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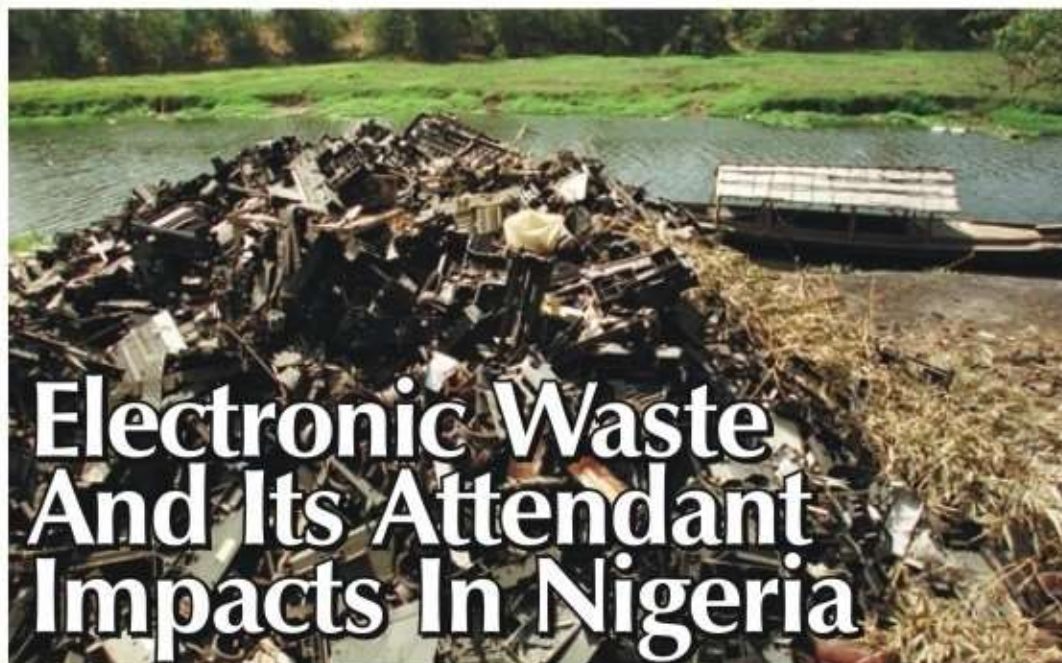
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Electronic Waste And Its Attendant Impacts In Nigeria

One of the topical issues of the 21st century as advances in Information and Communication Technology shape human development and lifestyle is electronic waste. Electronic waste has assumed greater significance due to improper management, increased dumping in developing countries and the associated problems of contamination and pollution. Prevention of the attendant impacts

of electronic waste especially in this age and time when electronic materials and equipment has taken over is very necessary.

Electronic waste embrace all types of discarded, surplus, obsolete or broken electrical or electronic devices. Electronic waste which includes wastes from computer and accessories, refrigerators, air conditioners, cell phones and personal stereos and other consumer electronics which have

been disposed off by their original users has become the driver of hazardous and toxic components. Electronic wastes contain toxic components such as chlorinated and brominated substances, toxic gases and metals, biologically active materials, acids and plastic additives. It also contains heavy metals like lead, cadmium; barium, brominated flame retardants, mercury, poly vinyl chloride (PVC),

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Prof. Olanrewaju Fagbohun

FROM THE EXECUTIVE DIRECTOR'S DESK

2010 was an eventful year, and 2011 has also started on a resounding note. Can you believe we are already moving towards end of February, 2011? In the course of 2010, and since the beginning of 2011, some people have continuously dreamt of worthy accomplishments. Others simply remained awake and did them. For us at ELRI working together with our partners, we have been in the latter group. I sure hope you have too. The lesson is not to allow for fatigue simply because the task is not easy. If it were easy it would have been done before. There lies the challenge of productive achievement and the opportunities that goes along with it.

Since things do not happen, but are made to happen, we have decided to usher in year 2011 with a focus on waste electrical and electronic equipment (WEEE). There is a worldwide concern about the transboundary movement and disposal of the waste of electrical and electronic equipments (e-wastes). This has in turn led to calls for the tightening of environmental laws both in developed and developing nations and the adoption of

international instruments to address the movement and dumping of these wastes. Key among these are the Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and Their Disposal, 1989 and the Bamako Convention on the Ban of Import into Africa and the Control of Transboundary Movement and Management of Hazardous Wastes Within Africa, 1991. Unfortunately, the resulting rise in the costs of disposing e-waste coupled with the globalization of shipping has continued to serve as incentives for illegal trafficking of e-wastes.

The poorest of the poor are increasingly becoming the recipients of the hazards and poisons of the rich. The fundamental question is how effective are the existing laws and various initiatives for preventive or remedial action to combat the illegal transfer of, and illicit traffic in e-waste in the face of the poverty of the world's vulnerable and the politics of the rich?

Many thanks to the Lagos State Environmental Protection Agency ("LASEPA") led by Engineer Adebola Shabi, and the BASEL Convention Coordinating Centre for the Africa Region ("BCCC Nigeria") led by Professor Oladele Osibanjo who

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ELRI Briefly

VISION

ELRI aspires to be recognized as a credible facilitator of superior scholarship and leadership in providing local and global information on environmental law, and the promotion of environmental rights in certain key areas for the benefit of individual citizens, indigenous communities and broader public policy.

MISSION & OBJECTIVES

ELRI's mission and objectives is to achieve the following among others:

- Advance environmental protection and governance in Nigeria by influencing actions and initiatives that can serve as catalyst for the enhancement of environmental law and policy;
- Provide objective, non partisan analysis of law and policies, and deliver educational programs for the improvement of environmental protection and governance;
- Provide information services, advices and publication on environmental practices and programs as it affects sub-Saharan Africa;
- Provide training tools and support to citizens, organizations, government agencies, businesses, environmental managers, communities, indigenous peoples and other relevant stakeholders;
- Engage in sponsored research and related project pertaining to harmonization of laws and issues such as environmental justice, risk assessment and risk communication.

ORGANIZATIONAL STRUCTURE

The ELRI structure is made up of the Governing Board, an Executive Committee, a Secretariat and Specialized Committees as may be required for specific purposes.

GOVERNING BOARD

The Governing Board consists of a Chairman and other Principal Members, one of whom is the Executive Director of ELRI.

EXECUTIVE COMMITTEE

The Executive Committee is responsible to the Governing Board to which its reports concerning all its activities. The Executive Committee meets as many times as necessary for the effective discharge of its activities. The Executive Committee is the implementing organ of the decisions of the Governing Board.

SECRETARIAT

The Secretariat operates under the supervision of the Executive Committee. The Secretariat carries out the day-to-day execution of activities of ELRI under the direction of the Executive Director. The Secretariat is made up of all staff of ELRI.

SPECIALIZED COMMITTEE

Specialized Committees may from time to time be set-up for the effective discharge of the activities of the Institute.

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poly chlorinated biphenyl's (PCBs) etc. Many of the components are valuable (e.g. some can produce precious metals such as gold and silver), some are hazardous and some are both depending on their condition and density.

Improper management of electronic waste causes acidification of the soil and leach ate contaminants into the soil which pollute groundwater. The threat to both health and vital components of the ecosystem by these wastes is enormous. For example, heavy metals such as Lead (Pb) causes damage to the central and peripheral nervous systems, blood systems and kidney. It also affects brain development in children, cadmium (Cd) accumulates in kidney and liver, it is teratogenic and causes neural damage), beryllium (Be) is carcinogenic and causes lung cancer, berylliosis and skin diseases such as warts, mercury (Hg) causes chronic damage to the brain and respiratory and skin disorders due to bioaccumulation in fishes), Barium (Ba) causes muscle weakness and damage to heart, liver and spleen, plastics including PVC causes reproductive and developmental problems, damage to immune system and interferes with regulatory hormones, hexavalent chromium (Cr) VI causes asthmatic bronchitis and DNA damage and brominated flame retardants disrupts endocrine system functions. With the attendant impacts of electronic waste to both health and environment and the shipping of these wastes to developing countries, several countries have exhorted the need for a global agreement to address its problems and challenges. This led to the adoption of electronic waste as one of the issues of the Basel Convention for the control and reduction of transboundary movements of hazardous and other wastes. The Convention calls for effective involvement and coordination by all concerned within the approach of



common but differentiated responsibility. Even in Nigeria, in the wake of the toxic waste dump at Koko town, the Harmful Wastes (Special Criminal Provisions etc.) Act was enacted.

The major sources of electronic waste are individuals, businesses, institutions, governments and manufacturers. Many electronic wastes can be reused, refurbished or recycled in an environmentally sound manner so that they are less harmful. To ensure this, it is necessary to establish a programme that will embrace the reduction, reuse, proper disposal and recycle in order to rid the environment of electronic wastes. In Nigeria, there is the need to introduce a National Policy on Electronic Waste Management, a National legislation and a Monitoring and Enforcement Institution. Similarly, the government should introduce such mechanisms as Waste-to-Wealth and Poverty Alleviation, establish properly managed sites for recycling and landfills and ban the importation of electronics that are scrap materials.

No doubt, the infrastructure expense, technology and skills required to create proper facilities for electronic waste management appear high but facing the challenge represents an important step in addressing the attendant impacts. This challenge will involve the education of citizens (human & corporate), proper collection, recycling and disposal. This will help reduce waste generation, curb health problems, recover a wide range of valuable materials and generate employment potentials, cut greenhouse gas emissions and pollution linked with electronic waste. What is needed therefore is immediate action to face the challenge.

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agreed to partner with ELRI to organize the Eko E-Waste Summit 2011 from 24th to 25th February, 2011. The sub-themes of the Summit are Challenges Facing Effective Management and Regulation of E-Waste; Regulatory Frameworks for the Management of E-Waste; Economic Perspective of E-Waste; International Collaboration for Management of E-Waste; and Building Capacity for the Management of E-Waste.

A significant opportunity that this Summit afford is the opportunity to bring together expert scholars and industry leaders who have played and are still playing major roles in the area of e-waste. In spite of the several global activities ongoing at this point of time, they have decided to give us their time and share their knowledge base with us for this we say thank you.

It has not all been rosy. We faced enormous challenges, particularly that of funding the Summit. But for the support of few corporate bodies whose creed is to genuinely support corporate social responsibility (as opposed to

merely paying lip service), this Summit would have remained a DREAM. These are the ambassadors of the CSR Initiative. We are happy to note that we have been able to put the support you gave us to good use.

When the going become very tough, the General Manager of LASEPA, Engineer Adebola Shabi stood firm. The Honourable Commissioner for the Environment, Lagos State, Dr. Muiz Banire also remained actively involved. He kept reassuring us of the total support of His Excellency, the Governor of Lagos State, Mr. Babatunde Raji Fashola, SAN. Our sincere appreciation.

Finally, to the distinguished members of Management, Director and staff of LASEPA, the entire staff of BCCC and ELRI, how best do we thank ourselves? I guess it's more like hearty congratulations for a job well done. As the saying goes, all is well that ends well. It's been a tough one, but, we surmounted all the odds. *Our Man of the Quarter...* all the vulnerable groups presently facing the environmental and human health concerns of electronic waste.

Hazards Associated With E-Waste Management In Developing Countries

Introduction

The term e-waste or waste electrical or electronic equipment encompasses "any appliance using an electric power supply or batteries that has reached its end of life (OECD, 2001). E-waste is one of the fastest growing waste stream (Widmer et al, 2005) and growing at a rate of 3-5% per annum (Schwarzer et al 2005). Constantly upgrading electronic products has resulted in growing e-waste. The amount of electronics is growing. At the same time, the life of equipment is getting shorter. Nigerians buy new cell phones every 14 months. These cell phones usually develop batteries and other problems after one year. Widmer et al (2005) reported that the lifespan of a new model computer has decreased from 4.5 years in 1992 to an estimated 2 years in 2005. Decrease in lifespan sometimes may be due to physical damage like failed controller, power surges, drive failure, viruses or Trojans etc.

Hazardous Component of E-Waste

E-wastes contain a complex array of parts that carry many hazardous substances. These parts are cathode ray tubes (CRTs), batteries, relays, drives, plastics, printed circuit boards (PCBs), liquid crystal displays (LCDs), power pack, motherboard, expansion cards and other current boards etc. Electrical and electronic equipment can contain a large number of hazardous substances, including heavy metals (e.g. mercury, cadmium, lead etc), flame retardants (pentabromophenol, polybrominated diphenyl ethers (PBDES), tetrabromobisphenol A (TBBPA) etc and other substances. These pose significant human and environmental health risks. It is estimated that e-waste contributes as much as 70% of the total heavy metals and 40% of total lead (Pb) in the waste stream being sent to landfill (Grossman, 2006).

The hazardous substances found in the e-waste include substantial quantities of lead, cadmium, chromium and flame-retardant plastics. LCDs are used in different electronics. Liquid crystals are embedded between thin layers of glass and electrical control elements. A PC display about 0.5g of liquid crystal. These liquid crystals contain mixture of 10-20 substances which belong to the group of substituted phenylcyclohexanes, alkylbenzenes and cyclohexylbenzenes etc. These substances have corrosive, and irritant properties (AEA, 2004). Relays used in telecommunication circuit board, electrical equipment, and switches, flat screen TVs, copiers and fax machines all contain mercury



(NEWMOA, 2008). Some of the batteries used in mobile phones, portable computers contain cadmium, lead and lithium, nickelcadmium (Ni-Cd), nickel metal hydride (NiMeH), Lead acid etc. (CRTs) contain Lead. CRT in computer monitors and televisions contain 0.4kg and 1kg of Pb respectively (Menad, 1999). The inside of CRT panel is coated with fluorescent, phosphor composed of cadmium, Zinc and rare earth metals. The electron gun of the CRT contains frame, bears barium and barium compounds (OECD, 2003). Plastics contain chlorine in PVC. These can yield polychlorinated dibenzo-p-dioxins and furans (PCDDs/Fs) during uncontrolled burning. These days cadmium is used as stabilizer and phthalates as plasticizers in PVC. PCBs contain a number of substances of concern (OECD, 2003, AEA, 2004). These are Lead (in solder), antimony (in solder), beryllium (in connectors), cadmium (in contacts and switches), brominated flame retardants (in plastics)

Hazards Associated with E-waste Management

In the USA, 2.2 million tons of e-waste was generated during 2000. According to Puckett et al (2002) between 50 to 80% of the e-waste collected in the USA for recycling is not recycled domestically but exported to developing countries. India in 2007 generated 0.38 million tons of e-waste from discarded computers, televisions and mobile phone (Greenpeace, 2008). Major sources of e-waste in Nigeria are government, public and private sectors and households. Imported e-waste can be seen in the computer village and Alaba market in Lagos, Onitsha, Port Harcourt, Biya, Kano, Kaduna. These e-wastes are reused, recycled, incinerated or disposed in open dumps or landfill.

Hazards Associated with E-waste Recycling

United Nations through the Basel Convention adopted the Nairobi declaration on e-waste in 2006. Currently, there is no policy on e-waste management in Nigeria. There is lack of

recycling facilities in Nigeria. There are indications that e-waste is being recycled in the informal sector. The state of e-waste recycling processes in developing countries like Karachi, Pakistan, Accra, Ghana can be found in Brigden et al (2005, 2008). Electrical repairers or shop owners disassemble the electrical appliances to get precious metals, CRTs, Batteries, PCBs, capacitor, diodes, and power pack etc. Disassembly is done manually. In the process of disassembling of e-waste, there is possibility of release and

spillage of hazardous substances. A study of exposure to e-waste in Guiyu, in Guangdong Province in China, revealed that residents of Guiyu have reported their children suffering from medical problems as breaking ailments, skin infections, and stomach diseases. There has also been a surge in cases of leukemia (Leung et al 2006). Huo et al (2007) found that blood lead levels in 165 children of Guiyu ranged from 4.40 to 32.67 ug/dl with a mean of 15.3 ug/dl. High concentration of brominated and organophosphate flame retardants in the air at an e-waste recycling facility was reported by Sjödin et al (2001).

Hazards Associated with E-waste Incineration

There are cases of open burning of plastic coated wires and cables to isolate coppers and aluminum, recovery of solder and chips from PCBs by heating the boards, acid extraction of metals. Burning of plastics or rubbers usually result in formation of PCDDs/Fs in the air (Leung et al, 2006).

Hazards Associated with E-waste landfilling

Hazardous leftover materials which cannot be sold, such as batteries, capacitors, and CRT glass, are discarded in open dumps. Heavy metals are always leached from e-wastes in open dumps or landfills. Pb leaches from the CRTs produces an average concentration of 18.5 mg/l in toxicity characteristic leaching procedure (TCLP) extracts (Musson et al, 2000). This exceeds the TCLP regulatory limit of 0.5 mg/l. Leaching of toxins to surface/ground water can pollute the groundwater or surface water. Workers in e-waste disposal sector are poorly protected against the risk of it.

Conclusions

E-wastes contain a wide variety of hazardous substances. E-waste handling, separation and transformation processes are associated with hazards. There is therefore the need for strong

legislation for e-waste management in developing countries. In the RoHS Directive of the European Union, this regulation practically bans the use of the substances (Pb, Hg, Cd, Cr^{VI}, P13B and PBDE) in most electronic products. Existing e-waste can be resold or refurbished and exported to neighbouring countries. Reuse, recycle and recovery should be encouraged. According to Plambeck and Wang (2009), slowing down the rate of new products introductions could have the effect of reducing the speed with which consumers replace the electronics they have purchased, and decreasing the mountains of e-waste accumulating across the globe.

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Electronic Waste - Emerging Strategies

By Claribel Diebo Longjohn

Electronic waste, which predictably is nicknamed e-waste, and also termed Wastes from Electrical and Electronic Equipment (WEEE), includes all types of obsolete, discarded or unwanted electronic equipment such as computers, televisions, cell phones and copiers. It has been reported that e-waste is growing at three times the rate of other municipal waste. This should be a cause for concern as, unlike the general municipal waste, e-waste is highly toxic. It contains chemicals such as lead, mercury and cadmium which are known to cause brain and kidney damage in humans. WEEE also contains Brominated Flame Retardants (BFR) which when handled improperly may have a negative effect on hormonal functions critical to normal development in humans. E-waste has thus, emerged as yet another menace to the environment. Worldwide, countries are coming up with ways of effectively checking its growth.

The trend in Nigeria is to dispose of e-waste in landfills where in most cases they are burnt. This practice unleashes the toxins in e-waste on the environment. Hazardous chemicals in e-waste can leach out of landfills into groundwater. Similarly, carcinogen dioxin may be emitted by e-waste plastics during burning. When released into the atmosphere, this toxin can cause cancer and also harm the immune and reproductive systems of the human body. As a result of its enormous attendant dangers, certain states in the United States of America have enacted laws banning e-waste from their landfills and incinerators.

In 1988, Nigeria imposed a ban on importation of hazardous waste. Hence, presently, it is illegal to import hazardous waste into Nigeria without authorization from the Nigerian Government. Under the Basel Convention to which Nigeria is a signatory, a country is allowed to define what constitutes hazardous waste in a way that suits its peculiar situation. It is not enough for the Nigerian government to impose a ban on hazardous waste. What is needed is the passage of a legislation

aimed at shutting the door against the influx of WEEE into the Country. It has been reported that as much as 75percent of the Electronic and Electrical Equipment (EEE) imported into the country as Second-Hand goods cannot be reused. As it is, Nigeria has allowed herself to be turned into a dumping ground for WEEE generated in other countries.

The newest strategy adopted by developed countries in curbing e-waste is the Producer Responsibility System. Under this system, the manufacturer takes responsibility for managing, in an eco-friendly manner, the waste generated from their products. Thus, when EEE are no longer needed by consumers they are allowed to return them to their

producers for proper management. Placing this responsibility on Manufacturers gives them a strong incentive to produce equipments that are recyclable.

It is strongly recommended that Nigeria passes a Producer Responsibility Law mandating Manufacturers to offer free e-waste collection and recycling programs as a prerequisite for selling their products in the country.

To check e-waste, consumers on their part should bear in mind that preventing waste is the preferred waste management option.



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Combating E-Waste At The Global Scene



INTRODUCTION

Industrialization, economic growth and the global craze for digitalization have engendered an increase in the production of electrical and electronic equipment (EEE). The proliferation of production and the short lifespan of these equipment in turns increases waste from electrical and electronic equipment (WEEE). It has been said that the amount of waste produced has accelerated perhaps even more sharply than the rate of the world economic growth.

While there is disparity between the developed and developing nations in terms of the level of production and usage of EEE, one serious challenge which the two worlds have in common has been the issue of management, disposal and recycling of WEEE.

Consequently, series of efforts are ongoing to combat the transboundary movement of WEEE and other hazardous wastes. Several initiatives have also been undertaking to curb the illicit dumping of toxic wastes and products, clean up of the environment, rehabilitation and assistance of victims by way of compensation, guiding national legislation in relation to the transboundary movement and dumping of toxic and dangerous products.

GLOBAL EFFORTS

The first and the most comprehensive pan-global international effort geared at combating WEEE is the Basel Convention on the Control of Transboundary Movement of Hazardous wastes and their disposal. This Basel Convention was opened for signature on March 22nd 1989 and it entered into force on May 5th 1992.

The Basel Convention adumbrates on the principle of Environmentally Sound Management of Hazardous Wastes. In other words, in accordance with this principle, practicable steps must be taken in order to ensure that hazardous wastes are managed in a manner which will protect human health and the environmental against the adverse effects which may result from WEEE.

Furthermore under the Basel Convention, the international community sets the following objectives:

- The prevention and minimization of the generation of hazardous waste and other wastes subject to the Basel Convention.
- The reduction of transboundary movements of hazardous and other waste subject to the Basel Convention.
- The provision of adequate capacity to manage wastes within the country of origin.
- The active promotion of transfer and use of cleaner technologies.

By way of addition, the Basel Convention stipulates that hazardous wastes and other WEEE subject to transboundary movements should be packaged, labeled and transported in conformity with international rules and standards. Transboundary movement of WEEE is prohibited between a party and a non-party to the convention except a bilateral, multilateral or regional arrangement exists as required under article 11 of the Convention.

CRITICISM

The Basel Convention has enjoyed wide ratification of 170 Party States. However, a major disturbing set-back to its objectives and principles is the failure of the United States of America (who is one of the largest producers of WEEE) to ratify the Convention. As a matter of facts, the United States is said to be responsible for approximately three million tons or 35% of the World WEEE.

FURTHER EFFORTS

Another international response, although on a regional level, to the scourge of WEEE and hazardous waste generally is the Bamako Convention on the Ban of Import into Africa and the Control of Transboundary Movement and Management of Hazardous Wastes within Africa.

The Bamako Convention was opened for signature on 30 January, 1991 and entered into force on 10th March, 1999. In this convention the principle of Environmentally Sound Management

of Hazardous waste was defined in similar terms as done in the Basel Convention. The Bamako Convention set the objective of protecting human health and the environment from dangers posed by hazardous waste by reducing their generation to a minimum in terms of quantity and/or hazard potential.

CRITICISM

A major setback to the Bamako convention however appears in its framework of implementation and enforcement. It has been observed that none of the organs of the Bamako Convention (the Secretariat, the Conference of Parties or the individual Parties) has an independent capacity to carry out an independent inspection.

RECENT TRENDS GEARED AT COMBATTING E-WASTE

The dangers inherent in the management or mismanagement of WEEE has been duly appreciated worldwide. More and more international organizations, networks and initiatives are rising up to the challenge. A few of this include:

- The Nairobi Declaration on the Environmentally Sound Management of Electrical and Electronic Waste;*
 - Partnership for Action on Computing Equipment;* This is a multi-stakeholder partnership between industry, government, academia and the civil society. It addresses the Environmentally sound management of used and end of - life personal computer.
 - Mobile Phone Partnership Initiative;* This is aimed at addressing environmentally sound management of used and end of life mobile telephones.
 - Silicon Valley Toxics Coalition;* Formed in 1982 located in San Jose California, it is a diverse grassroots coalition that engages in research and advocacy and is organized around an environmental and human health problem caused by the rapid growth of the High-tech electronic industry.
 - The based Action Network (BAN)*
- A global network of toxic and development activist organizations that share a vision of International environmental justice
- International Solid Waste Association;*
 - Solid Waste Association of North America;*
 - Environmental Protection Agencies ... etcetera.*

CONCLUSION

The global concerns, efforts, responses and awareness to the scourge of WEEE is improving by the day. While the scourge of WEEE has not disappeared and while manufacturers of EEE keep producing in reaction to the digitalization craze of consumers across the globe, international efforts at combating this life-threatening menace by way of various treaties, conventions, initiatives and networks would also proliferate over the years. The awareness level is rising. Maybe, just maybe, the day will come when the people of the world would adopt environmentally sound management of all wastes as a normal way of life.

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Brief on LASEPA

The State Executive Council on the 24th of April 1996 approved the Establishment of Lagos State Environmental Protection Agency (LASEPA) to be created out of the then Pollution Control Unit of the Department of Environment, Sewage and Water of Ministry of the Environment and Physical Planning (MEPP).

The Agency therefore inherited the responsibilities of the Pollution Control Unit in addition to the functions that were indicated in the Edict that later established the Agency. The Agency began operation in July 1996 with the appointment of the General Manager in the person of Engr. A.M.A. Shekoni.

Since its inception, the Agency with the Ministry of the Environment and Physical Planning prepared a draft Edict that established the Agency. This has been approved by the Military Administrator and gazetted as an Edict to establish the Lagos State Environmental Protection Agency Edict No. 9 of 1996.

Our Mission

The mission of the Lagos State Environmental Protection Agency (LASEPA) is to safeguard environmental quality that is consistent with the social and economic needs of the State, so as to protect health, welfare, property and the quality of life.

Our Goal

The major goal of the agency is to:

- Provide leadership to chart a new course for clean air, which is responsive to relevant needs in Lagos State and complies with priority aspects of the clean air act regulations.
- Address outstanding solid and hazardous waste management concerns and participate as appropriate in the national deliberations on reauthorization of the hazardous waste programme.
- Utilize creative means to address the priority needs for clean and safe water in Lagos State and participate as appropriate, in national deliberations and authorization of water programmes.
- Enhance capability to fund environmental clean-up when necessary and to provide better service for private party actions.
- Promote pollution prevention and market-based approaches for continued environmental progress.
- Develop an environmental planning capability, which emphasizes risk-based analysis, good science and sound data and open communication and informed participation.

LAGOS STATE ENVIRONMENTAL PROTECTION AGENCY (LASEPA)

In collaboration with

ENVIRONMENTAL LAW RESEARCH INSTITUTE (ELRI)

and

BASEL CONVENTION COORDINATION CENTRE FOR THE AFRICA REGION (BCCC – NIGERIA)

Organize a

2 – Day International Summit on the Regulation and Management of E-Waste in Nigeria

Keynote Addresses

Dr. NGERI BENEBO, JP, Director – General, NESREA

Ms. KATHERINE KUMMER PIERY, Secretary – General, Basel Convention Secretariat

Other Speakers:

- Professor Oladele Osibanjo, BCCC Nigeria
- Mr. Herve Guilcher, Hewlett Packard
- Ms. Elisabeth Tanguy, Nokia International
- Mrs. Florence Seriki, MD – OMATEK Ventures
- Mr. Adeleye Adagboyega

- Mr. Keith Anderson, E-Waste South Africa
- Professor Nacko Tojo, Lund University Sweden
- Professor Mynepalli Sridhar, Niger-Delta University
- Professor Lanre Fagbohun, NIALS, Nigeria
- Engineer Haron Adekilekun, MD – Maintenance Systems

- Mr. Jonathan Perry, Dell International, UK
- Mr. Jim Puckett, Basel Action Network
- Mr. Ota Oresanya, MD – LAWMA
- Jean Cox-keams, SteP
- Mr. John Oboro, CAPDAN

Special Guest of Honour

HIS EXCELLENCY, MR. BABATUNDE RAJI FASHOLA, SAN
Executive Governor, Lagos State

Chief Host
Dr. Muiz Banimo

Honourable Commissioner for the Environment

Date: 24th – 25th February, 2011

Venue: Lagos Oriental Hotel, The Ground Ballroom 3, Lekki/Epe Express Road, Victoria Island, Lagos, Nigeria

Time: 9:30am

Host:

Engr. Adebola R. Shabi
General Manager, LASEPA

LITERACY CORNER

Getting To Know E-Waste More



E-waste is the fastest growing form of toxic waste in the world. It is probably no surprise that considering our current age of technology and computers, e-waste makes up a significant portion of waste on Earth. However, what is surprising to most people is that e-waste is toxic. How can this be? Electronics are just a casement of plastic and metal right? Well, when we take a closer look at the many different elements that go into making up the many different electronic components and processes used in everything from computers to refrigerators, e-waste is a lot more than just metal and plastic. Some of the toxic substances of e-waste include the heavy metals, Mercury, Cadmium and Lead, as well as potential carcinogenic substances like polychlorinated biphenyls. In fact, nearly 70% of all heavy metals found in landfills comes from electronic equipment. On average, computers and monitors are 20% Lead by weight and contain a total amount of Lead ranging anywhere from 4 to 8 pounds - all of which is now steadily collecting as a toxic pollutant to the environment. And while the entire world still has a long way to go in developing more effective e-waste recycling programs, the U.S. is especially dealing with a serious issue. Just in the State of California alone (where e-waste recycling programs are making progress), 2.2 million computers are sold every year. This correlates into approximately 6,000 computers being discarded or put out of commission every day.

A positive side to all of this is that many people are not throwing their computers away, but instead are storing them in their attics at home or in the garage. Not quite sure what to do with such high value items, people often think of selling their old computers off at a garage sale or giving it to the Salvation Army or Good Will. And while this is a good temporary solution, we are going to have to face the fact that we can't keep lugging around our old unused electronics. Even the Salvation Army is unsure about what it should be doing with the steady stream of computers and other e-waste that is coming in so fast it can't even be given away. For now, however, it's a good thing all this outdated electronics is not being added to the tons and tons of e-waste that is already exponentially growing every year. Right now, e-waste Represents 2-5% of the total composition of municipal waste in the U.S., which apparently is the highest ratio of e-waste in the world.

Other countries have made considerable progress in easing the burden of e-waste. Switzerland was the first country to set up an electronic waste recycling system, which began with refrigerators

but now includes all forms of electronic waste. The European Union has also set up regulations that hold electronics manufacturers financially responsible for giving consumers the opportunity to return their old electronics to be reused or recycled free of charge. So, depending on where you live, your options to recycle your old computer, microwave or television might be limited. The best thing you can do is a little research. Find out where the closest recycling center or landfill is to your residence and call to inquire if there is a drop-off center for e-waste, and if so, the dates and times for collection. An even more convenient option is to use the services of a junk removal company.

Source: <http://www.savewithgreen.com/greentips/recycling/electronics-ewaste.html>

WHAT IS IN ELECTRONIC DEVICES?

Electronic devices are complex mixture of several hundred materials. A mobile phone, for example, contains 500 to 1000 components. Many of these contain toxic heavy metals such as lead, mercury, cadmium and beryllium and hazardous chemicals, such as brominated flame retardants. Polluting polyvinyl chloride (PVC) plastic is also frequently used.

These dangerous substances cause serious pollution and put workers at risk of exposure when the products are produced or disposed of. Of particular concern is the exposure of children and pregnant women to lead mercury. These metals are highly toxic and can harm children and developing fetuses even at low levels of exposure.

Source: <http://www.greenpeace.org> [Toxic Tech: Not in Our Backyard (Full Report February, 2008)]

COMPONENTS OF E-WASTE

E-waste consists of old electronic items such as computers, printers, mobile phones, refrigerators and televisions. It also includes hazardous substances such as heavy metals contained in discarded products. Additional categories includes lighting equipments such as fluorescent tubes, toys, sports and recreational equipment, surveillance and control equipment, medical instruments and automatic ticket machines, electric and electronic tools like drills, sewing machines, lawn mowers, etc

Sources:

<http://www.unep.org/documents/multilingual/default.asp> [UNEP backs action on e-waste in East Africa, Press Releases September 2010]

EMPA Swiss Federal Laboratories for Materials Testing and Research (definition according to the European Union WEEE Directive, 2006)

WHY SO SERIOUS?

E-waste can include computer central processing units, monitors, televisions, cell phones, pagers, i-pods, cathode ray tubes and other digital devices. The main source of e-waste is computers. Metallic compounds that are a major threat to the environment, like polyvinyl chloride, copper, arsenic, lead, cadmium, manganese, iron, cobalt, gold, beryllium and mercury are present in the electronic items including circuit boards, it are responsible for environmental pollution, causing health problems particularly in children. They can also lead to neurological disorders and cancer. The lax disposal of this waste into water bodies results in a threat to aquatic life and incineration of this waste causes air pollution. Currently landfills are being used in certain regions but as the waste keeps

piling up, exposure to the hazardous chemicals keeps on increasing. Dealing with electronic waste is a daunting task because there are no proper ways of disposing them.

With technology developing rapidly, computers turn obsolete quicker and we end up in more and more e-waste. The lifetime and diminishing rates of electronic goods makes the situation even worse for the environment. Every year there is a sheer rise in the number of Internet users and with everything becoming computerized, e-waste is becoming a prime concern to be dealt with.

Source: <http://www.youthkiwaaz.com/2010/06/e-waste-generation-a-threat-to-the-green-a-threat-to-existence/> (June 29, 2010)

MORE ON THE HEALTH HARZARDS OF CHEMICALS IN ELECTRONICS

- Some brominated flame retardants, used in circuit boards and plastic casings, do not break down easily and build up in the environment. Long-term exposure can lead to impaired learning and memory functions. They can also interfere with thyroid and oestrogen hormone systems and exposure in the womb has been linked to behavioural problems.
- As much as 1450 tonnes of a brominated flame retardant called TBBPA was used to manufacture 991 million mobile phones sold in 2006. This chemical has been linked to neurotoxicity.
- The cathode ray tubes (CRT) in monitors contain lead. Exposure to lead can cause intellectual impairment in children and can damage the nervous, blood and reproductive systems in adults.
- Cadmium, used in rechargeable computer batteries, contacts and switches and in older CRTs, can bio-accumulate in the environment and is highly toxic, primarily affecting the kidneys and bones.
- Mercury, used in lighting devices for flat screen displays, can damage the brain and central nervous system, particularly during early development.
- Compounds of hexavalent chromium, used in the production of metal housings, are highly toxic and are human carcinogens.
- PVC is a chlorinated plastic used in some electronics products and for insulation on wires and cables. Chlorinated dioxins and furans are released when PVC is produced or disposed of by incineration (or simply burning). These chemicals are highly persistent in the environment and many are toxic even in very low concentrations.
- On a more local level, uncontrolled discarding or inappropriate waste management/recycling generates significant hazardous emissions, with severe impacts on health and environment. In this context, three levels of toxic emissions have to be distinguished.
- Primary emissions: Hazardous substances that are contained in e-waste (e.g. lead, mercury, arsenic, polychlorinated biphenyls (PCBs), fluorinated cooling fluids etc.).
- Secondary emissions: Hazardous reaction products of e-waste substances as a result of improper treatment (e.g. dioxins or furans formed by incineration/inappropriate smelting of plastics with halogenated flame retardants).

Continued on Page 10

Environmental Tit-Bits

NEWS AND GLOBAL ACTION ON THE REGULATION AND MANAGEMENT OF E-WASTE UN Conference to Tackle Growing Problem of 'E-Waste'

Billed as the largest global environmental meeting since Copenhagen, a UN summit in Bali this week will focus on the growing threat in the developing world through discarded electronics such as computers.

A report by the United Nations published on Monday warned that developing countries face increasing environmental and health hazards from electronic waste. The report's release is timed to coincide with a week-long UN conference in Bali, Indonesia, on the topic which brings together officials and environmentalists from than 100 countries.

Called 'Recycling - from E-Waste to Resource', the UN report said that China already produced more than 2.3 million tons of e-waste a year - second only to the US - and had also become a dumping ground for waste from other countries.

It warned that without immediate action to ensure safe and proper collection and disposal of materials, many developing countries "face the specter of hazardous e-waste mountains with serious consequences for the environment and public health."

The report said the problem could worsen in the next 10 years with sales of electronic devices set to rise sharply, particularly in China and India.

"Managing this waste has become not just important, it has become absolutely urgent," Achim Steiner, executive director of the United Nations Environment Program (UNEP) said in a news conference.

NOT A NEW PROBLEM, BUT A GROWING ONE

It's not the first time that e-waste has been the focus of a major UN summit. Nor is the issue new. Reports of children toiling away in inhuman and dangerous scrap yards in the developing world to strip down computers, refrigerators, vacuum cleaners and mobile phones from industrialized nations and extract parts that can be sold on the high street have made headlines for several years.

The job involves exposure to a number of toxic chemicals such as mercury and lead and acids, which are used in the process of extraction, and then often dumped into the soil from where they enter the groundwater.

Experts say exposure to chemicals from e-waste - including lead, cadmium, mercury, chromium and polybrominated biphenyls - could damage the brain and nervous system, affect the kidneys and liver, and cause birth defects.

The reports and campaigning by environmental groups have spurred a flurry of international agreements to regulate the global trade in hazardous waste.

More than 150 countries have signed up to the UN Basel Convention, an international treaty which came into effect in 1992 and aims to minimize the generation and movement of electronic waste across borders.

Companies in western nations that have ratified the Convention - only the US has not ratified - cannot export non-working computer equipment unless they go through a complex government-level process. This is supposed to ensure the waste will be disposed of properly in the importing country.

(There is a fundamental question that needs to be asked: What happens to a laptop or PC equipments when it gets replaced with an upgrade?)

But that hasn't happened. Experts say that, as with so many well-intentioned agreements, many of the regulations in the treaty are not implemented and remain confined to paper.

"E-waste is still exported by industrialized nations to developing countries in complete violation of international law," Benjamin Bongardt, an expert on electronic waste at the Berlin-based environmental organization NABU told Deutsche Welle.

He said there was a "flourishing waste black market" in Europe with some firms dodging the laws by labelling their waste as "second-hand."

"It's simply cheaper for some waste disposal companies in the West to rent a container, stuff it with discarded



E-Waste And Su

E-waste is a popular, informal name for electronic products nearing the end of their "useful life." Computers, televisions, VCRs, stereos, copiers, and fax machines are common electronic products. Many of these products can be reused, refurbished, or recycled. However most of these products are disposed off indiscriminately and they are an increasing source of concern for environmentalists worldwide. The concern stems from the fact that used electronic products contain harmful substances which have grave health implications on people, particularly women and children, if not properly disposed off. Some of these electronic items such as used television sets, computer monitors and hard drives, mobile phones and batteries contain harmful chemical substances and heavy metals which damage health. For example, exposure to mercury, an essential component in monitors and batteries can cause brain damage. Other substances also have their harmful effects such as: Beryllium which causes lung cancer; Chromium which damages DNA; Lead which damages nervous systems, blood systems, kidneys and reproductive systems; Cobalt; Barium and Arsenic which are all poisonous, to mention but a few.

The bulk of e-waste generated in the world comes from the industrialised nations such as the United States of America (US) and the various European States. Conversely the greatest importers of e-waste are the developing nations such as China, Vietnam and of course Sub-Saharan Africa. Sub Saharan Africa refers to those countries which are fully or partially located south of the Sahara. The countries that make up Sub Saharan Africa are Angola, Benin, Botswana, Burkina-Faso, Burundi, Cameroun, Cape-Verde, Central Africa Republic, Chad Comoros, Congo (Brazzaville), Congo DRC (Zaire), Cote-D'Ivoire, Djibouti, Equatorial Guinea, Eritrea, Ethiopia, Gabon, Gambia, Ghana, Guinea, Guinea-Bissau, Kenya, Lesotho, Liberia, Madagascar, Malawi, Mali, Mauritania, Mauritius, Mozambique, Namibia, Niger, Nigeria, Rwanda, Sao-Tome and Principe, Senegal, Seychelles, Sierra-Leone, Somalia, South-Africa, Sudan, Swaziland, Tanzania, Togo, Uganda, Zambia and Zimbabwe.

Most of the e-wastes generated in the

industrialised nations are disposed off by unsuspecting users to recyclers for the purpose of safe disposal of the harmful components and reuse of the useful components. However these used items which should be safely recycled are shipped to the developing countries mentioned above. The reason is simple; the average cost of recycling a computer in the US is about \$30 while the average cost in China is about \$2. In Sub-Saharan Africa it is even cheaper because what is referred to as recycling is the burning of the plastic components in order to retrieve a few scraps of precious metals contained in the used electrical items. Unfortunately the burning of these used electronic items releases heavy metals such as lead, cadmium and mercury into the air and ashes. Mercury released into the atmosphere can bio-accumulate in the food chain, particularly in fish - the major route of exposure for the general public. If the products contain PVC plastic, highly toxic dioxins and furans are also released. Brominated flame retardants generate brominated dioxins and furans when e-waste is burned further endangering the local populace.

Some of the industrialised nations such as the US have various regulations and legislation in place to prevent the exportation of unusable electronic appliances. However, there are loop holes which are readily exploited by brokers who pose as recyclers. These so called "recyclers" readily exploit every loophole in the system to dump e-waste on developing countries such as the countries in Sub-Saharan Africa, rather than de-manufacture and safely dispose of these used electronic items and make a tidy profit in the process. The health implications for unsuspecting Africans are very grave indeed.

There are a number of e-waste dumps in Sub-Saharan Africa particularly in Ghana and Nigeria. The demand for used electronic items is very high because of the high levels of poverty in these countries. Regardless of European Union regulations prohibiting the exportation of unusable electronic items such as television sets, the illegal trade is still very much around. On 18th February, 2009, Green Peace released an article exposing the illegal trade in e-waste. The article was the end result of a joint investigation with sky television that spanned three years. During the investigation,



Sub-Saharan Africa

Green Peace took an unfixable television set and hid a tracking device inside and took it to the UK's Hampshire County Council for recycling. Instead of being safely dismantled in the UK or Europe, like it should have been, the Council's 'recycling' company, BJ Electronics, passed it on as 'second-hand goods' and it was shipped off to Nigeria to be sold or scrapped and dumped. There are numerous other accounts and incidents of e-waste being shipped to countries like Nigeria. When the unusable items are dumped, they end up in open rubbish dumps or rivers and water ways. Those in the rubbish dumps are incinerated in the open and dangerous toxins are released into the atmosphere. Scavengers who frequent rubbish dumps to extract precious metals and other scrap from the e-waste are directly exposed to the noxious fumes. The saddest part of this is that most of the scavengers are children and teenagers. Similarly the e-waste dumped into the rivers and water ways release their toxins into the water and this is ingested by fish which are in turn eaten by the general populace.

The industrialised nations are well informed about the health hazards of exporting and dumping e-waste. However as with most environmental issues, they merely make good regulations but fail to implement them properly or monitor the persons responsible for implementation and enforcement. However there is another angle to the e-waste problem and that is one that would at least catch the attention of both the governments and citizens of the industrialised nations.

Most computers and other data storing equipment retain all the data that has ever been processed on them even when they are unusable for the everyday consumer. In the hands of a trained computer engineer or a criminal with basic knowledge about hacking (most if not all cyber criminals possess this knowledge), the unusable hard disc is a treasure trove of knowledge which holds confidential information about the past owners. Information such as bank details and other personal information, security information from hard drives discarded by security agencies and government contractors etc. Although the government agencies and the private security contractors go to great lengths to protect their data and also to erase their hard drives before sending them for recycling, the only sure way of protecting

data stored on the hard drives is to de-manufacture the said hard drives. These dumpsites where these e-waste are dumped are frequently visited by cyber criminals and scam artists looking for information to use to defraud unsuspecting victims. A trail of such e-waste which contained vital information was recently tracked to Ghana by a group of graduate journalism students, from the University of British Columbia, on a study assignment to Ghana. The findings of these students have grave security implications for the industrialised nations. Some of the information they unearthed includes past contracts with the United States Government and private security companies.

It is the humble view of this writer that governments of industrialised countries would pay more attention to security risks for their respective countries than to health concerns for countries in Sub-Saharan Africa. In the light of the above, this writer proposes that in addition to the awareness being created about the negative health implications for Sub-Saharan Africa, awareness should be created about the security risks faced by the industrialised nations when they fail to ensure that their e-waste is properly recycled. In the absence of such awareness, these nations will continue to close their eyes to the illegal trade in e-waste to the detriment of Sub-Saharan Africa. Until these issues are addressed, dumping of e-waste and its attendant negative effects will continue unabated. Even the best efforts of the various governments in Sub-Saharan Africa cannot stem the flow of e-waste as long as there is money to be made by the brokers. Perhaps the imposition of criminal sanctions for selling state secrets and divulging personal information to criminals will serve as a deterrent to the various brokers who dump e-waste on the developing. Conversely, the governments of the various countries in Sub-Saharan Africa should improve their economies and the conditions of living for their citizens as this will greatly reduce the demand for used items and effectively remove the market for e-waste.

Adewale Dosunmu
Legal Practitioner
Lagos, Nigeria

Environmental Tit-Bits

electronics and send it for 'recycling' to Asia and Africa," he said.

Bongardt called for a better enforcement of the laws and willingness by governments to crack down on firms involved in illegally dumping electronic waste in the developing world.

PRESSURE ON ELECTRONIC GOODS PRODUCERS

Many point out that for the measures to have real teeth, it's crucial to rope in electronic makers and pressure them to take responsibility for the entire life cycle of their products.

"It all begins with how electronic products are designed, what materials they contain and how they're marketed," Tom Dowdall, who coordinates a campaign for greener electronics for Greenpeace, told Deutsche Welle. "Electronics have become a disposable item today - you're constantly being asked to upgrade your gadgets. Consumers need to ask hard questions about what happens to their old phones once they switch to a new one."

Greenpeace has been ranking consumer electronic makers for the sustainability of their products. Finnish mobile phone maker Nokia topped the latest list for its product take-back policies while US computer maker Apple showed the best record on eliminating toxic chemicals from its products.

LOTS OF WORK TO BE DONE *Bildunterschrift:*

While an increasing number of IT firms are keen on burnishing their green credentials, there is no global framework regulating producer responsibility.

Within the European Union, producers of electrical equipment are responsible for funding the end of life recycling under a 2005 EU directive called WEEE - Waste Electrical and Electronic Equipment.

But no such legislation exists for the millions of electronic products sold in Africa, Asia and Latin America.

It's hoped that the week-long Bali conference will help in linking the various initiatives to tackle e-waste to form a robust global action plan to deal with the problem.

And the figures from the latest UN report have underlined the urgency of quick action. It said that global e-waste is growing by a whopping 40 million tons a year.

The report's authors also warned that by 2020, e-waste in South Africa and China will have soared by 200-400 percent from 2007 levels, and by 500 percent in India.

INDONESIA PARTICULARLY VULNERABLE

The location of the conference is also poignant. Indonesian Environment Minister Gusti Muhammad Hatta said as a vast archipelagic nation, Indonesia was vulnerable to illegal trafficking of hazardous substances and wastes, estimating that 2,000 locations in the country were potential entry points for such materials.

Industrial emissions also include persistent organic pollutants or POPs, chemical substances that persist in the environment, accumulate through the food chain, and pose a risk to health and the environment, he said.

"We therefore believe that international cooperation and agreements, at both global and regional level, are crucial in tackling these challenges," he said.

Author: Sonia Phalnikar

Editor: Nathan Witkop

<http://www.dw-world.de/dw/article/0,5274947,00.html>

(NUSA DUA, INDONESIA) Societies are producing more and more electronic goods, and therefore more and more electronic waste, or e-waste. The United Nations' Environment Program has released a report that warns of a dangerous rise in the amount of such waste, which is often simply dumped in developing countries, posing health hazards to residents.

Every year the world produces 40 million tons of electronic waste: from TVs to refrigerators to cell phones and computers. And this figure will only increase.

For instance, by 2020, China is expected to throw away seven times more cell phones than now, and India 18 times more.

These high-technology goods not only are bulky, they often contain toxic materials such as lead and mercury. If the e-waste is not taken care of properly, it can cause pollution and health hazards.

The Basel Action Network is a private group focused on halting the trade in toxic goods, particularly waste goods.

Environmental Tit-Bits

Executive director Jim Puckett says the world needs to take urgent measures to end toxic trash.

"The industry has built in obsolescence unfortunately, so we're seeing things become waste quicker than ever before," Puckett said. "Computers now have a life span of about two years now in the North; many mobile phones are turned over within six months when somebody wants to newest model. So we are creating a mountain and we're not going to stop people from consuming. So the first thing we need to do is to get the toxic materials out of the equation".

The issue of e-waste is one of several topics being discussed this week at the United Nations Program for Environment's conference in Nusa Dua, Indonesia.

Achim Steiner, the agency's secretary-general, says much of the e-waste should be recycled. Beyond the environmental reasons, there is also an economic incentive, he says: for example, three percent of the gold and silver mined worldwide is used in personal computers and mobile phones.

"If you start investing and recycling and reusing these materials, you actually begin to look at turning a problem into an opportunity; you start creating jobs, you start reducing the amount of metals that leaves the cycle of our economy, you can reuse them," Steiner said. "So those are all advantages if you begin to manage electronic waste not as we see from industrialized countries to least developed countries without legislation. It is actually being dumped in the backyards of the slums of this world."

The Basel Convention is an international agreement setting global guidelines on handling e-waste. But it is not without weaknesses.

The United States, the single largest producer of e-waste, has never ratified the convention. Also, e-waste has become a highly profitable illegal trade. Some companies get rid of their trash by exporting it to poor countries where, instead of being treated or recycled, it piles up in landfills, and the toxic materials can leach out into water and soil.

"One example that happened in West Africa: they export obsolete cars, and they stuff the cars with obsolete computers hidden in the cars. So we have all those ingenious schemes to do it. And it is actually in that sense very comparable to arms smuggling, and drug smuggling because the incentives are financial and a huge business is to be found in this," said Katharina Kummer, the executive secretary of the Basel Convention.

The problem today is compounded by the growing complexity of the trade. E-waste used to be produced by developed nations and then dumped in poor countries. But today poor countries without recycling capacity export their e-waste to nations like China, and emerging economies are also increasingly net producers of e-waste: China for example has become the second largest producer after the United States.

Katharina Kummer says there remain limits to how much the traffic can be curbed.

"The responsibility of the countries is to adopt legislation and to enforce it," Kummer said. "The problem though is that it requires a huge amount of money, and even the highest developed countries, like the countries of the European Union, do not have the necessary resources to prevent all those illegal exports from happening. So you can imagine what it would look like for a poor country in Africa for example or a poor country from another part of the world".

Electronic waste is more than an economical problem. It also affects the health of millions of people who make a living by stripping out the waste dumped in their countries. Environmental experts say it will take new funds and manpower to solve the problem, by establishing safe recycling facilities and curbing illegal exports.

E-WASTE THREAT GROWS BY THE DAY

by Esmond Shahonya, Daily Nation

In a recent report, Information permanent secretary Bitange Ndemo proposed a ban on used computer imports. This is good because of the growing threat posed by hazardous e-waste from used electronic equipment: computers, mobile phones, television sets and even fridges.

Continued from Page 7

Getting To Know E-Waste More

- Tertiary emissions: Hazardous substances or reagents that are used during recycling (e.g. cyanide or other leaching agents, mercury for gold amalgamation) and that are released because of inappropriate handling and treatment.

Sources:

<http://www.greenpeace.org/international/campaigns/toxic/electronics/what-s-in-electronic-devices>

UNEP: Sustainable Innovation and Technology Transfer Industrial Sector Studies, titled 'Recycling- From E-waste to Resources' (July 2009)

The following countries were listed in 2007 to be the largest producers and exporters of e-waste by the EPA, they include but are limited to the underlisted

LARGEST PRODUCERS AND EXPORTERS OF E-WASTE WITH THE QUANTITIES PRODUCED

COUNTRIES	KILOS (in thousands)
Malaysia	3,583
Canada	NR
Brazil	1,633
South Korea	1,588
China	1,043
Mexico	816
Vietnam	318
India	91

Source: California and EPA data (2007 estimated e-waste exports (kilos) by designated country) San Diego Union-Tribune (June 19, 2007); EPA notification reports.

WHERE DOES E-WASTE END UP?

Many old electronic goods gather dust in storage waiting to be reused, recycled or thrown away. The US Environmental Protection Agency (EPA) estimates that as much as three quarters of the computers sold in the US are stockpiled in garages and closets. When thrown away, they end up in landfills or incinerators or, more recently, are exported to Asia.

Source:

<http://www.greenpeace.org/international/en/campaigns/toxic/electronics/the-e-waste-problem/where-does-e-waste-end-up/>

Landfill

According to the US EPA, more than 4.6 million tonnes of e-waste ended up in US landfills in 2000. Toxic chemicals in electronics products can leach into the land over time or are released into the atmosphere, impacting nearby communities and the environment. In many European countries, regulations have been introduced to prevent electronic waste being dumped in landfills due to its hazardous content. However, the practice still continues in many countries. In Hong Kong for example, it is estimated that 10-20 percent of discarded computers go to landfill.

Source:

<http://www.greenpeace.org/international/en/campaigns/toxic/electronics/the-e-waste-problem/where-does-e-waste-end-up/>

Incineration

This releases heavy metals such as lead, cadmium and mercury into the air and ashes. Mercury released into the atmosphere can bio-accumulate in the foodchain, particularly in fish - the major route of exposure for the general public. If the products contain PVC plastic, highly toxic dioxins and furans are also released. Brominated flame retardants generate brominated dioxins and furans when e-waste is burned.

Source:

<http://www.greenpeace.org/international/en/campaigns/toxic/electronics/the-e-waste-problem/where-does-e-waste-end-up/>

Reuse

A good way to increase a product's lifespan. Many old products are exported to developing countries. Although the benefits of reusing electronics in this way are clear, the practice is causing serious problems because the old products are dumped



after a short period of use in areas that are unlikely to have hazardous waste facilities.

Source:

<http://www.greenpeace.org/international/en/campaigns/toxic/electronics/the-e-waste-problem/where-does-e-waste-end-up/>

Recycle

Although recycling can be a good way to reuse the raw materials in a product, the hazardous chemicals in e-waste mean that electronics can harm workers in the recycling yards, as well as their neighbouring communities and environment.

In developed countries, electronics recycling takes place in purpose-built recycling plants under controlled conditions. In many EU states for example, plastics from e-waste are not recycled to avoid brominated furans and dioxins being released into the atmosphere. In developing countries however, there are no such controls. Recycling is done by hand in scrap yards, often by children.

Source:

<http://www.greenpeace.org/international/en/campaigns/toxic/electronics/the-e-waste-problem/where-does-e-waste-end-up/>

Export

E-waste is routinely exported by developed countries to developing ones, often in violation of the international law. Inspections of 18 European seaports in 2005 found as much as 47 percent of waste destined for export, including e-waste, was illegal. In the UK alone, at least 23,000 metric tonnes of undeclared or 'grey' market electronic waste was illegally shipped in 2003 to the Far East, India, Africa and China. In the US, it is estimated that 50-80 percent of the waste collected for recycling is being exported in this way. This practice is legal because the US has not ratified the Basel Convention.

Mainland China tried to prevent this trade by banning the import of e-waste in 2000. However, we have discovered that the laws are not working; e-waste is still arriving in Guiya of Guangdong Province, the main centre of e-waste scrapping in China.

We have also found a growing e-waste trade problem in India. 25,000 workers are employed at scrap yards in Delhi alone, where 10-20,000 tonnes of e-waste is handled each year, 25 percent of this being computers. Other e-waste scrap yards have been found in Meerut, Ferozabad, Chennai, Bangalore and Mumbai.

Source:

<http://www.greenpeace.org/international/en/campaigns/toxic/electronics/the-e-waste-problem/where-does-e-waste-end-up/>

Continued on Page 10

Environmental Groups Advocate Ban On E-waste Importation

By Francis Jakpor

Against the backdrop of research which links health problems such as cancer, neurological, respiratory and birth disorders to used computer equipment, the nation's environmentally-inclined non-governmental organisations (NGOs) have urged John Odey, minister of the environment, to institute an Environmentally Sound Management (ESM) regime that will check the importation of e-waste.

At a roundtable on 'Environmentally Sound Management of Electrical and Electronic Waste' (e-Waste) organised by SRADev Nigeria in Lagos recently, the groups confirmed the Nigerian population's susceptibility to e-waste induced diseases despite the globally accepted standard for trans-boundary movement of goods.

In his remarks at the occasion, Leslie Adogame, executive director, SRADev, said Nigeria had a high penchant for imported goods including new and faulty electronic/electrical appliances, adding that the legal and illegal importation of such appliances into the country was creating serious human and environmental problems resulting from unsound management.

"With the phenomenal build-up of e-waste and the serious health and environmental implications, it has become imperative that

NGOs discuss ways of arresting the problem, especially as these wastes contain very high amounts of toxic metals such as lead, cadmium, barium, mercury, beryllium, brominated flame retardants etc, which are carcinogenic and affect the nervous system and foetal growth/development," he said.

According to other participants, "The arbitrary open burning of e-waste in uncontrolled landfill sites is also known to be

causing general health problems due to the absence of a regulatory framework and poor awareness by e-waste handlers."

At the close of the session, they recommended immediate passage of the e-Waste Management Bill - proposed to the

National Assembly by NESREA/the Federal Ministry of Environment into law, an effective ban on the importation of electronic and electrical waste into Nigeria, urgent capacity-building on compliance and enforcement for regulatory agents and law enforcement officials, stringent penalties for defaulters and protection of workers throughout the life-cycle of electrical/electronic products from manufacture to recycling and disposal, among others.

http://www.businessdayonline.com/NG/index.php?option=com_content&view=article&id=15889:environmental-groups-advocate-ban-on-e-waste-importation&catid=154:city-file&Itemid=563



Environmental Tit-Bits

The e-waste is one dark aspect of the digital age. The ever increasing use of electronics has in actual sense resulted in a consequential increase in the end-of-use products. Every day we wake up to new technology and discard the old.

I came across homeless children at Mombasa's Kibarani dumping site scavenging for copper and metallic scrap from electronics. The children, totally oblivious of the dangers posed by the waste, were breaking open the cases of computers, splitting the CRTs and rummaging on circuit boards for re-usable components.

Another group was burning the wires to separate the copper from the plastics. Strange fumes were emanating from the smouldering electronics. One boy, barely 10 years old, could be seen clutching to a bunch of some copper wires and electronic circuit boards. I watched with pity as the hapless children put their health and safety at the periphery of their quest for a meal for the day.

But they are not the only ones endangered. The toxic components of the e-waste can find their way to anybody's table. Researchers have identified the impacts posed when the underground water is eventually polluted by toxins and heavy metals like lead and mercury found in electronic waste.

Fumes from the burning e-waste can be hazardous when they cause respiratory infections. Notably, electronic products contain doses of harmful metals and chemicals: mercury is found in some switches and flat screens; lead oxide and barium are in CRTs monitors; polyvinylchloride is found in electric cables and wires; and lead and cadmium are found on circuit boards and batteries.

Some traders in the west are having no better ways of recycling e-waste and end up exporting the problem to developing nations. The e-waste finds itself in Africa and Asia as second hand electronics. It is illegal to export any waste from Europe or USA, but the avenue created by exporting used electronics poses an e-waste gateway for unscrupulous trade of tonnages of discarded electronics.

Just by virtue of being a consumer of technology from the West, we are at risk consuming both the fruits of hi-tech and its poisons unless proper disposal, re-use and recycling techniques are implemented. Millions of computers and other electronics may be deemed obsolete each decade. There is a need to adhere to an ICT law that caters for all the aspects of the e-waste.

In December 2006, the Basel Convention through its country members came up with the Nairobi Declaration to call for urgent global action on e-waste. At the convention, Unep director Achim Steiner urged governments to develop effective regulatory regimes to respond positively to the e-waste problem.

This indeed was an eye opener following the horrifying e-waste dumping incident in Cote d'Ivoire in which deaths, injuries and massive clean-up costs were incurred. The approaches and issues adopted in the Nairobi Declaration deserve implementation to stem this growing e-waste threat.

The CCK requires the respective operators to take full responsibility for the disposal of e-products. But the operators have no attachment to the end-of-life of many products such as mobile phones, which end up as e-waste.

Mr Shahonya is a telecommunications engineer.

Excerpt Published by Basel Action Network(2008)

http://www.ban.org/ban_news/2010/100223_problem_for_developing_nations.html

2nd NVMP-SIEP Ewaste Summer School: YOUNG RESEARCHERS MEET IN EINDHOVEN AND HOBOKEN TO LOOK AT THE FUTURE OF E-WASTE

Eindhoven/ Hoboken: Philips and Umicore hosted an international group of young researchers looking at the growing problem of waste electronic and electrical equipment, more commonly known as e-waste. Sponsored by the NVMP Foundation, the Dutch Association for the Disposal of Metal and Electrical Products, the E-waste Summer School was organised by the United Nations University under the aegis of the SIEP Initiative and took place from 29th August - 7th September.

"Building research capacity on e-waste management is a key objective of NVMP. Hence, the Summer School is

Environmental Tit-Bits

a wonderful platform for this", said André Habets, in charge of Research and Development at NVMP.

Nineteen students from all continents participated in this second NVMP-STEP E-waste Summer School. Between them, they represented 18 countries of origin or place of study. The issues discussed during the ten days ranged from environmental justice to consumer behaviour to recycling technology.

The theme of this year's Summer School was 'Enabling Sustainable EEE Cycles'. Claudia Luepschen of UNU said, "It was our intention to provide young e-waste researchers with an

opportunity to look at e-waste in a holistic perspective. E-waste is not only an environmental issue. It is closely interlinked with technical, legal, social, logistic and economic issues too and often researchers working in one field are not aware of the other related aspects".

Nils de Caluwe from Philips, also a co-sponsor, is very supportive of the aims and objectives of the Summer School. He said, "It is important for young researchers to interact with experts from industry as well as academia and government as also to share their knowledge and expertise amongst their peers. The Summer School was a unique opportunity for Philips and also for me personally to get fresh ideas and know more about the questions and solutions being discussed around the management of e-waste worldwide".

One of the international experts invited to the Summer School was Prof. Oladele Osibanjo, the Executive Director of the Basel Convention Coordinating Centre for the African Region in Nigeria. He added: "This is such a laudable initiative. The future of e-waste management is in the hands of our young researchers and scientists. I was immensely impressed by the level of knowledge and the lively discussions we had in the sessions".

One of the participants, Huabo Duan from China explains, "E-waste is a hot topic around the world. Less developed countries like China or India have been experiencing great challenges in managing their e-waste due to growing domestic generation as well as uncontrolled imports. The Summer School provided a platform for me to learn about e-waste management systems in countries like the Netherlands, Belgium or Germany, which have integrated recycling systems and advanced technology in place and many years of experience in e-waste management."

The programme of the summer school included expert lectures, student presentations as well as on-site study tours and even a hands-on dismantling session. The group also visited co-sponsor Umicore Precious Metals Refining in Hoboken, Belgium, where precious metals like gold, silver and even special metals like indium are recovered from e-waste. Christina Meskers from Umicore adds: "The involvement in the Summer School is a further continuation of our interaction with STEP. It provides the students insights in the workings of a high-tech metallurgical and chemical plant, illustrates the complexity of recycling chains and the role that each stakeholder plays in it".

Mauro from Brazil summed up the experience of the students "This is a brilliant initiative and not only beneficial for me, but for my university and my country. I received so much input on just the first day alone so as to compensate for my travel from Brazil. I had come to get some answers regarding e-waste. After ten days, not only do I know lots of answers and possible solutions, but have even more enthusiasm to work towards an e-waste solution for Brazil."

STEP, Germany

Solving the E-Waste Problem is a partnership of several UN organizations, prominent industry, government and international organizations, NGOs and the science sector. STEP initiates and facilitates a sustainable e-waste management worldwide through analysis, planning and pilot projects. The STEP initiative is hosted by United Nations Universities Institute for Sustainability and Peace (UNU-ISP SCYLE). The NVMP STEP E-waste Summer School is organized under the Capacity Building task force of STEP www.step-initiative.org.

United Nations University, Japan

UNU is a major think-tank for the United Nations System. With research and capacity-building, UNU helps to resolve most burning global problems. The

Legal Regime for E-waste in Nigeria: "Fact or Fiction"

When GSM phones were first introduced into Nigeria in 2001, the most technologically-savvy phones then were the Nokia 3310, Motorola C200, old models of Sagem and Sony Ericsson which served the basic functions of phones - making and receiving calls. But today, those phones look like trash beside the BlackBerrys, Nokia X-series, iPhones, HTC's, LGs and Samsungs; some of which come as PDAs (Personal Digital Assistants) and are loaded with a wide range of applications and features. By December 2009, Nigeria had about 73 million active mobile subscribers in a country with a total population of about 150 million, making it the fastest growing mobile market in Africa. This in effect also means that Nigeria has the fastest growing e-waste volumes when it comes to mobile phones.

It's the same with cars, television sets, computers, music devices, even electronic toys including video games. As a manufacturer comes up with a device that is savvier, sophisticated and runs faster, smoother, or more efficiently, a whole line of products become obsolete; consumers discard the ones they have for new ones. Those 2001 phones have now become obsolete and many of them have caused deaths and diseases to people in whose environment they were discarded. Electronic waste or E-waste, described as loosely discarded, surplus, obsolete, or broken electrical or electronic devices which pose a great hazard to the environment.

The trash from these old computers, mobile phones or refrigerators (which according to experts, contains dangerous substances, such as lead, mercury, cadmium, hexavalent chromium and barium among others) when burnt, disassembled or improperly disposed of, can leach toxins into the soil, air and groundwater which later enter into crops, animals and human body systems causing contamination and pollution.

The issue of hazardous content in electronic items has worried, before now, and continues to worry medical experts. With this, medical experts have warned that exposure to these substances can cause damage to blood and nervous systems, DNA, immune systems, kidneys, can lead to respiratory and skin disorders and lung cancer. **Even more vulnerable are the thousands of men, women, and children employed in highly polluting, primitive recycling technologies, extracting the metals, toners, and plastics from computers and other electronic wastes in dumpsites, which they sell for a living as recent studies have shown that seven out of 10 of these people are found to have too much lead in their blood, resulting to lead poisoning. Lead interferes with a variety of body processes and is toxic to many organs and tissues. It is particularly toxic to children, causing potentially permanent learning and behaviour disorders.**

Despite this disturbing reality, everyday, toxic ships laden with containers of these 'weapons of mass destruction' leave the EU and US ports destined for Africa. The developing countries are becoming big dump yards of e-waste due to their weak laws. Experts argue that lower environmental and labour standards, cheap labour, and the relatively high value of recovered raw materials may have prompted electronic waste being sent to these countries for processing, most times illegally. Even with the Basel Convention prohibiting

International waste transfer, the western/eastern nations, because of economic costs and difficult processes associated with recycling these products now see Africa with Nigeria in the lead as the final destination for their e-waste.

Nigeria with its landmass, population and large market is emerging as one of the top dumping grounds for toxic, chemical and e-waste from the developed world. Reports show **the European Union accounts for 45 per cent of e-waste exports into Nigeria; the United States, 45; with the remaining 10 per cent from other locations such as Japan, Italy, Belgium, Finland, Germany, Korea, Netherlands, Norway, and Singapore.** This trend which has remained unabated has continued to be a challenge to the regulatory agencies, especially, the Standard Organization of Nigeria, (SON) which may have been helpless in regulating the daily influx of these obsolete e-gadgets that have short life span. According to Consumers International, in Nigeria alone more than half a million second-hand PCs arrive in Lagos every month, yet only one in four works. These obsolete equipments, it was learnt, are fraudulently shipped most of the time as re-used or refurbished by racketeers; by non governmental Organizations (NGOs) as a donation which in the long run, never last the test of time or **from the technologically advanced countries under many guises such as bridging the digital divide. In all these cases, the high volume of environmentally unsound e-waste is driven almost exclusively by the motive of profit, but the cost is borne by the environment and the children who disassemble the equipment.**

Under the Producer Pays principle of the WEEE (wastes from electrical and electronic equipments) directive in the UK, producers of electrical equipment are responsible for funding the end of life recycling of equipment within the European Union, but no such legislation exists for the millions of electronic products sold or exported into Nigeria, where nobody cares about properly disposing an old gadget once they have acquired a new one. Even though e-waste is a global issue, it seems Nigeria is a loose market without regulation, making it 1st choice for dumping hazardous e-gadgets.

The Koko waste dump incident in 1988 prompted the government into action on the menace of hazardous waste. Two measures were put in place that till date forms the gist of laws on such wastes in Nigeria. First was the promulgation of the *Harmful Waste Decree* now the *Harmful Waste (Special Criminal Provisions) Act of 2004* that formed the 1st comprehensive legislation against the dumping and trafficking in harmful wastes. The next step was the creation of the *Federal Environmental Protection Agency (FEPA)* now the *National Environmental Standards and Regulations Enforcement Agency (NESREA)* which constituted the foundational block in the institutional framework and became the core of the Federal Ministry of Environment. At the institutional level, Nigeria has grown substantially. The Federal Ministry of Environment, Housing and Urban Development, the NESREA, the Standards Organisation of Nigeria, the Computer Professionals Registration Council of Nigeria and the Nigeria Customs Service, Basel Convention Regional Coordinating Centre for Africa (BCRCC), Ibadan, The National Information Technology Development Agency (NITDA), Nigerian Maritime Administration and Safety Agency (NIMASA), the Nigerian Navy, the Nigerian Police, Defense Intelligence Agency, etc are all regulatory and

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"...act now! Your support for the environment counts".

PROFILES



Basel Convention Coordinating Centre for the African Region (for cleaner production technology and management of hazardous waste)

VISION OF THE CENTRE

To strengthen the Africa Region in the Environmental Sound Management of Hazardous Waste through defining the template for the programmes and projects for the implementation of the Basel Convention and its Amendments.

THE CENTER'S MANDATE

Overall role of the BCCC-Nigeria

To promote capacity building in hazardous waste management through the promotion of training and technology transfer activities within each of its regions.

Core functions of the BCCRCs

- Training
- Technology Transfer
- Information Services
- Consulting and advisory services
- Awareness Building

ELRI The Environmental Law Research Institute (ELRI)

A Non profit organisation for the Protection of the Environment and Promotion of Human Health

WHO WE ARE

The Environmental Law Research Institute (ELRI) is a think tank for applied legal and policy Institute whose objectives goes beyond research to creating awareness and increasing understanding of environmental laws to the public towards finding practical ways to protect the earth and improve people's lives. Because ELRI recognizes that people are inspired by ideas, empowered by knowledge, and moved to change by greater understanding, it seeks to provide and helps other institutions provide objective information and practical proposals for policy and institutional change that will foster sound environmentally and socially equitable development

OUR VISION

To be recognized as a credible facilitator of advanced scholarship and leadership in the provision of local and global information on issues relating to the environment.

OUR MISSION & OBJECTIVES

- To advance environmental protection and governance in Nigeria by influencing actions and initiatives that can serve as a catalyst for the enhancement of environmental laws and policies;
- To provide objective, non partisan analysis of law and policies, and deliver education programs for the improvement of environmental protection and governance in Nigeria;
- To provide and disseminate information and publications on environment particularly as it affects the sub-Saharan African Region;
- To assist in the provision of training tools and support to enhance the knowledge and capacity of individuals and institutions on the protection of the environment;
- To facilitate research programmes and projects that would initiate innovative technologies for the management and protection of the environment.

Environmental Tit-Bits

University comprises UNU headquarters in Tokyo, Japan (since 1975) and a worldwide network of more than a dozen Research and Training Centres and Programmes. www.unu.edu, www.isp.unu.edu

NVMP, Netherlands

The NVMP Foundation (the Dutch Foundation for the Disposal of Metal and Electrical Products) has been commissioned by producers and importers to set up an efficient and effective collection and recycling system for discarded electrical and electronic equipment and appliances in The Netherlands. NVMP is sponsoring E-waste Summer School. www.nvmp.nl

Philips, Netherlands

Royal Philips Electronics of the Netherlands is a global leader in healthcare, lifestyle and technology, delivering products, services and solutions through the brand promise of "sense and simplicity". Sustainability is an integral part of the way Philips does business focused on improving people's lives through timely innovations. Philips is hosting the E-Waste Summer School at Hightech Campus in Eindhoven. www.philips.com

Umicore, Belgium

Umicore is a materials technology group. It focuses on application areas where it knows its expertise in materials science, chemistry and metallurgy can make a real difference. Umicore generates approximately 50% of its revenues and spends approximately 80% of its R&D budget in the area of clean technology, such as emission control catalysts, materials for rechargeable batteries and photovoltaics, fuel cells, and precious metals recycling. Umicore's overriding goal of sustainable value creation is based on this ambition to develop, produce and recycle materials in a way that fulfils its mission: materials for a better life. The Umicore Group has industrial operations on all continents and serves a global customer base; it generated a turnover of € 6.9 billion (€ 1.7 billion excluding metal) in 2009 and currently employs some 14,300 people. www.umicore.com

EMPA, Switzerland

EMPA is the research institute for material science and technology of the Swiss Federal Institute of Technology (ETH) domain. It is a pioneer in monitoring and controlling for e-waste management systems and setting recycling and disposal standards. Additionally, it manages the online e-waste guide (www.e-waste-guide.info). Empa is co-organizer of the Summer School. www.empa.ch

<http://www.step-initiative.org/news.php?id=0000000147>

E-waste trade ban won't end environmental threat

Published in *Earth & Climate*

A proposal under debate in the U.S. Congress to ban the export of electronics waste would likely make a growing global environmental problem even worse, say authors of an article from the journal *Environmental Science and Technology* appearing online today. The authors call into question conventional thinking that trade bans can prevent "backyard recycling" of electronics waste – primarily old and obsolete computers in developing countries.

Primitive recycling processes used in these countries are dispersing materials and pollutants that are contaminating air, water and soil.


"Trade bans will become increasingly irrelevant in solving the problem," says Eric Williams, one of the authors of the article, which offers alternative ways to address the problem.

Williams is an assistant professor at Arizona State University with a joint appointment in the School of Sustainable Engineering and the Built Environment, a part of the Ira A. Fulton Schools of Engineering and the School of Sustainability.

Electronics waste or e-waste is often exported from the United States and other developed nations to regions in China, India, Thailand and less developed countries where recycling is done in a crude fashion.

To recover copper from e-waste, for instance, wires are pulled out, piled up and burned to remove insulation covering the copper. This emits dioxins and other pollutants.

Toxic cyanide and acids used to remove gold from circuit boards of junked computers also are released into the environment.



IWWA
Integrated Waste Management in Western Africa

OBJECTIVES OF THE IWWA INITIATIVE

THE MAIN OBJECTIVE OF IWWA IS TO FACILITATE THE ESTABLISHMENT OF INTEGRATED SOLID WASTE MANAGEMENT SYSTEMS (ISWMS) IN WESTERN AFRICAN COUNTRIES. THE INITIATIVE WILL SUPPORT THE DEVELOPMENT OF POLICIES AND LEGAL FRAMEWORKS, INSTITUTIONAL AND OPEN TRANSFER OF KNOWLEDGE AND TECHNOLOGY.

GENERAL OBJECTIVES:

- ESTABLISHMENT OF INSTITUTIONAL FRAMEWORKS FOR SOLID WASTE MANAGEMENT AND COORDINATION OF ALL LEVELS
- ESTABLISHMENT OF AUTONOMOUS AND ACCOUNTABLE INSTITUTIONS IN THE PRIVATE SECTOR FOR WASTE MANAGEMENT OF SOLID WASTE
- TECHNOLOGICAL TRANSFER, KNOWLEDGE AND BEST PRACTICES
- STRENGTHENING OF ISWMS SYSTEMS, LOCAL, NATIONAL AND REGIONAL
- PROMOTION OF PARTICIPATORY PUBLIC MANAGEMENT AND ENVIRONMENTAL AWARENESS
- STRENGTHENING OF THE LOCAL FRAMEWORK OF ISWMS IN THE TARGET COUNTRIES

PROJECT ACTIVITIES:

- TO COLLECT AND ANALYZE RELEVANT DATA THAT IS REQUIRED FOR DESIGNING SOLID WASTE MANAGEMENT PLANNING AND ACTION PLAN
- TO IDENTIFY THE STAKEHOLDERS AND THEIR INTERESTS, INTERACTIONS AND CONTRIBUTION TO THE ESTABLISHMENT OF SOLID WASTE MANAGEMENT
- TO ANALYZE POLICY AND LEGAL FRAMEWORKS FOR SOLID WASTE MANAGEMENT AND IDENTIFY THE GAPS AND RECOMMENDATIONS FOR IMPROVEMENTS
- TO DESIGN FRAMEWORK FOR IMPLEMENTATION OF ISWMS IN THE TARGET COUNTRIES
- TO PROVIDE TRAINING FOR ENVIRONMENTAL OFFICIALS, PRIVATE AND COMMUNITY LEVELS ON THE IMPORTANCE OF SOLID WASTE MANAGEMENT

WHAT IS IWWA?

IWWA AIMS TO ESTABLISH AND PROMOTE INTEGRATED SOLID WASTE MANAGEMENT SYSTEMS (ISWMS) IN WESTERN AFRICAN COUNTRIES BY EMPOWERING ALL STAKEHOLDERS PARTICIPATING IN THE WASTE MANAGEMENT CHAIN, THROUGH THE REINFORCEMENT OF INSTITUTIONAL AND LEGAL FRAMEWORKS AND OPEN TRANSFER OF KNOWLEDGE AND TECHNOLOGY.

THIS INITIATIVE REQUIRES HIGH PARTICIPATION LEVELS FROM THE INTERESTED PARTIES AND FOCUSES ITS ACTIVITIES ON 4 TARGET COUNTRIES: COTE D'IVOIRE, GUINEA, NIGERIA AND SENEGAL. AS A REPRESENTATIVE SAMPLE OF WESTERN AFRICAN COUNTRIES, IWWA ALSO SEEKS TO PROVIDE SYNERGIES FOR THE ESTABLISHMENT OF ISWMS ACROSS THE REGION WHILE RAISING PUBLIC AWARENESS.

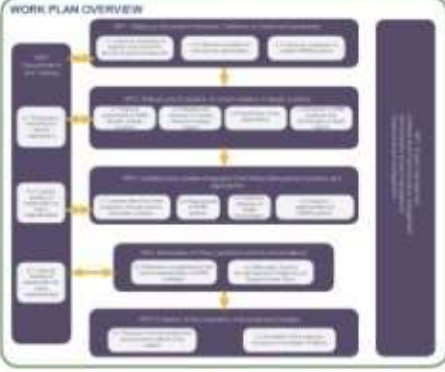
EXPECTED RESULTS

- HAVE THE ESTABLISHMENT OF INTEGRATED WASTE MANAGEMENT SYSTEMS, APPLIED IN SELECTED COUNTRIES (COTE D'IVOIRE, GUINEA, NIGERIA, SENEGAL)
- HAVE THE IMPLEMENTATION OF INTEGRATED WASTE MANAGEMENT SYSTEMS
- BECOME THE MAIN SOURCE OF POLICY SUPPORT FOR WASTE MANAGEMENT
- BECOME THE MAIN SOURCE OF POLICY SUPPORT FOR WASTE MANAGEMENT


WASTE MANAGEMENT IN THE IWWA COUNTRIES

THE IWWA INITIATIVE IS A JOINT EFFORT OF THE EUROPEAN UNION AND THE AFRICAN UNION, WITH THE SUPPORT OF THE AFRICAN DEVELOPMENT BANK AND THE AFRICAN UNION.

WORK PLAN OVERVIEW



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THE IWWA INITIATIVE IS A JOINT EFFORT OF THE EUROPEAN UNION AND THE AFRICAN UNION, WITH THE SUPPORT OF THE AFRICAN DEVELOPMENT BANK AND THE AFRICAN UNION.



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Getting To Know E-Waste More

WHO ARE THE ACTORS OF E-WASTE MANAGEMENT

The relevant stakeholders in e-waste management include Generators of E-Waste such as Small business and households, large businesses, Institutions and Government offices, equipment manufacturers, business sectors, local NGOs representatives, informal sectors such as the waste pickers associations, rural cooperatives, community-based organizations, government agencies and parastatals including international environmental bodies.

Source: IWWA (Project number 244188) Identification of relevant key stakeholders (September 2010)

THE 'DO YOU KNOW' ABOUT E-WASTE

- Do you know that more than 500 million computers had become obsolete in the USA alone between the year 1997 and 2007
- Do you know that 130 million cellular phones had been discarded in the USA in the year 2005, resulting in 65,000 tones of phone waste
- Do you know that 610 million mobile phones are to be discarded of in Japan

by 2010

- Do you know that 315 million PCs had become obsolete in 2004 alone
- Do you know that every year, an EU citizen leaves behind 25kg of E-Waste
- Do you know that 25-50 million tonnes of E-Waste are generated per year world wide.

Today, E-Waste comprises more than 5 per cent of all municipal waste, which is nearly the same amount of all plastic packaging, and is growing steadily.

Source:

<http://www.kuwaitwaste.com/papers/03.pdf>
(UNEP Role in Promoting Environmental Sound Management of E-Waste)

ELECTRONIC WASTE SUBSTANCES

Some computer components can be reused in assembling new computer products, while others are reduced to metals that can be reused in applications as varied as construction, flatware, and jewelry.

Substances found in large quantities include epoxy resins, fiberglass, PCBs, PVC (polyvinyl chlorides), thermosetting plastics, lead, tin, copper, silicon, beryllium, carbon, iron and aluminium. Elements found in small amounts include cadmium, mercury, and thallium.

Elements found in trace amounts include americium, antimony, arsenic, barium, boron, cobalt, europium, gallium, germanium, gold, indium, lithium, manganese, nickel, niobium, palladium, platinum, rhodium, ruthenium, selenium, silver, tantalum, terbium, thorium, titanium, vanadium, and yttrium.

Source:

http://en.wikipedia.org/wiki/Electronic_waste

The following hazardous elements and compounds can be found in everyday e-waste:

- Lead in cathode ray tubes and solder
- Mercury in switches and housing
- Arsenic in older cathode ray tubes
- Antimony trioxide as flame retardant

- Polybrominated flame retardants in plastic casings, cables, and circuit boards
- Selenium in circuit boards as power to supply rectifier
- Cadmium in circuit boards and semiconductors
- Chromium in steel as corrosion protection
- Cobalt in steel for structural strength and magnetivity.

Source: <http://electronicrecyclers.com/historyofewaste.aspx>

HAZARDOUS SUBSTANCES AND THEIR HEALTH AND ENVIRONMENTAL IMPACT

E-waste contains a number of toxins, including:

- Lead in cathode ray tubes (CRTs) and solder;
- Arsenic in older CRTs;
- Antimony trioxide as flame retardant;
- Polybrominated flame retardants in plastic casings, cables and circuit boards;
- Selenium in circuit boards as a power supply rectifier;
- Cadmium in circuit boards and semiconductors;

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Alaba Traders, Agency Differ On Seizure Of Fairly-Used Electronics

By Etim Ekpimah



The seizure of fairly-used electronics belonging to a group of importers by the Nigerian Environmental Standards and Regulations Enforcement Agency is brewing controversy. The importers, under the aegis of the Association of Importers of Fairly-Used Electronics and Allied Products, Alaba International Market, Lagos, have called on the Federal Government to prevail on NESREA to release their seized goods unconditionally, describing the seizure as 'illegal and fraudulent.'

In an interview with PUNCH METRO on Monday in Lagos, the association's Chairman, Mr. Gilbert Aragwe, said, "About eight NESREA female officials came to check the imported electronics in our containers. They were merely selecting the television sets and DVD players."

"The officials declared the black television sets and the DVD players as unfit for Nigerian users, while those that are silver, were marked as fit for the Nigerian users."

"There was no court order (warrant) for the inspection, detention and seizure of the goods."

"There was no instrument for testing the state of each television set or DVD players. Television sets and DVD players are not on the list of prohibited goods."

A human rights activist, Pauly Onyeka, said the agency did not come with any equipment to test the true state of the goods, adding that it would be difficult to know either toxic television sets or DVD players without an appropriate instrument.

Onyeka said there was no law in Nigeria prohibiting the importation of fairly-used television sets and DVD players into the country and urged the Federal Government to intervene.

But the Lagos State Coordinator of NESREA, Mrs. Eunice Eze, who faulted the importers' claim, said there was an international convention forbidding the importation of toxic or hazardous goods into any country.

"There is a law regulating the importation of electrical or electronic wastes into the

country. The importers buy some of these goods as spare parts. The way the importers burn these goods is inimical to the people's wellbeing," Eze said. She said since these goods could cause cancer or brain damage during incineration, they constituted potential danger to human beings and their environment.

Eze said NESREA and other agencies went to Alaba International Market on September 2, 2010 to sensitise the traders on the danger of importing toxic and hazardous goods, adding that despite this, the traders went ahead to import them.

On why the agency did not use any instrument to test the suitability of the goods, Eze said, "We are professionals in the field. We know which goods are bad and which ones are good. If you bring in old black and white television sets or broken ones, they are already toxic or hazardous. What further test do you want us to conduct?"

Eze said NESREA had sent the seized products to the University of Ibadan under the supervision of Prof. Oshunbanjo of the Department of Chemistry for analysis, adding that the results would soon be published. She said once the fact was established, the goods would be sent back to the country of origin, while "those that meet the standard and are not toxic, shall be returned to the importers."

The Executive Director of SRADev Nigeria, a non-governmental organisation, Mr. Leslie Adogame, said used electrical/electronic products were hazardous to health because they were heavy metals.

According to him, electronic waste can contain toxic substances like lead, cadmium, mercury and retardant plastics and can leach into the soil or waterways when they are burnt.

Adogame warned that it was dangerous for human beings to eat either plant or fish that had had contact with such soil or water.

"Besides, they (used electronics) can cause cancer, weaken our reproductive system, even our endocrine," he said.

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"Fact or Fiction"

enforcement agencies in the war against e-wastes. Unfortunately, this war is not close to being won.

It should be noted that nowhere in our local environmental laws are 'e-wastes' explicitly mentioned. Our laws speak of hazardous waste/substances; 'hazardous substance' means any chemical, physical or biological and radioactive material that poses a threat to human health and the environment or any such substance regulated under international conventions to which Nigeria is a party or signatory (Sec.37 of NESREA Act) and this by implication also includes electronic wastes.

The **Harmful Waste (Special Criminal Provisions) Act of 2004** is the only existing municipal law at the federal level in Nigeria (apart from the Law that creates and empowers the NESREA), that covers e-wastes. It prohibits the carrying, depositing, transporting, importing, selling, buying or negotiating in the trade of harmful waste within Nigerian territory; violation would result in forfeiture of ships to the Federal Government and a sentence of LIFE IMPRISONMENT for convicted offenders.

Section 6 (g) of the NESREA Act empowers the Agency to enforce compliance with regulations on the importation, exportation, production, distribution, storage, sale, use, handling and disposal of hazardous chemicals and waste (not in the oil and gas sector). Sec 27 prohibits discharging such wastes especially by a corporate body into the air or upon the land or waters of Nigeria with a fine of one million naira for violation.

Across the various states in Nigeria, there are environmental protection agencies created by law e.g. the Lagos State Environmental Protection Agency (LASEPA), Kaduna State Environmental Protection Authority (KEPA) and waste management authorities created by law e.g. Lagos State Waste Management Authority (LAWMA), Enugu State Waste Management Authority, empowered to manage the collection, sorting and proper disposal of waste. (Sec 12 and 13 of the LAWMA law of Lagos State prohibits depositing obnoxious, poisonous or toxic waste in dustbins). Unfortunately, these agencies are yet to fully grasp domestic waste management. In Lagos, home of the Computer Silicon valley, the notorious Alaba 'international' market and the thriving Apapa Port, this dirty lucrative business of importation of e-wastes into the country continues.

Though NESREA and other key agencies are taking a stand, a look at the Computer Village Ikeja where hardware and software are sold reveals there remains a whole lot to be done. It is expected that in this New Year, the Government will pass into law the Electronic Waste Bill and the National Environmental (Electrical Electronic Sector) Regulations, proposed by NESREA and the Ministry of Environment. The Bill is meant to place a ban on the importation and illegal traffic of electrical and electronic waste from developed countries to Nigeria.

20yrs since the adoption of the Basel Convention, a 'catastrophic accumulation' of e-waste continues to flood Nigerian markets. It is apparent that no matter the international conventions/laws signed and ratified, we must strengthen our local laws and develop institutional capacity to handle keep the 'toxic ships' at bay. The time to act, as always is NOW.

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Getting To Know E-Waste More

- Chromium in steel as corrosion protection;
- Cobalt in steel for structure and magnetivity;
- Mercury in switches and housing.

The combination of these substances, along with smelting and burning of waste, causes local air pollution and contaminates ground and surface. These toxins also pose potential health problems including lung disease, lead poisoning and cancer.

Source: <http://news.bbc.co.uk/1/hi/world/africa/6193625.stm>

INTERNATIONAL EFFORTS FOR CONTROLLING E-WASTE

Concerns about e-waste have led to a number of responses, from both governments and corporate actors. The 1992 Basel Convention prohibits exports of e-waste to developing countries. The US is the only industrialized country that has not ratified the Basel Convention. (In comparison, the only other countries that are signatories but that have not yet ratified the treaty are Afghanistan and Haiti.)

At the corporate level, multi-stakeholder initiatives like *Solving the E-waste Problem* (StEP) and the *Global e-Sustainability Initiative* (GeSI) bring together a constellation of members, including industry actors, to determine sustainable approaches to deal with e-waste. StEP projects include annual status reports and a "best practices" document for e-waste policies.

At the regional level, the 2007 European Community's Waste Electronic and Electrical Equipment (WEEE) directive targets manufacturers of electronics. European manufacturers are now obligated to take back and recycle their products, or dispose of them in an environmentally-friendly way if they cannot be refurbished or recycled.



The Basel Action Network and the *Electronics TakeBack Coalition* (ETBC) are pushing for more national legislation prohibiting the export of e-waste to developing countries. BAN has also put together a list of responsible e-waste recyclers called the e-Stewards Initiative.

Source: <http://blog.riskmetrics.com/esg/2010/08/e-waste-trade.html> Titled 'Importing Electronics, Exporting E-Waste: Financial, Human Costs of Electronics Disposal Spread Worldwide' (August 2010)

DISPOSING OF ELECTRONIC WASTE RESPONSIBLY

Sneaking batteries and electronic waste (e-waste) into the garbage is not only illegal, but also bad for the environment. In addition, some places that accept electronic waste then sell these items to developing countries (such as China, Mexico, and African countries) where children go through the waste to extract copper and other valuable items for money. In the process, these children get exposed to hazardous chemicals. Fortunately, there are steps you can take to dispose of these items properly and keep dangerous waste out of the environment.

- **Look Carefully at Packaging** Help family members get into the habit of looking at packaging before they open a purchased item to see if there are any messages stating that the item needs to be recycled as hazardous waste when it's used up. More and more items for sale now need to be disposed as hazardous waste rather than through a landfill.
- **Create a Space for E-Waste** Have a place in your home (or garage) where family members can place their non-working electronic items (and batteries) to be disposed of as hazardous waste. Otherwise, it's too tempting to toss these items into the trash.
- **Find Your Local Hazardous Waste**

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ELRI welcomes articles on contemporary environmental issues from individuals and corporate organisations for publication in *ELRI News*. Contributions should not be more than 300 words, font type Arial, font size - 12 points; with full names and email addresses of author. Same should be sent as attachment to info@elri-ng.org OR elri2008@yahoo.com

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Facility Most communities and counties have a hazardous waste facility that allows you to drop off dangerous materials. Find out what they accept and how to drop off these items safely. Some families visit these facilities once or twice a year, depending on the amount of hazardous waste they generate.

- **Learn More about the Problems of Improperly Disposed E-Waste**
- **Use E-Waste Drop-off Sites**
- **Talk with Others about E-Waste** Too many people assume that it is okay to toss batteries and other electronic waste into the garbage. Encourage your friends and family to dispose of these items properly. Get the word out.

Source: <http://www.parentfurther.com/parenting/environment/electronic-waste>

WHAT CAN I DO TO SPREAD THE AWARENESS OF E-WASTE?

There are plenty of things you, as a consumer or an individual, can do. First, spread awareness of e-waste by discussing the problem with friends and family, and especially your office or job. The more people know the proper way to dispose of their electronic waste, the better.

Second, find out if there is a computer or electronic-recycling center in your city or anywhere nearby. Bring your equipment there when it is time to dispose of it; even a small cell phone has hundreds of harmful carcinogens that are detrimental to our environment. Kindly spread the news.

Source: <http://hubpages.com/hub/Spreading-Awareness-of-E-waste>

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