Interested parties	On request	Publications
Poisoning Statistics	Pharmacy, Medicines and Poisons Board, Police	Ministry of Health, Media,	Interested parties	On request	Publications, internal reports
Pollutant Release and Transfer Register					

Hazardous Waste Data					
Register of Pesticides	Pesticides Control Board	Importer/supplier	Public	On request	Register
Register of Toxic Chemicals					
Inventory of Existing Chemicals					
Register of Imports	National Statistics Office, Ministry of Industry and Trade	Importers, Malawi Revenue Authority, Pesticides Control Board	Public	Internet/ On request and purchase	Database / publications
Register of Producers	Registrar of Companies, Pharmacy, Medicines and Poisons Board MPB	Producers	Interested parties	On request	Database / register
PIC Decisions	Environmental Affairs Department, Pesticides Control Board	FAO, Rotterdam Convention on Prior Informed Consent Procedure for Certain Hazardous Chemicals	Public	Internet	Database / publications
Others Obsolete Pesticides	Pesticides Control Board, Croplife Malawi	Private Sector, Government	Public	On request	Report

Key: blank = no information available

8.3 Procedures for Collecting and Disseminating National / Local Data The types of data related to chemicals management required by law to be provided to Government authorities are in line with the mandates of the regulatory bodies in the country. These include data on importation, exportation, production, use, handling, storage and disposal of chemicals. For example the Pesticides Control Board requires data on pesticides importation, exportation,

production, use, handling, storage and disposal. On the other hand the Pharmacy, Medicines &Poisons Board requires data on licensing of practitioners, production, sale and distribution of medicinal products.

No data is currently maintained on health and environmental effects of chemicals. Some government authorities, such as Pesticides Control Board and, Medicines &Poisons Board maintain data related to the specific chemicals or groups of chemicals used in the country.

Below, in Table 8.C is a summary of the information on the availability of international literature in Malawi.

Table 8.C: Availability of International Literature

Literature	**Location(s)**	**Who has access?**	**How to gain access**
Environmental Health Criteria Documents (WHO)	University of Malawi libraries, Ministry of Health, WHO country office, National Commission for Science and Technology	Public	Electronic / membership
Health and Safety Guides (WHO)	WHO country office/libraries/website, Ministry of Labour	Public	Electronic / hard copies, on request
International Chemical Safety Data Cards (IPCS/EC)	IPCS/EC Ministry of Labour, University of Malawi libraries, WHO website	Public	Electronic / hard copies, on request
Decision Guidance Documents for PIC Chemicals (FAO/UNEP)	Environmental Affairs Department, Pesticides Control Board, Rotterdam Convention on PIC website	Public	Electronic / hard copies, on request
FAO/WHO Pesticides Safety Data Sheets	Malawi Bureau of Standards, Ministry of Health, Pesticides Control Board, FAO country office, WHO country office	Public	Electronic / hard copies, on request
Documents from the FAO/WHO Joint Meeting on Pesticides Residues	Malawi Bureau of Standards, Pesticides Control Board, FAO country office, WHO country office and official websites	Public	Hard copies on request

Material Safety Data Sheets (Industry)	Malawi Bureau of Standards, industry	Users and public	Payment on purchase of product
OECD Guidelines for the Testing of Chemicals	Libraries and laboratories	Subscribers, workers and public	Payment of subscription fees, membership to library and workplace
Good Laboratory Practice Principles	Libraries, laboratories and workplace	Subscribers, workers, public	Payment of subscription fees, membership to libraries, workplace
Good Manufacturing Practice Principles	Malawi Bureau of Standards, Ministry of Industry and Trade, Pharmacy, Medicines &Poisons Board, Pesticides Control Board and official websites	Workers, Subscribers, Public	Electronic/ hard copies on request/ Payment of subscription fees
WHO/ UNEP Global Environmental Library Network	WHO, UNEP and official websites	Public	Electronic, hard copies on request
Others 1.Drug Donation Guidelines 2.Guidelines for the Registration of Pharmaceuticals /Drugs 3. Guidelines for the registration of pesticides in Malawi	Ministry of Health, , WHO, Pharmacy, Medicines &Poisons Board, Pesticides Control Board	Public, prospective donors, suppliers of pharmaceuticals and drugs	Electronic/ hard copies on request

Table 8.D provides a summary of information on the availability of international databases.

Table 8D: International Databases

Database	**Location(s)**	**Who has Access?**	**How to gain access**
IRPTC	Switzerland	Public	
ILO CIS	Ministry of Labour, ILO website	Public and through labour officials, Malawi Congress of Trade Unions	On request www.ilo.org
IPCS INTOX			
Chemical Abstract Service Database	Environmental and chemical society	Interested parties	Subscription, website

Global Information Network on Chemicals (GINC)			
STN Database			
Relevant Database from Other Countries	1.Sweden 2. Organisation for the Prohibition of Chemical Weapons website	Public Member states of OPCW	www.kemi.se www.opcw.org
Other 1. CORESTA	France	Public	www.coresta.fr

Key: blank is unknown

8.6 National Information Exchange Systems

Malawi does not currently have national activities, programmes or policies on chemicals management which facilitate information flow from international organizations to all concerned parties in the country. Neither are there activities on exchange of national information among various ministries and other institutions and other concerned parties. However, Malawi has ICT policy that provides for information exchange which has not yet been used for chemicals management.

8.7 Comments/ Analysis

Malawi has data on specific aspects of chemicals such as pesticides for agricultural, public health and consumer use. However, Malawi does not have sufficient data on industrial chemicals and chemical waste.

The submission of information is also not well segregated For example, the National Statistics Office and Malawi Revenue Authority database on chemicals is not segregated into specific categories of chemicals which makes it difficult for the user to interpret.

Despite the fact that importers are required by law to submit information to responsible ministries such as the Pesticides Control Board and other institutions, this is not done. Most of the literature exists in hard or electronic formats. However the hard copies are not properly catalogued and organized in libraries for easy access. In addition, most of the institutions do not have their own websites to host this information. These factors make it difficult for the public to access this information.

There is also no register on toxic chemicals including an inventory of all chemicals in the country. This makes it very difficult to know what types and quantities of chemicals are available in the country.

The effort to license importation of chemicals is available in the country. However the regulation, monitoring and enforcement is weak which leads to availability of unregistered and poorly labeled chemicals on the market.

Chapter 9: Technical Infrastructure

9.1 Overview of Laboratory Infrastructure for Regulatory Chemical Analysis

The country has laboratories established for specific functions, basically for quantitative and qualitative analyses related to the particular mandate of the institution. Some of the sectors hosting these laboratories include: academia, water department, agricultural research institutions, Malawi Bureau of Standards (MBS), Geological Survey, health sector and various industries. These laboratories utilize internationally recognized procedures and compare results with accredited laboratories. Efforts are being made to improve the quality and accreditation of laboratories through formal programmes of cooperation to share facilities with other countries. Examples are MBS and Agricultural Research and Extension Trust, who are in the process of accrediting their laboratories. A summary of institutions having laboratories that were sampled in the survey are provided in Table 9.A below.

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 good Laboratory Practice (GLP) (yes/no)	Purpose
Malawi Bureau of Standards – Quality analysis	Blantyre	Gas chromatograph, High performance liquid chromatograph, Atomic Absorption Spectrophotometer, UV Visible Spectrophotometer,	In process	Yes	To determine quality of chemical products
Department of Mines – Mineral processing	Lilongwe	Volumetric glassware, Fume extractors, ball mill, pulverisers	No	No	Beneficiation and analysis of mineral ores of Malawi
ARET - Soil fertility and quality control	Lilongwe	Gas Chromatograph , Atomic Absorption Spectrophotometer	In process	In process	Quality analysis of soils
Agricultural Research Stations - Soil, plant and agrochemicals	Chitedze and Bvumbwe		No	No	To offer analytical services
PM&PB National Drug Quality Control Laboratory – drugs and narcotics, drug quality control,	Lilongwe	UV/ VIS Spectrophotometer , IR Spectrophotometer,	No	No	To ensure that only safe, efficacious and good quality medicines are distributed in the country
Central Water Laboratory - Water and Waste Water Analysis	Lilongwe and Blantyre	Electric conductivity, flame photometer, Atomic Absorption Spectrophotometer UV/VIS	No	No	Monitoring compliance of drinking water and wastewater standards

		Spectrophotometer			
The Polytechnic - environmental and food analysis	Blantyre	Atomic Absorption Spectrophotometer, Gas Chromatograph, Flame Photometer , UV/ VIS Spectrophotometer	No	No	Teaching and research in the field of environment and food
Chancellor College – chemistry	Zomba	Atomic Absorption Spectrophotometer, Gas Chromatograph, Flame Photometer , UV/ VIS Spectrophotometer, Liquid Chromatograph, Infrared Spectrometer,	No	No	Teaching, research and outsourcing services
College of Medicine – pharmaceutical and medical	Blantyre	UV/ VIS Spectrophotometer, HPLC	No	No	Teaching, research and outsourcing services
Bunda College – soil, water and plant analysis	Lilongwe	Atomic Absorption Spectrophotometer, UV/VIS Spectrophotometer	No	No	Teaching, research and outsourcing services
Geological Surveys - mineral analysis	Zomba	Atomic Absorption Spectrophotometer, Graphite Furnace Atomic Absorption Spectrophotometer, X-Ray Spectrometer	No	No	Mineral analysis for exploration
City Assembly – waste water analysis	Blantyre		No	No	Waste water analysis
Central Veterinary Laboratory-blood and diagnostic and toxicology analysis	Lilongwe		No	No	

Equipment Available

Below is a list of major equipment available in various laboratories. The majority of the equipment is found in University, Research and MBS laboratories.

- Infrared Spectrophotometer
- Gas Chromatograph
- High Performance Liquid Chromatograph
- UV/Vis Spectrophotometer
- Atomic Absorption Spectrophotometer
- Flame Photometer
- X-ray spectrometer
- Bomb calorimeter
- Elisa and scanner

- Incubator

9.2 Overview of Government Information Systems/Computer Capabilities

Malawi government does not currently have a nationally recognized chemical information system, because there is no designated institution to coordinate chemical management issues. As such, capabilities, access to international databases and implementation of government policies and programmes related to chemicals management is done at institutional level in a variety of ways. This means that all institutions having a stake in chemicals management are custodians of their data, consequently, access to data is through visiting websites of specific institutions. All line ministries have computers and are able to access electronic mail and the internet.

9.3 Overview of Technical Training and Education Programmes

The country has put in place training and education programmes aimed at providing the technical expertise required to implement government policies and programmes related to chemicals management. There are institutions that provide long-term training that aim at developing human resources at a broader scale and short-term trainings that aim at addressing specific immediate needs of the country. Some of the key disciplines include chemistry, toxicology, environmental sciences and medicine.

University of Malawi

(i) Chancellor College

Chancellor College is a constituent college of the University of Malawi (UNIMA). It has a faculty of science, which offers specialized degree programmes in chemistry, physics and mathematics. The faculty also offers a masters degree course in environmental sciences, in which some students do specialize in environmental chemistry.

(ii) Polytechnic

The Polytechnic is also a constituent college of UNIMA. It offers a wide range of degrees in disciplines of environmental health covering issues of public health, environmental science and technology, as well as civil engineering. It also offers courses on short term basis such as water quality management and analysis to respond to short term needs.

(iii) Bunda College

Bunda College is a constituent college of UNIMA, which offers degrees in science only. Degree programmes offered include crop science, animal science, irrigation and agricultural engineering, environmental sciences and natural resources management among others. Some of the courses offered include environmental chemistry, soil chemistry, toxicology and pathology.

(iv) Mzuzu University

This University operates independently of University of Malawi, but it also came into being through an Act of Parliament. It has a faculty of science offering a wide range of courses in occupational safety and health, forestry as well as environmental science.

9.4 Comments/Analysis

An analysis of the technical infrastructure has revealed the following:

9.4.1 Main strengths

The country has a number of strengths as regards chemicals management. Some of the notable strengths include;

- *Political will:* - The Government, in the MDGS, has included science and technology as one of the nine key government priorities. This provides an opening for investment in science and to address some of the problems which had little attention previously.
- *Majority allocation of budgetary resources to the agricultural sector*: - The economy of Malawi is based on agriculture. As such, this sector gets a fair share of the budgetary allocation. This means that there is already government commitment to invest in this sector, which provides raw materials to the industrial sector. The agricultural and industrial sectors are the principal users of chemicals; as such it provides a window of opportunity to raise the profile of chemical management in these sectors.
- *Availability of capacity building personnel and existence of institutions specializing in science*: - The country has highly qualified personnel up to doctorate level in fields of pathology, chemistry, toxicology and environmental science who have the capacity to build upcoming scientists. The country also has a number of institutions specializing in science as outlined above, thereby providing a good environment for investing in chemical management.
- *Availability of laboratories and research institutions*: - The country has a number of institutions hosting laboratories in various disciplines of science. This provides a base for further investment in chemical research and capacity building.

9.4.2 Main Weaknesses

- Despite having all these strengths, the country faces some challenges as outlined below: Lack of an accessible centralized national chemical information system; this creates a problem in accessing chemicals information and sharing
- Limited financial resources;
- Fragmented regulation on chemicals;
- Chemicals not a priority due to limited financial resources
- Lack of awareness/appreciation on chemicals management issues;
- Limited access to up-to-date technology and equipment

Chapter 10: Chemical Emergency Preparedness, Response and Follow-up

Malawi does not have a specific chemical emergency preparedness, response and follow-up unit. However, there are various mechanisms that are in place for responding to emergencies and disasters

Act No. 24, the Disaster Preparedness and Relief Act, 1991 was enacted by Parliament to provide for the coordination and implementation of measures to alleviate the effects of disasters. The 1991 Act also established the office of the Commissioner for Disaster Preparedness, Relief and Rehabilitation which currently falls under the Office of the President and Cabinet. The Act provides for the establishment of a National Disaster Preparedness and Relief Committee of Malawi (NDPRC), the national body tasked with coordinating disaster response. It consists of NGOs, principal secretaries from all line ministries, and Malawi Police Service and Defence representatives.

The Act defines *'disaster' as a natural or accidental occurrence on a large scale which has caused or is causing or is threatening to cause death or destruction of persons, animals or plants; disruption, pollution or scarcity of resources and disruption of essential services'*, amongst other things.

As such, Malawi, through the office of the Commissioner for Disaster Preparedness, Relief and Rehabilitation and the NDPRC, has the capacity to prepare for, respond to and follow up on disasters. These offices have emergency response plans in place in the event of a natural disaster such as an earthquake or flood.

The other mechanisms are that of the Fire Departments in the City assemblies. These too have staff trained not only in firefighting and rescue, but also cardio-pulmonary resuscitation (CPR), first aid, and building plans. In both mechanisms, there is no specific plan for chemicals emergency preparedness, response and follow up. Incidents are responded to when they do occur

Malawi, however, has limited capacity to prepare for, respond and follow up on emergencies involving chemicals in the case of accidents arising from industrial, transport or other incidents involving toxic substances including waste and in the event of a chemical terrorism incident. Incidents involving chemicals in Malawi are responded to when they do occur. This is mainly because there is no specific institution, which deals with chemicals, to draw up such a plan.

10.1 Chemical Emergency Planning

Malawi currently does not have a national chemicals emergency plan and as such chemicals are not part of a disaster management plan. As earlier explained, the disaster management affairs department deals with all disaster as and when they occur.

The country does not have inventories of installations and transport routes at risk of chemical incidents. The police, fire and other emergency services do not have specific equipment to deal with chemical incidents; however they have equipment for their line of duties.

The Globally Harmonized System is being applied in Malawi and the chemical hazard identification systems are already in place in the country, both in the transport and industrial/commercial sectors. These apply to small and medium size enterprises as well.

There is no chemicals information service available around the clock to provide advice on chemical emergencies or poisoning, neither are there dedicated emergency communications systems. Local hospitals do not have patient decontamination facilities, but do have stocks of antidotes, medicines and appropriate equipment for chemical emergencies. The health and emergency services are not equipped for transportation of chemically exposed persons.

There are no specialised facilities available for incident clean-up and for long term follow-up of exposed persons. No training is available to prepare the emergency services such as the fire, police, civil defence personnel in dealing specifically with a chemical incident, as well as medical and paramedical staff in handling and treating chemically exposed persons. Neither is there any training for veterinarians concerning treatment of exposed animals to toxic substances.

10.2 Record of Chemical Incident Response in Malawi

Malawi does not have a database of chemicals incidents. All accidents are recorded by the police without categorization. However, the police service does have records of chemicals poisonings incidents and accidents.

10.3 Chemical Incident Follow-up and Evaluation

As previously explained, there are no mechanisms in place to investigate a chemical incident and its outcome, nor is there a standardized format for collecting information about the incident. The Ministry of Labour has standard forms for reporting incidents but it is not specific to chemicals. All accidents are reported without segregation. In the absence of this mechanism, no investigation has led to a formal enquiry about the causes and responsibilities of various parties involved, or follow up activity such as an epidemiological study, or a study of improved fire prevention in warehouses.

There is a register of incidents available but they are not categorized. Since there is no specific authority that deals with chemicals management, no specific register of chemicals and other incidents is kept. There is also no follow-up surveillance and rehabilitation mechanism in the health service for the exposed persons who may suffer long term disabilities and sicknesses. The local authorities have the responsibility for clean up after an accident in public places, and currently there is no follow up of any damage to the natural and physical environment.

10.4 Comments/Analysis

From the above explanations, it can be noted that Malawi has limited capacity in relation to chemical emergencies. There is a need for a coordinating institution to deal with chemicals incidents/accidents. Other than that, the country generally needs capacity in coordination mechanisms, communications, equipment, databases and information management systems, trained human resources, health service capacity for response, environmental services clean up capacity, mechanisms for follow up and rehabilitation of exposed persons.

Also, there should be introduced a proper system of recording the kinds of accidents and incidents in the Ministry of Labour, the Malawi Police Service and other stakeholders. There is also need to enforce the Globally Harmonized System in all sectors that use this system to ensure conformity.

Chapter 11: Awareness/Understanding of Workers and the Public; Training and Education of Target Groups and Professionals

Chemical safety, the health impacts and environmental degradation that may be caused by exposure to toxic chemicals and waste, as well as the impacts of chemicals on human wellbeing and economic development are issues that are still inadequately appreciated in Malawi.

11.1 Awareness and Understanding of Chemical Safety issues

Currently, there is no coordinating entity that undertakes specific activities and programmes to provide information to workers to protect their health and safety from the risks of chemicals. Neither is there a coordinating entity to provide information to the public concerning the risks to the environment, health and safety from chemicals, and actions which should be taken to enable members of the public to protect themselves from chronic or acute exposure to hazardous chemicals in everyday life.

In Malawi, programmes have been established to provide workers with information to protect their health and safety from the risks of chemicals including workers education programmmes. The Ministry of Agriculture and Food Security provides information on pesticides to users and the general public through agricultural extension workers, circulars, radio programmes, agricultural shows, field days and publications. The Ministry recognized the need to train agricultural staff in pesticide handling, use and disposal so that they can in turn impart the information to farmers.

Individual companies, including tea and sugar estates, have put in place training programmes on handling, use and disposal of chemicals.

The Malawi Congress of Trade Unions (MCTU) which was formed to ‘protect, promote and defend human and workers rights’ has a membership of over 120,000 people. The MCTU undertakes various programmes to provide information to workers and the public on chemicals including:

- workplace visits and meetings;
- meetings of the General Council, Stewards and Executive Boards;
- tripartite social dialogue forums involving employers and workers;
- use of radio programmes to inform workers and the general public; and
- engagement of health, city councils and officials to make presentation

Programmes to raise awareness on chemicals management and to educate the public for effective participation in national environmental management initiatives are not widely undertaken. There are currently very few programmes raising public awareness on access to justice in environmental matters and there are no programmes raising awareness of decision-makers and legislators concerning chemical safety and encouraging them to take timely action to implement sound management measures.

In Malawi limited activities are being undertaken to improve the understanding of communicators and the media concerning chemical safety issues and encouraging them to better communicate these issues to the public in order to improve understanding and promote chemical safety actions by the public and civil society in general. For example, there are very few environmental publications with the objective of raising awareness on environmental issues generally which may contain articles on issues concerning chemicals.

11.2 Education and Training for Sound Management of Chemicals and Waste

As mentioned earlier management of chemicals in Malawi rests with various government institutions depending on their respective legal mandates, as well as with different institutions outside of government.

There are some activities being undertaken to develop chemical safety education in schools especially on pesticides and medicines. The university curricular has some activities on chemical safety and some universities in Malawi have training and education programmes aimed at providing technical expertise for chemicals management, in disciplines that include environmental sciences, chemistry and toxicology.

Limited activities are also being undertaken to promote the necessary skills for administrators concerned with the risk assessment and regulation in use of available data and evidence base approaches.

Minimal activities are being undertaken to promote skills training for professional workers involved in different aspects of management of chemicals including customs officials, chemicals handlers, personnel involved in transporting chemicals to users of chemicals such as agricultural and industrial workers and those working in small to medium enterprises.

Minimal activities are being undertaken to promote the training of health and other professionals in diagnosis and management of exposed persons;

There are no currently no activities being undertaken to promote the training of chemical emergency response professionals.

There are some activities being undertaken to promote the training of staff at technical facilities, such as laboratories and at disposal facilities.

11.3 Comments/Analysis

There is limited capacity available in Malawi in relation to workers awareness on chemical safety issues. The consequence of this is that it becomes costly for the nation as there is no systematic approach to management of chemicals. As mentioned above there are some institutions within Government which have established programmes to raise awareness of agricultural workers and the MCTU undertakes various programmes to provide information to workers and the public on chemicals. Furthermore some institutions and organizations have

established programmes to raise awareness to their workers on chemical safety issues. However, there are very few human resources trained on chemicals management.

There is also limited capacity available in Malawi in relation to the awareness of the public on chemical safety issues. There are very few human resources in government and within civil society, particularly NGOs, trained on chemicals management.

The obstacles to the implementation of international agreements in Malawi include:

- Lack of coordination;
- inadequate expertise in the area of chemicals and chemicals management;
- limited equipment; and
- limited funding to implement international requirements

International agencies could improve the effectiveness of the current programmes in Malawi in the following ways:

- Better communication;
- Technical support;
- Provision and facilitation of more training programmes;
- provision of incentives for locally available expertise;
- improved funding;
- improved conditions of grants;
- flexibility to accept redefined priorities; and
- improved coordination mechanisms.

The barriers can be overcome through:

- sufficient training; and
- acquisition of equipment.

Chapter 12: International Linkages

12.1 Co-operation and Involvement with International Organizations, Bodies and Agreements

Malawi is involved in various international activities and agreements that deal with various aspects of chemicals management. Table 12.A below provides a summary of Malawi's membership in international Organizations, Programmes and Bodies.

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

International Organization/Body/ Activity	**National Focal Point (Ministry/Agency & Primary Contact Point)**	**Other Ministries/Agencies Involved**	**Related National Activities**
Intergovernmental Forum on Chemical Safety (IFCS)	Ministry of Labour	Environmental Affairs Department	National Profile to assess the infrastructure for management of chemicals
UNEP	Environmental Affairs Department	All line ministries and UNIMA, UNDP	Chemical Safety
IRPTC – National correspondent			
IE/PAC – Cleaner production centre			
IPCS			
UNIDO	Industry and Trade	PCB, MBS, ESCOM, MoHP,	To develop a national implementation plan for the management of POPs
WHO	MoHP	Local Government	Medical Waste
FAO/ GTZ	Ministry of Agriculture and Food Security	Pesticides Association of Malawi	Regional activities relating to pesticides and training on pesticides.

ILO	ML	All line Ministries/Agencies, MCTU	Occupational Safety and Health services
World Bank	Ministry of Finance	MoAFS	Subsidy Program
Regional Development Banks(AfDB)	Ministry of Finance	All line Ministries, Trade and Industry	Regional Trade
Regional Economic Commissions COMESA SADC	Ministry of Finance	All line Ministries	
UNITAR	Environmental Affairs Department	All line Ministries	Updating of national chemicals profile
1.Pesticides Action Network	Ministry of Agriculture and Food Security	MoHP, PCB	Information on pesticides use
2. Organization for the Prohibition of Chemical Weapons	Ministry of Foreign Affairs	All line Ministries	Chemical weapons and safe use of chemicals
-	National Economic Council	All line Ministries/Agencies	Employment and Labour Sector
4. IAEA	Environmental Affairs Department	All line Ministries/Agencies	Atomic energy

Malawi has participated in various international agreements/ procedures related to chemicals management as indicated in Table 12 B below.

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

International Agreements	**Primary Responsible Agency**	**Relevant National Implementation Activities**
Agenda 21 - Commission for Sustainable Development	Environmental Affairs Department	Implementation of Environmental Support Program (ESP) Several programs which include management of chemical waste

UNEP London Guidelines (voluntary procedure)	Environmental Affairs Department	Control on acquisition of hazardous chemicals
Montreal Protocol	Environmental Affairs Department	Phasing out of ODS
FAO Code of Conduct (voluntary procedure)	Environmental Affairs Department (MoAFS - Code of Conduct)	Control on acquisition of hazardous chemicals
ILO Convention 170	ML	Safe use of industrial chemicals
ILO Convention 174	ML	
UN Recommendation for the transport of Dangerous Goods	Ministry of Transport and Public Works	Carriage of hazardous chemicals
Basel Convention	Environmental Affairs Department	Control of Import and Export of Hazardous wastes
London Convention	Environmental Affairs Department	
Rotterdam convention	Environmental Affairs Department	Submission of prior informed consent procedure responses and responses on final regulatory action
Stockholm Convention	Environmental Affairs Department	Development of National Implementation Plan on Persistent Organic Pollutants
GHS		
SAICM	Environmental Affairs Department	
GATT/ WTO agreements (related to chemicals trade)	Industry and Trade	Trading in chemicals
Chemicals Weapon Convention	Foreign Affairs (Ministry of Defence)	
Regional/Subregional Agreements (specify)	Line Ministries	Codes of Practice
Bilateral Agreements Zambia and Malawi Joint Commission, Mozambique and Tanzania (but specify)		MOU

12.2 Participation in Relevant Technical Assistance Projects

Table 12.C below gives an overview of all on-going multi-lateral and bilateral assistance activities related to the management of chemicals that Malawi is involved in.

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

Name of Project	**International/ Bilateral Donor Agency Involved**	**National Contact Point**	**Relevant Activities**
Disposal of Obsolete Chemicals	FAO	Ministry of Agriculture and Food Security (PCB)	Conducting and inventory and collecting obsolete pesticides to one central location for disposal
IPM	GTZ/FAO	Ministry of Agriculture and Food Security	Pesticide control
Institutional Strengthening for the implementation of the Montreal Protocol	UNEP/ GTZ	Environmental Affairs Department	Phasing out of ODS
Environmental Management Project	World Bank	Environmental Affairs Department	Strengthening the implementation framework of environmental management in Malawi; Institutional development of Environmental Affairs Department, line department and NGOs; support initiatives in key areas of environmental management promote participation of communities' environmental management.
Malawi Environmental Monitoring Program	USAID	Environmental Affairs Department	Environmental monitoring
POPs –National Implementation for the Management of Persistent Organic Pollutants in Malawi	UNIDO	Environmental Affairs Department	Inventory of POPs

Updating National Chemicals Profile	UNITAR/SAICM	Environmental Affairs Department	Updating national chemicals profile

12.3 Comment/Analysis

Various national implementation activities of international agreements have been undertaken in Malawi. The integration of the activities of international organizations and the national implementation of activities of the international agreements has enjoyed some success through programmes in areas such as agriculture and environment. In most cases these have not functioned as expected due to failure to sustain them and poor coordination at national level. There is poor coordination between ministries, departments and agencies at national level with respect to chemicals management and the implementation of international activities and agreements in the area of chemicals management.

There is a need to domestic some international agreements in order to effectively implement them locally.

There are weak institutional arrangement to ensure coordination between ministries and agencies responsible for aid activities and ministries and bodies responsible for the protection of health and safety and the environment.

Chapter 13: Resources Available and Needed for Chemical Management

13.1 Resources available in Government Ministries/Institutions

Management of chemicals requires a well-defined legal and institutional framework coupled with adequate infrastructure, human, and financial resources. In Malawi, allocation of financial resources depends on approval by the parliament for line ministries. In most ministries, there are no line activities specifically for chemical management. This reduces the profile of chemical management; as such it does not feature highly on government agenda.

Chapter nine outlines the status of infrastructure existing in the country, which requires specialized expertise. The country has environmental scientists, mineral processing engineers, chemists, biologists, laboratory technicians, plant pathologists, entomologists, soil scientists, and agronomists among others. While it is appreciated that experts exist in some ministries, they are not fully utilized because of the low prominence of chemical management issues at national level.

13.2 Resources Needed by Government Institutions to Fulfill Responsibilities related to Chemicals Management

Though specialized expertise is available in selected ministries, there are still capacity gaps both at individual and institutional levels. Most of these scientists have the basic knowledge, but there is need for further training so that they cope up with technological advancement. Areas of specialized training required include: handling of hazardous chemicals, management of obsolete chemicals, technicians for operation and maintenance of equipment, specialized emergency response personnel, risk assessors, waste management practitioners.

Finances required for conducting further feasibility study for waste management options in Malawi, waste management and recycling facilities, financial resources for enforcement programmes,

13.3 Resources available in Non-government Institutions for Chemicals and Related Waste Management

At present, there are no known non-government institutions are involved in chemicals and related waste management. A large percentage of them are involved in natural resources management. As such, it is not documented if there is any expertise available in the non-governmental organizations for chemicals and related waste management.

13.4 Comment/ Analysis

The career prospects for scientific technical experts are not as rewarding as in administrative positions. Therefore, there is not much room for advancement for available expertise and the fields do not become attractive to upcoming scientists.

There are no incentives for companies to invest in waste management due to weak enforcement of chemical management related legislation.

Chapter 14: Conclusions and Recommendations

14.1 Conclusions

This report has provided an overview of chemicals management in Malawi and has highlighted strengths and weaknesses. It is evident from the Report that chemicals used in Malawi are mostly imported. Production of chemicals is very minimal, while export is non-existent. The identification of priority concerns related to chemicals production, import, export and use indicates that Malawi is mostly concerned with the following issues, in order of ranking: hazardous waste, treatment and disposal, contamination of drinking water, occupational health and safety for the industrial sector, public health, chemicals in food and ground water pollution.

The strengths of the country in terms of chemical management include; political will, majority allocation of budgetary resources to the agricultural sector which is a principal user of chemicals; availability of highly qualified personnel up to doctorate level in fields of pathology, chemistry, toxicology and environmental science who have the capacity to build upcoming scientists; availability of a number of institutions specializing in sciences thereby providing a good environment for investing in chemical management; and availability of a number of institutions hosting laboratories in various disciplines of science which provide very good infrastructure for investing in chemical research and capacity building.

The weaknesses of the country in terms of chemical managements include; lack of a specific institution to coordinate chemical management; lack of national chemical information system which creates a problem in accessing chemical information and dissemination of that information and limited financial resources; limited access to updated technology. There is a gap in tools and methods that are used in some of the institutions with what is used worldwide, as such management and analysis of some data is difficult.

Malawi also faces a challenge in terms of national legal and regulatory infrastructure. Currently there is no single legislation in Malawi that specifically deals with and manages chemicals. Legislation dealing with different aspects of chemicals is fragmented and uncoordinated.

Therefore, taking into account the strengths and weaknesses, management of chemicals in Malawi requires a well defined legal and institutional framework coupled with adequate infrastructure, human, and financial resources.

14.2 Recommendations

Due to the key issues highlighted throughout this report, it is highly recommended that:

- An independent institution be established/created to specifically deal with chemicals
- Legislation be drafted on chemicals management
- Chemicals safety education in school and university curricular be developed
- Awareness campaigns for both the public and workers be carried out extensively in the country
- A chemicals emergency preparedness, response and follow-up plans be drawn

- To address these capacity gaps and raise the profile of chemical management, there is need to have a nationally designated institution with specific mandate of monitoring chemical management issues, with adequate structures, infrastructure, human as well as financial resources.
- There is need for human resource development for sound life cycle management of chemicals in the country.
- There is need to develop chemical safety education in the school and university curricular
- There is a need to develop a national database of chemicals information

Annex 1: Glossary

ADB	African Development Bank
ARET	Agriculture Research and Extension Trust
COMESA	Common Market for Eastern and Southern Africa
EAD	Environmental Affairs Department
EMA	Environment Management Act
ESCOM	Electricity Supply Commission of Malawi
FAO	Food and Agriculture Organization
GTZ	German Technical Cooperation
JICA	Japan International Cooperation Agency
MBS	Malawi Bureau of Standards
ML	Ministry of Labour
MoAFS	Ministry of Agriculture and Food Security
MoHP	Ministry of Health and Population
NGO	Non-Governmental Organisation
NSO	National Statistical Office
OECD	Organisation for Economic Co-operation and Development
PCB	Pesticides Control Board
POPS	Persistent Organic Pollutants
SADC	Southern African Development Community
SAICM	Strategic Approach to international Chemicals Management
SME	Small and Medium Enterprises
UNEP	United Nations Environment Program
UNIMA	University of Malawi

Annex 2: Names and Addresses of Key Individuals and Organizations

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