

## **DIRECTOR'S COMMENT**

*James Simoko Phiri – Director, ECZ*

Welcome to this last edition of the Enviro-Line Newsletter for this year. In this issue, we focus on a number of issues that we have worked through especially towards the end of the year. We reflect on some of our achievements in the year 2000.

As the pace of change in mining, industry and other forms of development increases in Zambia due to liberalisation, greater competition and indeed globalisation, there is need to refocus our vision on effective environmental management capacity with regards to the anticipated greater pressure and stress on the environment. With this in mind, we initiated a consultative process of re-establishing the overall picture of the organisation, its mission and vision as well as current strategic directions and course of action through strategic planning. Through this process, we hope to address priority directions over the life of the strategic plan, which covers the period between 2001 to 2005.

I must hasten to mention that the challenge for us still remains to ensure environmental compliance and effectively deal with environmental crimes. Whilst our past successes show that our strategic direction is right, we shall continue revamping our actions and responsibilities, through strategic planning, to ensure that we continue to achieve our key outputs from the process.

The year 2000 was generally a good year for the ECZ and we hope to consolidate on what was achieved. Among some great achievements included our signing of a new \$2 million cooperative agreement with NORAD/SFT and another \$3 million programme with the World Bank under the Environmental Support Programme (ESP). Both agreements run for the next three years. Through our partnership with the Zambia Chamber of Commerce and Industry (ZACCI), we continue to positively interact with our partners, the industry through the Cleaner Production Programme. We have made headways in meeting the challenges of coordinating stakeholders both local and international in various fields of natural resources and wastes, including wetlands, land assessments and monitoring, environmental impact assessments, hazardous wastes such as PCBs etc.

You may recall that during the year 2000, we have managed to decentralise by opening an office on the Copperbelt, a move that has made ECZ more responsive to issues, not only on the Copperbelt, but the northern region as a whole. We also managed to train eleven of our inspectors as public prosecutors. Through our strategic vision we hope to continue developing capacity by attracting and retaining the best personnel while establishing a clear plan for succession and career development.

Indeed, as the quote in this issue goes, we have a lot to learn from nature. We remain committed to the vision of achieving a pollution free environment, based on ensuring that development takes into account, its impact our natural resources because we believe that it is such development that is fundamental to our long-term survival as human race. We recognise that developers world-wide are still exploring the implications of the concept of

sustainable development. In Zambia, we want to be part of that process by ensuring that developers pursue practical ways of realising the concept.

In the coming year we see the ECZ that more positively engages its stakeholders.

Finally, I urge all our stakeholders, partners and the public in general to continue working with us to give practical expression to our common goal, achieving development that benefits all in a healthy environment.

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**NOTE... NOTE.... NOTE...**

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## **EDITOR**

### **Environmental Reflection**

"... Of course I am a disciple of nature! I am part and parcel of nature. Nature's existence is in my hands, my habits and my life, wherever I am. Nature is what I do, think and see. I am nature and nature is me."

**Nicholas Sipho Mathaba**

## **HUMAN RESOURCES NEWS**

### **Dennis Kangwa**

The ECZ offers a warm welcome to Dennis Kangwa who has joined as Registry Clerk. Mr. Kangwa is a holder of a Certificate in Library and Information Services obtained from Evelyn Hone College. Before joining ECZ, Mr. Kangwa worked for Zambia Library Services on voluntary basis. His ambition is to contribute towards creating a well co-ordinated professional system, within registry, that will ensure Proper maintenance, retrieval and storage of written communication. He is married with two children.

### **WATER; WATER EVERYWHERE, BUT NOT A DROP TO DRINK! – A CASE OF GROUND WATER CONTAMINATION**

By Chilekwa Kampeshi, Consultant, EnviroCon.

WATER is supposed to be “refreshing”, and yet you probably avoid drinking it straight from the tap. Tap water tastes (and often smells) too bad to enjoy. So instead, you and many thousands of families nation-wide have switched to soft drinks and other less healthy beverages, to bottled water.

The American Environmental Protection Agency (EPA) states “People must stop taking the purity of their water for granted”. The EPA’s published list of contaminants and impurities found in municipal and private water supplies is alarming. These include sediment, bacteria, excess salts, chlorine, asbestos, detergents, pesticides, nitrate, heavy

metals and even radioactive substances. That was in the USA. The picture in Zambia is not very clear because there are no thorough studies that have been carried out to establish the quality of water. However, the ECZ is presently carrying out a project to study the quality of groundwater in Lusaka.

### **Groundwater contamination**

Most people have no problems understanding that surface water (rivers, lakes, etc.) can be polluted. They see industries discharging effluents into surface water bodies. Even municipalities discharge sewage effluent. However, groundwater is considered to be pure, out of reach of human activities.

Unfortunately, groundwater is susceptible to contamination in the same way that surface water gets contaminated. Groundwater is part of what is referred to as the water cycle. Figure 1 shows the schematic diagram of the water cycle.

The sun is the engine that drives the water cycle. It causes water to evaporate from water bodies. When the water vapour cools it condenses and falls to the ground as rain. Part of the rain falling on the ground runs to surface water bodies such as rivers and lakes. Part of the rain infiltrates into the ground until it reaches the water table. Upon reaching the water table, the groundwater flows toward the nearest surface water body.

The water infiltrating the ground to recharge the groundwater usually carries with it dissolved impurities from the surface such as heavy metals from industries, pesticides and fertilisers from farms and, lastly bacteria. If the soil cover is thin or absent, it will offer very little purification to the water infiltrating the ground. In this way, the groundwater becomes contaminated.

### **Sources of contamination**

There are many human activities on the surface of the earth that can cause contamination of groundwater. Pesticides and fertilisers are leached from farms. Septic tanks, soak-aways and pit latrines contaminate groundwater with faecal matter. Industrial effluents usually contain chemicals and heavy metals that can contaminate groundwater. Waste disposal sites, cemeteries all do contaminate groundwater if poorly sited and managed. Old underground petroleum tanks at filling stations and fuel depots may leak thereby releasing petroleum products into the ground. Garages sometimes dispose of used oils by pouring it on the ground thereby polluting groundwater with these oils. There are reports of boreholes in the industrial area of Lusaka that have been abandoned because the water is contaminated with petroleum products. Others have bought drinks with a diesel smell. The list of sources of contaminants is endless. Figure 2 shows a borehole that is delivering water contaminated with sewage from the neighbour's septic tank.

### **Should I worry about contaminated water?**

Absolutely yes! Drinking contaminated groundwater can have serious health effects. Diseases such as dysentery may be caused by contamination from septic tank waste. Toxins that have leached into borehole water supplies may cause poisoning. Among the

people who are prone to suffer ill effects from contaminated groundwater are children, the elderly and people with low immunity.

### **Groundwater protection**

Unfortunately, contaminated groundwater is very difficult and expensive to clean. However, solutions can be found after groundwater has been contaminated but this isn't always easy. The best thing to do is adopt pollution prevention and conservation practices in order to protect important groundwater supplies from being contaminated in the first place.

### **What can you do?**

Before drilling a borehole, it is important to carry out a site assessment to find out potential contamination sources. It is amazing how many people have drilled boreholes next to septic tanks and vice versa. If you have a borehole, you need to have the water quality assessed. Don't rush to collect a sample yourself. The process is a bit more complicated than just collecting water in a container and rushing to the nearest laboratory.

If you have a borehole, install an on-line chlorinator to kill bacteria in the water. This is the barest minimum. If you don't like the smell of chlorine, or if the water is contaminated with heavy metals and other chemicals, you may wish to install a filter that removes bacteria, pesticides, nitrates, heavy metals and a variety of other chemicals.

### **What about boiling water?**

Yes and no! Boiling water will kill bacteria and no more. Most people just switch on a kettle and let the water boil for a few seconds. This is not sufficient. Water must be allowed to boil for 10 to 15 minutes. At that rate, you will have ZESCO to worry about, and a rich calcium layer will be deposited in your pots. Not only that, boiling also concentrates harmful heavy metals and chemicals in water!

### **Is bottled water any better?**

Surprise, surprise, no! All the water being bottled in Lusaka comes from boreholes just like all others! Bottled water, being groundwater is also prone to contamination. Incidentally, even the orange juices and drinks are made from the same groundwater.

## **REGIONAL ECZ OFFICES OPENED IN NDOLA**

By Joseph Sakala, Inspector Pesticides and Toxic Substances

ANYBODY walking along the south end of Buteko Avenue in Ndola knows that a "new organisation has opened offices lately. The offices belong to no other than the Environmental Council of Zambia. They have been painted a brilliant green colour to depict ECZ commitment to protect the environment and prevent pollution.

The Ndola Offices became operational in July 2000 and cater for the Copperbelt, North-western, Luapula, Northern and parts of Central provinces,

They are situated in the former Passport Office, opposite the Immigration offices.

The offices are operated by a team of 12 officers and headed by Mr. Gentile Chasaya, who is the Principal Inspector. He was Senior Inspector in charge of Air Pollution and Noise abatement Unit at the Lusaka office.

Opening of these offices has several advantages:

- ECZ will be able to respond to environmental issues and complaints in indicated provinces in the shortest possible time.
- It won't be necessary to travel to Lusaka to obtain environmental licenses or lodge complaints.
- The offices will result in greater effectiveness for ECZ in its operations.

One may ask why ECZ has opened offices on the Copperbelt and not elsewhere. The reasons are simple. The Copperbelt is one of the environmental hot spots in the country. Almost all the mines are based there, some of which have been in operation for well over sixty years. We cannot ignore the fact that mining by its very nature has great impacts on the environment. Mining affects air, water, and land. It also generates huge amounts of waste including tailings and chemical pollution, a result from chemicals used in the mining processes. In addition there are many other industries that gravitate around the mines, which contribute to pollution.

The author remembers quite vividly, while staying in Kankoyo township of Mufulira, about 1964, how his parents would lock him in the house every time the mines emitted what was locally known as *senta* or sulphur dioxide. As a result of years of these emissions, the area around the township has experienced land degradation due to acidification. This has impacted negatively on the general health of the residents and other natural habitats in the area.

Privatisation of the former ZCCM mines, earlier this year, has brought new challenges in environmental management.

To effectively meet these challenges, ECZ is now present in the north and all are welcome to work with ECZ towards managing the environment!

## **EXPO 2000- ZAMBIA PAVILION**

By Kwali Mfuni, Senior Environmental Education & Communications Officer

ZAMBIA participated in the EXPO 2000 World Exposition held in Hannover, Germany for five months from **1<sup>st</sup> June to 31<sup>st</sup> October 2000**.

Environmental Council of Zambia was represented by Ms Kwali Mfuni at the national Pavilion from June 17<sup>th</sup> to end of August 2000.

The EXPO theme was: "*Human, Nature and Technology*".

*"Preservation of Natural Resources for the Benefit of Human Life in the Next Century"* was Zambia's interpretation of this theme.

ECZ was exhibiting the water hyacinth problem in Zambia, focussing on what has been done as a nation to address this problem and scout for possible solutions on how it could be better controlled by learning what was available in the world.

In addition to exhibiting activities carried out on water hyacinth in Zambia, the representative also presented other national projects, such as Administrative Management Design (ADMADDE) Project, Coal Briquettes, and Herbal Medicines.

Zambia displayed national exhibitions at the country pavilion, while Zambian traders were given an opportunity to promote national products at the country bazaar. Zambia was also represented as an active SADC member in the SADC Pavilion. When the author concluded her service at the national pavilion, Zambia was scheduled to host the EXPO community on two key days, 'Trade Promotion day in September and the National day, aptly scheduled on Zambia's independence day. National days at the EXPO were days when EXPO focus was on a particular country and main activities revolved around that country.

### **Zambia Pavilion**

Ministry of Commerce Trade & Industry (MCTI) co-ordinated Zambia's participation while the Vice President, Lt. General Christon, Tembo was Patron.

Zambia's EXPO Commissioner General Mrs. Winnie Chibesakunda spearheaded Zambia's participation at the EXPO. Mrs Chibesakunda is based at the Zambian Embassy in Germany. The national pavilion also had three government representatives from Zambia. The representatives were Ms. Viola Chipere from MCTI, Mrs. Beauty Chengala, National Tourist Board and the author.

The water hyacinth was displayed as a real life plant in ponds, with a possible solution, chairs made from the plant being displayed in the pavilion. The other three projects were exhibited as write-ups displayed on the pavilion wall.

The water hyacinth and ADMADDE projects were voted among the best projects in Africa Hall. There were several thousand visitors per day and the number of visitors increased with time.

An animated picture of the Victoria Falls was a central attraction in the National Pavilion. There was also a real life model of the Nalikwanda boat representing one of Zambia's outstanding traditional cultural activities.

Various artists' works like paintings and wooden sculptures were also displayed in the national pavilion.

## **Water Hyacinth**

The Water Hyacinth was very well promoted as a project from Zambia., Mrs Chibesakunda, drew attention to it in her interviews on German television. It was extensively covered in the local media and was a major crowd puller to the pavilion. The water hyacinth was particularly enhanced by the fact that furniture made from it was displayed besides the live plant. The furniture was being displayed by a German Company, **Teekampagne**, of Potsdam, which markets and sells the chairs in Germany. This furniture is made in Thailand. A prominent German Professor, Dr. Gunter Faltn, played a key role in formulating techniques of making furniture from the water hyacinth .

Most visitors to the pavilion showed interest in the water hyacinth and the furniture made from it. There were also a few investors interested in running a similar project in Zambia, notably the German Investment & Development Company .

There were also possibilities for initiating local use of the water hyacinth through opportunities offered by the UN programme Zero Emissions Research Initiatives, which was exhibiting a pilot project where mushrooms could be grown from the hyacinth.

*This was a pilot project by Professor Margaret Tagwira of Zimbabwe.*

An irony of the water hyacinth was that it was a problem even at the EXPO. The plant in the exhibition pond dried due to cooler weather, low nutrients and lighting. It had to be replaced for a few thousand Deutschmarks!

Many visitors to the national pavilion indicated an interest in visiting Zambia either for business or for holidays, particularly to witness the eclipse due for June next year.

UN Secretary General, Mr. Koffi Annan, President Sam Nujoma of Namibia, the Mayor of Hannover were among dignitaries that visited the pavilion.

## **ECZ FINES FIVE COMPANIES IN LIVINGSTONE**

*By Justin Mukosa, Environmental Education Officer*

**IN a recent inspection, ECZ ordered five companies in Livingstone to submit Environmental Management Plans within 30 days in addition to being fined.**

**This action has been taken against Industries that are operating contrary to the provisions of the Environmental Protection and Pollution Control Act (EPPCA) of 1990 and its subsidiary regulations.**

The ECZ Director, Mr. James Phiri undertook, an inspection tour of Livingstone District in Southern Province, accompanied by Messrs Jacob Chishiba, and Shadrack Nsongela, Senior Inspectors Water Pollution Control and Environmental Impact Assessment

respectively. Annel Phiri, Inspector, Waste Management and Justin Mukosa, Environmental Education Officer also accompanied the Director. The tour was undertaken under Industrial Pollution Prevention Programme (IPPP), an on-going ECZ programme, funded by NORAD. The aim of the tour was to assess compliance by industries, municipalities and individuals to the Environmental Protection and Pollution Control Act (EPPCA) and its subsidiary legislation.

The inspection revealed that a lot of developmental work that has taken place in Livingstone requires ECZ involvement in as so far as Environmental Impact Assessment, or licensing of facilities generating and discharging wastes are concerned.

The major developments taking place in the Tourist Capital are the construction of the Sun International Hotel and expansion of the Livingstone Airport. In addition there are other small facilities mushrooming in the city with the intention of providing more services to tourists that are expected to increase in number.

Other issues of concern included rehabilitation works at the Waterfront Lodge, Southern Water and Sewerage Company, the re-opening of the old cemetery, gas cylinders at the Zambia Railways sheds and the disposal site for the city.

The following provides an in-depth account of the inspection and actions taken.

#### ***Quarrying for Construction Materials by Grinaker Construction***

A visit was made to Grinaker Construction, the main contractor on the Sun International Tourism Project, to follow up on reports of illegal quarrying of sand. Three sites were visited which included a borrow pit in Chief Mukuni's area, Dambwa Forest Reserve and Sinde river sites.

The visit verified that apart from Grinaker, Minestone and Noremco were also using the borrow pit in Mukuni's area for their materials.

ECZ fined Grinaker, Noremco and Minestone and directed them to prepare and submit Environmental Management Plans detailing the nature, schedule and budget for rehabilitating the borrow pit.

At Dambwa Forest Reserve, Grinaker was found excavating sand without either a mining or forest licence. Further the EIA process had not been concluded with the ECZ. Grinaker contended that Chief Mukuni, who has been acting as their agent in obtaining all the necessary authorisations, had allowed them to start mining. Grinaker was instructed to stop quarrying immediately, until they obtain ECZ authorisation and a licence from the Forest Department.

At Sinde River site Grinaker was found mining sand on the riverbed. They again argued that Chief Mukuni who had been acting as their agent in obtaining all the necessary authorisations had allowed them.

The Livingstone office of the Ministry of Mines & Minerals Development showed a letter written to chief Mukuni offering him the right to mine sand in the area upon obtaining a licence. However no licence was issued in Livingstone.

Grinaker were allowed to continue operating on conditions that mining is done in a uniform manner, excavations do not exceed a depth of 50 cm and that the banks of the river should not be disturbed as was observed. They were also instructed to prepare and submit an Environmental Impact Assessment Report.

### **Airport Rehabilitation**

Findings at the airport revealed that there were major rehabilitation works being carried out by National Airport Corporation regarding the upgrading of the Livingstone City Airport to international standards. These works have gone on without concluding the EIA procedures.

ECZ fined National Airport Corporation and instructed it to submit a Project Brief.

### ***Southern Water and Sewerage Company***

In Livingstone the concerns for water pollution relate to the capacity for waste management facilities, which apparently seem not to be moving on the same pace with the rapid developments taking place in the area. It is feared that due to rapid development in the city, there is likely to be increased volumes of wastes both solid and liquid. Unless measures are put in place to manage these wastes efficiently it could be the source of environmental problems in the area. To this effect key spot areas and important institutions located in Livingstone were visited and inspected with the view to assessing their capacity and plans in place to manage the possible increase in the loads of wastes especially with the opening of Sun International Hotel in April 2001.

One key spot area is water and sewerage management. The responsibility of managing water and sewerage in Livingstone is now under Southern Water and Sewerage Company. The findings from the inspections indicated that the company's environmental management plans are not keeping pace with development in the area as far as environmental waste management facilities are concerned. It was also found that since the Company took over from Livingstone City Council, the Company has not applied for the respective environmental licenses.

The company therefore was directed to apply for the licenses and to submit an environmental management plan, which will be the basis for granting of the respective environmental licenses.

### **Zambezi Water Front**

The purpose of visiting the Zambezi Water Front was to follow up on ECZ' s directive to demolish two chalets which were too close to the Zambezi river as resolved by the ECZ during the review of the Water Front EIA report. Verification inspections were also

conducted to establish the location and closeness to the river of the original infrastructure on which the current structures were reported to have been erected.

During this visit, the developer argued that the Council's decision to demolish the chalets in question was unfair because they were not any closer to the river than the original structures at the time of property purchase.

The developer was requested to submit within 14 days visual and documentary evidence such as original plans and photos to support his arguments.

### ***Re-opening of the Old Cemetery***

The team, on its way to Sesheke noticed some burial activities going on at the old cemetery. On inspecting the site, it was found that although the cemetery had reached its capacity, its boundaries were being extended towards Nakatindi road. Observations further revealed that burial was not systematic and it was feared that the cemetery might eventually reach the road

The Town Clerk was instructed to close the Old cemetery with immediate effect.

### **Installation of Sewer and Water Supply Pipelines by Noremco**

Noremco were found installing water and sewer pipelines from Sun International to the city Water Works plant (water pipe) and to the sewer ponds (sewer pipe) on both sides of the Mosi-oa-tunya road without complying with EIA requirements.

Noremco were fined for implementing a project without ECZ approval and requested to submit a project Brief.

### ***Chlorine Gas Cylinders at the Zambia Railways (ZR) Sheds***

This was a follow up inspection after a previous ECZ inspection team's discovery of chlorine cylinders at the Zambia Railways sheds. There are over 270 Chlorine gas cylinders at the ZR sheds some of which were bought as far back as 1976. According to the District Safety officer for ZR in Livingstone, the cylinders were ordered for Livingstone Hardware, a shop that has since closed. The Sheds have since been sold to Members In Christ Church of Livingstone. During the inspection it was discovered that the church had allowed two families to stay in one of the sheds. This building is very close to the pressurised chlorine gas cylinders, some of which contain the gas.

The Pastor was instructed to evict the occupants of the building for safety reasons.

## **ALL ABOUT BLUE LAGOON NATIONAL PARK**

***By Carlyn Hambuba***

AN investor from Zimbabwe who has brought the Blue Lagoon National Park, situated in Mumbwa, has expressed concern at the high rate of poaching in the park. The

conservationist, John Mckendricks, says that at the rates wildlife is being killed, the animal population will be completely wiped out in a few years' time.

Mr. Mckendricks, owner of the company Trully-Ho safari has already started rehabilitating the park and is being funded by World Wide Fund for Fund. (WWF). "In the first phase of the rehabilitation, we will rehabilitate the roads, improve the cause way and air field then erect a boundary around the park to protect the animals," Mckendricks said.

Mr. Mckendricks pointed out that in the 1970s the park had a population of 35,000 animals but the figure declined to 20,000 by 1997.

WWF Tourism Module expert Chuma Simukonda explained that the partnership with Trully-Ho is part of a global programme by WWF to encourage investors in the conservation of Wetlands ecosystems. He said under the scheme known as Partners for Wetlands, WWF is working towards encouraging sustainable productive use and conservation of nature. Mr. Simukonda notes that the park needs to stabilise in order to get rid of poachers who are killing animals indiscriminately. He said a general management plan for the park is being worked out and to counter poaching, an anti-poaching unit will be formed to operate within the park.

A game ranger, John Kunga interviewed in the park said poachers have sophisticated fire-arms, which his team does not have. He said despite the drawbacks, they are determined to win the battle against the poachers. Mr. Kunga also observed that poaching has increased because game rangers were demobilised after the transformation of National Parks and Wildlife Department to Zambia Wildlife Authority (ZAWA). He said that the rangers have not yet been told if they will be picked by ZAWA, which has led to low morale among them.

The Blue Lagoon is part of the greater Kafue flats of Zambia, which are wetlands. The wetlands are best known for the Kafue Lechwe, a semi-aquatic antelope found only in this part of the world. This antelope now faces extinction due to poaching.

## **ECZ LIBRARY SERVICES: PROVIDING ACCESS TO ENVIRONMENTAL INFORMATION**

*By Sheila S. Makala, Librarian*

THE ECZ Library operates under the Data Bank Unit. The library is situated at the main ECZ office in Lusaka. While the main function of the library is to provide relevant literature to support the operations of ECZ, it also provides information to the general public on reference basis only. The library thus collects and maintains up-to-date information on all aspects of the environment both locally and internationally, and makes it readily available to anyone needing it.

The library collects reports, books and journals containing up-to-date environmental information. In its collection, there are reports and publications of the ECZ such as the State of the Environment and Who Is Who in Environment. The Library has copies of

the Environmental Protection and Pollution Control Act and the Regulations, which cover air, water, waste, environmental impact assessment, pesticides and toxic substances. These documents can be photocopied through the library. The library also collects information from other stakeholders such as the Ministry of Environment and Natural Resources and other ministries, Government departments and NGOs. The library also seeks to collect rare documents on the environment for reference. For information, which the library might not have, it refers its users to other organisations, which may have such information as required.

The main purpose of the library is to enhance better decision-making on matters relating to the environment by members of staff and various stakeholders by providing access to information. The Government recognises that the dissemination of information on environmental issues to individuals and organisations is a critical activity and ECZ is the entity responsible for this task. This is to foster sustainable development of our country and protection of the environment. Access to the library is free. It is open Monday to Friday from 8:30 to 12:45hrs and from 14:00 to 16:45 hrs and closed on weekends. Users of the library include students, school children, researchers, lecturers, consultants, journalists and the general public at large. All are welcome to the ECZ library.

## **ZAMBIA'S ACHIEVEMENT ON CHEMICAL SAFETY APPLAUDED.**

*By Julius Daka and Theresa Bowa*

THE third session of the Intergovernmental Forum on Chemical Safety (IFCS), referred to as Forum III, was held in Salvador, Bahia, Brazil from 15 to 20 October 2000 under the theme "In Partnership for Global Chemical Safety". The forum is a non-institutional arrangement to provide analysis and report on progress of governments, international organisations and intergovernmental bodies in achieving the environmentally sound management of chemicals and to provide advice and guidance and make recommendations.

Set up in 1994, the IFCS has since held Forum I and Forum II meetings. IFCS seeks consensus amongst representatives of governments, in consultation and collaboration with other participants, on the development of priorities and strategies for the Agenda 21, chapter 19 i.e. Environmentally Sound Management of Chemicals including Prevention of Illegal International Traffic in Toxic and Dangerous products and related issues and undertakes review of such strategies. The IFCS provides policy guidance with particular emphasis on regional and sub-regional co-operation.

At Forum III, progress on priorities set during Forum I and II were reviewed, Bahia declaration on Chemical Safety was adopted and new priorities for action to be reviewed at Forum iv and v were put in place.

At Forum III, Mr Joseph Sakala, Mr Julius Daka and Mrs. Teresa Bowa, represented Zambia.. The country actively participated at Forum III in the Africa Regional meetings, plenary sessions and by presenting an exhibition.

Prior to this meeting, different IFCS regions held pre-Forum meetings whose purpose was to come up with regional positions or inputs on various thematic topics (agenda items) to the Forum III meeting.

Zambia participated in the discussions of the Africa regional meeting, which noted among other things that some African Countries have not elaborated their National Profiles and do not have adequate environmental legislation. This has been compounded by the fact that the required capacities (human, technical, material and communication to achieve an adequate environmental management of chemical products are still very weak, or simply do not exist at all. It was noted that Zambia was the only country from Africa that has developed a Pollutant Release transfer Register (PRTR) system. The achievements made by Zambia on these issues were noted and applauded.

Other concerns raised in these meetings relate to the fact that the impact of chemical pollutants on the environment and over the health of people living in Africa is not well known. Further, the prevention of illegal traffic of toxic and dangerous chemical products was considered as one of the most important priorities for action for the African Region

Zambia, through the ECZ, presented a poster on Environmental Licensing Information System (LIS) for Industrial Pollution Prevention and Control in Zambia. Mr Julius Daka and Mrs Theresa Bowa presented the poster as part of the Pollutant Release and Transfer Registers (PRTR) session.

From the general considerations, priority actions for Africa were identified and thoroughly incorporated in the priorities for action beyond the year 2000. African countries pledged to perform according to requirements about the mechanisms through which they could access the required financing in order to implement the priority programmes identified during forum III. Zambia acknowledged the support of the Norwegian government to ECZ in regards to developing a licensing information system that could be considered as a PRTR. The support from the Canadian International Development Agency (CIDA) to establish an emergency system on chemical safety was also acknowledged.

During regional meeting nominations for new officers of the forum were considered. Africa supported the nominations of Brazil for the President, elected Senegal for Vice President for the Africa Region. Nigeria and Madagascar were chosen as members of the Forum Standing Committee while Angola and Malawi were chosen as alternates respectively.

#### **ILLEGAL QUARRYING IN SESHEKE WORRIES ECZ**

*By Justin Mukosa, Environmental Education Officer*

AS PART of the Industrial Pollution Prevention Programme (IPPP) Phase II Programme inspection tour, the Director and Inspectors from Environmental Impact Assessment, Waste Management, and Water Pollution Control Units visited Sesheke in November 2000. The purpose of the visit was to check on any operation or developmental work

that required ECZ attention. There were three issues of concern, quarrying, waste management and water pollution.

The major issue is quarrying of sand being used for construction of the Trans-Caprivi highway linking Walvis Bay in Namibia to Democratic Republic of Congo through Sesheke and Livingstone. Quarrying has been going on at three major sites on the Western bank of the Zambezi River at Katima. The inspection revealed that this activity contravenes Environmental Impact Assessment Regulations.

This is because, although VKE Consulting in conjunction with Rumdel Construction, both South Africa Companies, have a mining licence from Ministry of Mines and Minerals Development, they have no clearance from ECZ.

The inspection revealed that generally, the major environmental issues of concern arising from this activity are land degradation and loss of aesthetic value. Other impacts include noise pollution from machinery and blasting as well as air pollution to the nearby villagers and potential river pollution and siltation as the sites are less than 500 m from the Zambezi River. The Consultant said the operations at two of the sites would cease by the end of November 2000. The other site has been closed and rehabilitation has been accomplished by stabilising slopes and minimal replacement of top- soil to facilitate re-growth.

VKE and Rumdel were fined and directed to submit an EIA report of the sites with focus on the rehabilitation plan.

In regards to water pollution in Sesheke, the problem is linked to sanitation in the area. The findings from this tour revealed that most houses, private and public institutions use septic tanks and pit latrines. For instance, Sesheke Secondary School operates its own set of maturation ponds. The discharge from the ponds drains into the Zambezi River.

The Director of Works for Sesheke District Council said that they have problems emptying septic tanks as they do not have a vacuum tanker but rely on the one from Mongu at a high cost of hiring.

Sesheke District Council was requested to compile and submit data to the ECZ on the nature of sanitation in the area vis-à-vis list of facilities discharging effluent to the public streams.

The other issue of concern in Sesheke is waste management. The District Council has no disposal site. Discussions held with the Director of Works revealed that waste is dumped in open places, the bush, or back yards. The District Council was ordered to come up with a disposal site, which should be licensed by the ECZ.

## **WASTE MANAGEMENT ZAMBIA CHAPTER FORMED**

*By Cathy Sikombe*

THE ZAMBIA Waste Management Association, Southern Africa Zambia Chapter, has launched the Institute of Waste Management with a view to address waste management issues that have contributed to environmental degradation in the region. Mr. Rueben Lifuka, National Vice Chairperson, said there is need for ordinary Zambians to work closely with local authorities and other government departments to address the issue of waste management, which has the potential to lead to outbreaks of epidemics.

Mr Lifuka noted that uncollected heaps of garbage leaching into water bodies has resulted in the contamination of water sources. Insufficient waste management services have contributed in a large measure to the poor state of many cities and that this was the challenge that needs action by both citizens and government, as opposed to grumbling and criticisms. The Zambia Waste Management Association wishes to seek support by raising the profile of waste management to a national level adding that his organisation notes the remarkable strides government has made in dealing with issues of water and sanitation. He however regrets that waste management continues to be a secondary issue and has urged government to consider the possibility of having a national strategy on waste management which will give guidance to various stakeholders.

Mr. Lifuka said the launch of the Institute should act as a boost to the practice of waste management in Zambia and will not operate in isolation but maintain professional contacts with their counterparts in the region. Waste management can be a business venture and needs to be promoted and exploited by even small-scale entrepreneurs. Although there have been a number of private waste collection companies in the past few years there are still some areas of waste management that have not been exploited by the private sector. It is incumbent upon government to recognise waste management as a viable sector, which requires investment opportunities as well.

In addition, Mr. Patrick Kangwa, Lusaka Deputy Mayor, said the launch of the Institute is a step in the right direction, as it will contribute towards articulating for a suitable waste management system in the country. Mr. Kangwa disclosed that waste management was one of the priority areas and that strategic measures have been outlined in Lusaka City Council's five-year strategic plan, first ever in Zambia. He added that the strategic plan is a culmination of efforts by many stakeholders whose aim is to ensure that governance of the City of Lusaka moves from mere political rhetoric to more pragmatic solutions in resolving environmental problems.

Hon. Samuel Miyanda, Acting Environment and Natural Resources Minister, revealed that with a population of two million, Lusaka generates a total of one thousand four hundred tonnes of waste per day, of which only about fourteen percent is collected by both City Council and private waste collectors. Hon. Miyanda said this situation presents a challenge to all Zambians who would want to benefit from a clean and healthy environment. He pledged government's commitment to work together with NGOs, co-operating partners and communities in tackling issues of waste management to protect the environment.

The Zambia Waste Management Association is a small but active voluntary organisation, which was formed in 1995 after the realisation of the pressing problems of waste

management that nearly all towns in Zambia have to deal with. The organisation intends to advocate for appropriate waste management practices not only by local authorities but business houses and industries including residential areas.

## NATIONAL WETLANDS POLICY IN PREPARATION

*By Misozi Phiri, Senior Inspector - Natural Resources.*

Wetlands are an important Natural Resource in Zambia. They are a rich source of high Biological diversity, which supports many life forms, however, they are not well managed.

Currently, resources in wetlands are managed sectorally inspite of them being an ecosystem. It is for this reason that the Wetlands Policy and Strategy are being prepared. The major objective of the policy is to improve management of wetlands in an adequate and coordinated approach. ECZ's Natural Resources Unit is spearheading the work.

By definition Wetlands are “*areas of marsh, fen, peatland or water, whether natural or artificial, permanent or temporary, with water that is static or flowing, fresh or brackish or salt, including areas of marine water the depth of which at low tide does not exceed six meters.*” (Ramsar Convention, 1971).

Wetlands in Zambia include swamps, flood plains, flats, dambos, pans and shallow lakes. Dambos are the widest spread covering ten per cent (75,260 km<sup>2</sup>) of the country, while the swamps, marshes, and flood plains cover about four percent (30,104 km<sup>2</sup>). The major wetlands in Zambia are the Bangweulu Swamps, Zambezi Flood Plain, Kafue Flats, Luapula-Mweru, Mweru-Wantipa, Busanga Plain and Lukanga Swamps.

The International Convention that governs management of wetlands is called the “Wetlands Convention”. It was signed in 1971, in the Iranian town of Ramsar, therefore it is commonly known as the “Ramsar Convention”. It is also the oldest environmental convention. Zambia became party to the Convention in 1991. As a signatory, Zambia has since designated the Blue Lagoon and Lochinvar National Parks in the Kafue Flats, as well as the Chikuni area of the Bangweulu Swamps as wetlands of international importance, otherwise known as “Ramsar Sites”. The government has now proposed more areas of the country to be wetlands of international importance.

Why should wetlands be important? Wetlands are a source of great biological diversity and support many life forms. They carry the largest number of flora species and provide good habitats for most species of mammals, birds, amphibians, reptiles and fish. Many wetlands lie within National Parks. They are therefore important gene banks for a large number of species and may serve as sources of genetic materials for genetic improvement in plants and animals.

Wetlands have both important ecological and socio-economic functions. Their ecological functions include ground water recharge, ground water discharge, flood and erosion control, water quality control, waste water treatment, toxic substances management, nutrient retention, sediment trapping, food chain support and sustenance of biological

diversity. The socio-economic benefits of wetlands include plant products, fisheries resources, wildlife resources, livestock production, agricultural practices, water supply, and tourism and recreation.

In today's world, wetlands are continually threatened by an enormous number of factors, which include drainage of wetlands, dam development, water abstraction and irrigation, siltation, and mining. Others may include growing human population and settlements, deforestation, land tenure, pollution and eutrophication, over hunting, over fishing and overgrazing.

The Zambian Government has recognised the need for improved wetlands management. This has led to the preparation of the National Wetlands Policy to guide the management of wetlands in Zambia. In this regard a draft National Wetlands Policy document has been prepared. The preparation of the draft National Wetlands Policy involved fact-finding missions and local community workshops in the Kafue Flats (Lochinvar), Bangweulu Swamps (Samfya) and Zambezi Flood Plains (Mongu). Members of local communities were consulted during the fact-finding missions and workshops.

The draft National Wetlands Policy document will be presented before stakeholders in order to have their input. The National Wetlands Policy workshop, which will discuss the draft National Wetlands Policy document, is tentatively scheduled for February 2001. The workshop will have a wider participation and participants from wetland areas, other than those covered during the fact-finding missions and local community workshops will be invited to attend.

The implementation of the National Wetlands Policy will call for community involvement in wetlands management. Currently, the two Ramsar Sites are within the government protected areas and these are; the Kafue Flats, the Blue Lagoon and Lochinvar National Park and in the Bangweulu Swamps, at Chikuni. However, there are more wetlands in Zambia which have been proposed as Ramsar Sites and do not lie within the current protected areas. The local communities will be involved to a large extent in the management of these areas. They will be protected areas principally managed by local communities. Therefore, the role local communities will play in the management of local resources in the wetlands areas will be crucial.

## **ZAMBIA CELEBRATES THE INTERNATIONAL OZONE**

### **DAY IN DRAMA STYLE**

*By Mathias Banda, Ozone Project Co-ordinator*

ZAMBIA commemorated the International Ozone Day, which falls on 16th September each year for the preservation of the ozone layer. The launch of the ozone day was on the eve of the ozone day by the acting Minister of Environment and Natural Resources, Honourable Samuel Miyanda, Member of Parliament and Minister of Lands.

In his speech, the Minister said, "The Zambian government is concerned with the ozone depletion problem, and is conscious that the earth's atmosphere is under increasing

pressure from man-made chemicals that destroy the ozone layer. The government is also aware that in many parts of the world, these harmful substances know no boundaries and affect all mankind across the globe."

He was however aware that, different regions may respond differently to calamities caused by ozone depletion, given different levels of economic development and disaster preparedness.

Zambia joined the rest of the United Nations fraternity in the commemoration of the International Ozone Day for the preservation of the ozone layer on 16th September, 2000. The agreed theme for the commemoration of the year 2000 International Ozone Day was as follows: **"Saving the sky; protect yourself; protect the ozone layer."**

The theme reminds Zambia and other countries in the world of the importance of the ozone layer to the well being of the environment and human health and also reflects on the need for us to take necessary action to save the ozone layer from further deterioration.

"He encouraged citizens in Zambia to take action to reverse this dangerous trend by reducing and eliminating ozone depleting substances with safer substitutes which are economically and environmentally sustainable.

The planet stratospheric ozone layer continues to decline because of emissions from man-made chemicals such as CFCs in leaking cooling systems, in fridges and air conditioners, halons from fire extinguishers, and methyl bromide from soil fumigation in agriculture sector.

In helping the Zambian government to raise the awareness in the Community, the Environmental Council of Zambia in conjunction with the Environment Support Programme supported the commemoration of the International Ozone Day on 16th September, 2000 with drama performances in most townships at the grassroots level and through the media.

The impact of the Protocol, and its adjustments and amendments, can be seen most clearly in the projected concentration of ozone depleting chemicals in its absence. Without the Protocol, the 'world that was avoided' would have experience a concentration of chemicals in the atmosphere of at least 17 parts per billion of equivalent chlorine by 2050 five times today's value and nine times the value for the year 2050. Ozone depletion would be at least 50% at northern, and 70% at the southern, mid-latitudes giving double and quadruple levels of surface UV-B radiation.

The success of the Montreal Protocol has avoided the substantial impacts on human health and well-being of the environment. The recovery will be much slower than the rate of damage, due to the slower rate at which natural processes remove the chemicals from the atmosphere and it could be delayed by further volcanic eruptions, particularly cold Arctic winters or complex interactions with other sources of pollution.

In conclusion the Environmental Council advises the community in Zambia to be part of the global village, and should cooperate with other states to save the sky by being ozone friendly. As the saying goes "think globally, act locally," the community in Zambia need to take action at household level and business level to reduce and eventually eliminate the use of the ozone depleting substances.

## **AIR AND NOISE POLLUTION: PUBLIC AWARENESS CAMPAIGN**

*By Bwembya Mwanza, Technical Officer – Air and Noise*

ABOUT 15% of all Zambians show symptoms of cough, cold, and associated chest infections. Second to malaria, they are the leading illnesses in Zambia. Of these 15% showing symptoms of cold chest infections, 68% are children aged four years and below (*living conditions in Zambia (1998) Preliminary report*).

There is rampant burning of domestic waste in our communities, especially in unplanned settlements where garbage collection services are not provided, resulting in releases of noxious gases and particles to the atmosphere. We cannot rule out the fact that the burning of domestic waste in residential areas resulting in air pollutant emissions contributes to respiratory illnesses. Children are less resistant to infections and in most cases fall prey to these emissions. It is therefore, not surprising that such a higher number of children show symptoms of chest infections.

Noise pollution as a result of playing loud music in bars and other sources of noise causes sleep disturbances, irritation and annoyance to the public. Furthermore those that are very close to the noise sources risk ear damage, which could be temporal or permanent.

Due to the above, the Air and Noise Unit of the Environmental Council of Zambia has embarked on a public awareness campaign. This campaign will involve production of posters bearing information on the legal implications of violating environmental laws and the effect of noise pollution and air pollutants resulting from open air burning of domestic waste. The posters will be distributed to clinics and hospitals, schools, markets and bars.

## **ENVIRONMENTAL SUPPORT PROGRAMME MICRO-PROJECTS**

*By Cathy Sikombe*

THE MINISTRY of Environment and Natural Resources through the Environment Support Programme (ESP) has embarked on community based micro projects aimed at sensitising communities to protect the environment at a cost of Twenty thousand US (US\$20,00).

Pilot Environmental Fund Co-ordinator under the ESP, Mr Greenwell Mukwavi said in an interview recently that other micro projects, like the one which was launched in Mufulira on the Copperbelt, would also be launched in other areas. Mr Mukwavi said the

three micro projects in Mpika are namely the Munikashi water and sanitation, Mono Agro-forest and kaole water catchment projects.

Mr Mukwavi said the micro project are aimed at returning the management of environment and natural resources back to the local communities as they are directly dependant on the natural resources in the area.

He disclosed that the idea to embark on community based environmental management projects came about after realising that policy mechanisms were not helping much in environmental conservation.

He hopes that through the community based environmental management programmes communities will be able to use Natural Resources in a sustainable manner and contribute to environmental protection and poverty alleviation especially in rural areas.

Mr Mukwavi assured communities in areas where the projects will be launched that funds accessed will help them to enhance their living standards and protect the environment in turn.

The Environmental Support Programme (ESP) is a government initiative supported by the World Bank under the Ministry of Environment and natural resources, which aims at raising awareness of environment issues by applying different methods in an effort to increase capacity in environmental management.

## **STEP-BY STEP DEBATE ON CLIMATE**

*By Singy Hanyona*

THE EFFECTS of humanity's emissions of carbon dioxide and other gases threaten to reverberate throughout the environment. The growing scientific evidence that the climate is already changing and that global warming will even be worse over the course of the 21<sup>st</sup> century than previously believed should ring alarm bells in every human mind on earth. The following are the steps and efforts taken by the international community in trying to address the looming human catastrophe of climate change.

### **The Earth Summit: Rio De Janeiro - 1992**

Twenty years after the 1972 Stockholm Declaration first laid the foundations of contemporary environmental policy, the Earth Summit became the largest-ever gathering of Heads of State.

Industrialised nations agreed to voluntary caps on emissions of manmade greenhouse gases.

Other agreements adopted at Rio were the Rio Declaration, Agenda 21, the Convention on Biological Diversity and Forest Principles.

### **Conference of Parties (COP 1) Berlin - 1995**

Delegates from 117 Parties and 53 Observer States participated in COP 1, as did over 2,000 observers and journalists.

They agreed that the commitments contained in the United Nations Framework Convention on Climate Change (UNFCCC) for developed countries were inadequate and launched the "Berlin Mandate" talks on additional commitments.

They also reviewed the first round of national communications and finalised much of the institutional and financial machinery needed to support action under the convention in the years to come.

### **Conference of Parties (COP 2): Geneva - 1996**

Some 2,000 scientists and experts world-wide reviewed the Second Assessment Report.

It was soon widely known for concluding that "the balance of evidence suggests that there is a discernible human influence on global climate".

However, the Report did much more, for example confirming the availability of so-called no-regrets options and other cost-effective strategies for combating climate change.

### **US Congress: 1997**

The United States senate approves by a vote of 95 to 0, the Byrd-Hagel resolution that urges the administration not to agree to a treaty that doesn't include developing countries and which harms the US economy.

### **COP 3: Kyoto - 1997**

Some 10,000 delegates, observers and journalists participated in this high-profile event.

Under The Kyoto Protocol, which was adopted by consensus, industrialised countries have legally binding commitment to reduce their collective greenhouse gas emission by at least 5 per cent compared to 1990 levels by the period 2008-2012.

The Protocol has to enter into force 90 days after it has been ratified by at least 55 Parties to the Convention, including developed countries representing at least 55 per cent of this group's total 199 carbon dioxide emissions.

### **COP 4: Buenos Aires - 1998**

A two-year Plan of Action was adopted setting deadlines for finalising the outstanding details of the Kyoto Protocol so that the agreement will be fully operational when it enters into force sometime after the year 2000.

In addition, the Protocol's "mechanisms", the Plan of Action addresses work on policies and measures.

### **COP 5: Bonn - 1999**

The Conference of Parties (COP 5) in Bonn-Germany in 1999 was based on further negotiations on ways to implement the Kyoto Protocol. Little progress made.

### **COP 6: The Hague - 2000**

Delegates from all over 160 nations gathered in The Hague, Netherlands for another round of marathon climate negotiations. They addressed all issues of Kyoto.

The Conference took place along side the US Presidential elections. Delegates tried to determine how to get developing countries, which are exempted from signing the Kyoto Protocol, to participate in the so called Kyoto process.

The so-called "COP 6", with the conclave going down in the history books of Kyoto, will certainly lead to more COPs.

## **United Nations Environment Programme (UNEP)**

### **PRESS RELEASE**

#### **GOVERNMENTS FINALIZE PERSISTENT ORGANIC POLLUTANTS**

#### **TREATY.**

Diplomats from 122 countries , on December 22, 2000, finalized the text of a legally binding treaty that will require governments to minimise and eliminate some of the most toxic chemicals ever created.

“Persistent organic pollutants threaten the health and well-being of humans and wildlife in every region of the world,” said John Buccini, the Canadian government official who chaired the talks. “This new treaty will protect present and future generations from the Cancers, birth defects, and other tragedies caused by POPs.”

Executive Director KlausTopfer of the United Nations Environmental Programme, which organised the negotiations, applauded the strong international regime that has been established for promoting global action on POPs.

“This is a sound and effective treaty that can be updated and expanded over the coming decades to maintain the best possible protection against POPs,” he said.

The treaty sets out control measures covering the production, import, export, disposal, and use of POPs. Governments are to promote the best available technologies and practices for replacing existing POPs while preventing the development of new POPs. They will draw up national legislation and develop action plans for carrying out their commitments.

The control measures will apply to an initial list of 12 chemicals. A POPs Review Committee will consider additional candidates for the POPs list on a regular basis. This will ensure that the treaty remains dynamic and responsive to new scientific findings.

A financial “mechanism” will help developing countries and countries with economies in transition meet their obligations to minimize and eliminate POPs. “New and additional” funding and technical assistance will be provided.

Most of the 12 chemicals are subject to an immediate ban. However a health-related exemption has been granted for DDT, which is still needed in many countries to control malarial mosquitoes. This will permit governments to protect their citizens from malaria – a major killer in many tropical regions – until they are able to replace DDT with chemical and non-chemical alternatives that are cost-effective and environmentally friendly.

Similarly, in the case of PCBs, which have been widely used in electrical transformers and other equipment, governments may maintain existing equipment in a way that prevents leaks until 2025 to give them time to arrange for PCB-free replacements. Although PCBs are no longer produced, hundreds of thousands of tons are still in use in such equipment. In addition, a number of country-specific and time-limited exemptions have been agreed for other chemicals.

Governments agreed to reduce releases of furans and dioxins, which are accidental by-products and thus more difficult to control, “ with the goal of their continuing minimization and, where feasible, ultimate elimination”.

Other national measures required under the treaty relate to reporting, research, development, monitoring, public information and education.

The meeting in Johannesburg was the fifth and final POPs negotiating session and was attended by some 600 participants. The treaty will be formally adopted and signed by ministers and other plenipotentiaries at a Diplomatic Conference in Stockholm on 22-23 May 2001. Governments must then ratify, and when 50 have done so, the treaty will enter into force; this process normally takes several years.

Of all the pollutants released into the environments every year by human activity, POPs are among the most dangerous. They are highly toxic, causing an array of adverse effects, notably death, disease, and birth defects, among humans and animals. Specific effects can include cancer, allergies and hypersensitivity, damage to the central and peripheral nervous system, reproductive disorders, and disruption of the immune system.

These highly stable compounds can last for years or decades before breaking down. They circulate globally through a process known as the “grasshopper effect”. POPs released in one part of the world can, through a repeated (and often seasonal) process known as evaporation, deposit, be transported through the atmosphere to regions far away from the original source.

In addition, POPs concentrate in living organisms through another process called bioaccumulation. Though not soluble in water, POPs are readily absorbed in fatty tissue, where concentrations can be magnified by up to 70,000 times the background levels. Fish, predatory birds, mammals and humans are high up the food chain and so absorb the greatest concentrations. When they travel, the POPs travel with them. As a result of

these two processes, POPs can be found in people and animals living in regions such as the Arctic, thousands of kilometres from any major POPs source.

Fortunately, there are alternatives to most POPs. The problem is that high costs, a lack of public awareness, and the absence of appropriate infrastructure and technology often prevent their adoption. Solutions must be tailored to the specific properties and uses of each chemical, as well as to each country's climatic and socio-economic conditions.

The 12 initial POPs include eight pesticides (aldrin, chlordane, DDT, dieldrin, endrin, heptachlor mirex, and toxaphene), two industrial chemicals (PCBs and hexachlorobenzene, which is also a pesticide), and two unwanted by-products of combustion and industrial processes (dioxins and furans).







## **LETTERS TO THE EDITOR**

I have observed the unchecked littering in most of our cities, towns and on highways. If you travelled on any of the roads in Zambia today, you will notice this indiscriminate

throwing of litter from moving vehicles especially public transport vehicles.

I think that there is urgent need to sensitise public transport operators, (bus crews inclusive) on the need for consented management of waste on their vehicles. I would suggested that certain laws be put in place that would make it mandatory for public transport vehicles to have waste bins in which waste that accumulates doing a journey is collected and disposed of at proper designated places at bus stops. Signs should also be fitted in these vehicles to alert passengers about indiscriminate littering on highways. I further propose that such

vehicles, which are found littering, should be fined on the spot.

I would appreciate your comment on this.

Concerned.

Dear Concerned,

We do appreciate the concern and measures will be put in place soon. Littering is one of the biggest problems the country is facing. ECZ has observed this and has circulated a letter to the U.T.T.A and Ministry of Transport and Communications regarding the issue.

The U.T.T.A are encouraged to have litter bins on their buses. The Statutory Instrument to include such offences and prohibit dropping of any substance anywhere except in designated places is being worked on.

Editor.

**CLUES ACROSS**

1. A chemical sprayed on  
crop which is harmful to  
life.(9)
6. Harmful product from  
a fire(3)
7. Never put this on a  
burn.(3)
9. A deadly disease caught  
from an infected animal  
bite.(6)
- 10.This will protect your  
home from lightning.(6)
- 12.A machine that stops  
traffic.(5)
14. On the road always wear  
something white  
at .....(5)

1. We can ..... accidents  
from happening.(7)

2. Reptiles without

legs. (6)

3. A knife or glass can

cause this.(3)

4. Use soap and water to

get.....out of a wound (4)

5. Something put on a

wound to kill germs (10)

7. Lack of oxygen can

make you .....(5)

8. A person who saves lives .(5,5)

16. Never leave babies or small children on their own near a

.....(4)

17. Don't cross the road when a .....is coming.(3)

18. First aid courses are available all..... round.

19. This stings your eyes and makes you cough(5)

i. Learn to

swim

11. Learn to swim otherwise

you may.....(5)

13. These have two Wheels

and pedals.(8)

15. Another word for

wound. (6)