

BASEL CONVENTION COORDINATING CENTRE FOR TRAINING &
TECHNOLOGY TRANSFER FOR THE AFRICAN REGION

news letter

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Federal Ministry of Environment
University of Ibadan
Linkage Centre for Cleaner
Production Technology and
Hazardous Waste Management
University of Ibadan, Nigeria
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RECYCLING AUTOMOBILE BATTERY MANUFACTURING

Converting battery slag into fired clay
bricks

AFRICA SUB-REGIONAL WORKSHOP

Lusaka, Zambia

GRC LAB OPENS IN NIGERIA

Research laboratory
opens at BCCC Africa,
Nigeria

Partnership for Action on Computing Equipment (PACE)

at the 9th Open Ended Working Group (OEWG9)

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Foreword by the Director, BCCC-Africa



Global environmental challenges continue to grow and coping with them, calls for new strategies and policies that are underpinned by a strong science and knowledge base. The gap in science and technology capacity in developing countries is a major constraint towards adopting science-based informed decisions or policy developments in environmental governance. The maze of Multilateral Environmental Agreements (MEAs) introduced in the 20th century and especially the introduction of technical assistance in the implementation of the chemicals and waste clusters (Basel, Rotterdam and Stockholm; BRS; conventions) have assisted in raising environmental awareness to some extent in many developing countries. This underscores the importance of the Basel and Stockholm regional / coordinating centres in serving as foot soldiers in regional delivery of the goals of BRS MEAs at the country level through awareness raising; projects implementation; and mission oriented, scientific research and development activities.

This bumper edition of the BCCC-Africa newsletter has been published to mark the 2015 conference of parties of BRS conventions (Triple COP). It also endeavours to show case some of the results of scientific research and development activities at the centre that solve national environmental problems which knowledge can be shared and replicated in other developing countries and the international community. We have as a matter of policy published the results of our scientific research in high impact international scientific journals for outreach to the international scientific community and policy makers. A functional Geo-Environmental Research Centre (GRC) Laboratory for POPs Contaminated Sites has been established in BCCC-Africa, as a GEF/UNIDO/Federal Ministry of Environment, Nigeria sub-regional centre of excellence project.

Lead is a toxic metal responsible for deaths in some developing countries including those of Africa arising from crude dismantling of Used Lead Acid Battery (ULAB) to extract lead. Hence the significance of "Immobilization of Pb by recycling automobile battery manufacturing (ABM) slag with clay to produce fired bricks and tiles for building at low cost: A waste-to-wealth initiative". Electronic waste (E-waste) is the perfect model of an object that demonstrates synergy between the Basel and Stockholm conventions. It is hazardous waste under Basel Convention and contains POP-PBDEs which are controlled chemicals under Stockholm convention. Hence the project: "Preliminary Assessment of New POP's PentaBDE, OctaBDE and HBB Entering Africa Via Used Electronics/E-Waste; Development Of Methodology For Sampling And Analysis of PBDEs In E-Waste" - Promoting Synergy between Stockholm Conventions deserves special mention. This study has developed for the first time "Material Flow Analysis (MFA) and Substance Flow Analysis (SFA) of PBDEs in WEEE from Europe, North America, and Asia to Africa and Nigeria in particular. It supports SAICM ICCM2 decision II/4 in 2009 which adopted hazardous substances in the lifecycle of electrical electronic equipment as one of four emerging environmental policy issues.

The centre has intensified South-South Cooperation with BCRC China; CETESB, a Stockholm Centre in Sao Paulo, Brazil; and more recently BCRC Egypt which has requested BCCC-Africa to train experts from 12 Arab countries in POPs analysis. The centre is also participating in the Science fair to share knowledge and experience in our areas of research with stakeholders.

We cannot but appreciate profoundly the support and cooperation from the BRS MEA Secretariat, Geneva; Donors; International Donors, Federal Ministry of Environment, Nigeria; and the University of Ibadan Management We wish our readers happy reading.



Profile of Basel Convention Coordinating Centre for Training & Technology

Based on the decision to establish Basel Convention Regional Centres (BCRCs) worldwide taken by the Conference of the Parties to the Basel Convention pursuant to Article 14 of the Convention, BCRCs were established to cater for capacity building in developing and economies in transition countries to be able to tackle the technical, legal and institutional requirements for implementation of the Convention Decision III/19 of the third meeting of the Conference of the Parties, agreed on the establishment of two coordinating centres: in Nigeria for the African Region and in Uruguay for the Latin America and the Caribbean. Basel Convention Coordinating Centre for Training & Technology Transfer for the

African Region (BCCC-Africa) was established in September 1994 and has since been in operation to service the entire African continent. The Centre was also established as the Federal Ministry of Environment- University of Ibadan Linkage Centre for Cleaner Production Technology & Hazardous Waste Management. This Centre is located within the serene environment of the University of Ibadan, Ibadan, Nigeria's premier university, in South-West of Nigeria.

BCCC-Africa coordinates the Basel Convention Regional centres in: South Africa (for Anglophone countries in Africa), Senegal (for Francophone countries in Africa), and Egypt (for Arab states)

The Centre plays a key role in building the capacity of the African countries to implement the Basel Convention and its amendments, and to enhance their knowledge of chemicals and hazardous wastes issues and to address their lack of inventories on waste generation and other infrastructural deficiencies which are expressed in the priority needs of the countries. The Centre receives financial assistance from the Federal Government of Nigeria, and the Basel Convention Trust fund. Potential future sources of funding include revenue from the services provided, fees and earned interest charged by the Centre.

AFRICA SUB-REGIONAL WORKSHOP

Promoting synergy and enhancing participation in the work of Basel, Rotterdam and Stockholm Conventions



Participant in Africa Sub-Regional Workshop, Lusaka, Zambia



Following the need for countries party to the Basel, Rotterdam and Stockholm Conventions to update their National Implementation Plans, the Secretariats of the Basel, Rotterdam and Stockholm (BRS) Conventions in collaboration with the Basel Convention Coordinating Centre for the Africa Region in Nigeria (BCCC-Nigeria) organized a 3 (three)-day training workshop in Lusaka, Zambia between the 10-12 February, 2015.

The Workshop's aim was to enhance participants' understanding of the processes for reviewing and listing chemicals as well as to provide opportunities for information exchange and networking among Committee members, experts, Parties and observers. In addition, the Workshop aimed at providing a forum to discuss and explore a synergized approach for the implementation of the con-

ventions at the national and regional levels. The Workshop included lectures, group exercises and training sessions, based primarily on the documentation to guide the work of the two subsidiary bodies ("Handbook for effective participation in the POPs Review Committee under the Stockholm Convention"; "Working procedures and policy guidance for the Chemical Review Committee"; "Pocket guide for effective participation in the Chemicals Review Committee"). The participants undertook case study exercises to allow them to acquire the necessary skills to submit information relevant to the reviewing of chemicals under both subsidiary bodies. The Workshop also highlighted relevant outcomes of the tenth meeting of the Chemical Review Committee and the tenth meeting of the POPs Review Committee held in Rome in October of 2014.



ESTABLISHMENT OF GEO-ENVIRONMENTAL RESEARCH CENTRE (GRC) LABORATORY AT BCCC-AFRICA, NIGERIA

Promoting Synergy between Basel and Stockholm Conventions



 Gas Chromatograph – Mass Spectrograph (GC-MS) (Agilent 5975C series) in the GRC laboratory



 Gas Chromatograph – Electron Capture Detector (GC-ECD) in the GRC laboratory.

Basel Convention Coordinating Centre for the Africa Region for Training & Technology Transfer for Cleaner Production Technology and Hazardous Waste Management, which also serves as the Federal Ministry of Environment - University of Ibadan Linkage Centre, University of Ibadan, Nigeria (BCCC-Africa) was selected by the Federal Ministry of Environment, Nigeria to house the Geo-Environmental Research Centre (GRC) laboratory. This is because of the previous records of the BCCC-Africa in terms of expertise and experience in Persistent Organic Pollutants (POPs) analysis. Thus, it was selected to carry out all analysis related to Persistent Organic Pollutants (POPs) and other toxic pollutants contaminated sites in the country.

The established GRC laboratory is one of the main outputs of the GEF/UNIDO/Ghana-Nigeria Regional project to develop appropriate strategies for identifying sites contaminated by chemicals listed in Annexes A, B and/or C of the Stockholm Convention. Under this output of the project on capacity building, it was planned

to upgrade existing institution in the areas of contaminated sites identification, environmentally sustainable management of identified POPs contaminated sites and development of cost effective and environmentally friendly remediation technologies. UNIDO started the process of refurbishing of the laboratory in September 2010 through a local contractor to install the necessary infrastructure to operate a state of the art analytical laboratory

The second phase of developing the GRC POPs Contaminated Sites laboratory after the rehabilitation and modernisation of the laboratory furniture and accessories entailed the purchase by UNIDO, the executing agency for this GEF project, some vital analytical instruments such as high resolution Gas Chromatography–Mass Spectrometer (GC-MS) (Agilent 7890A GC System 5975C VL MSD Triple-Axis Detector) was bought and installed in 2013. Also Gas Chromatograph with Electron Capture Detector (GC-ECD) (Agilent 7890A system) was bought and installed in 2014. Other facilities recently purchased for the laboratory are Analytical balance, refrigerators and

freezers, Sonication Bath, Heating Mantle and Hot Plate, Lamina Flow Hood, two 60 KVA Generator sets, pH Meter, Glass Water Distillation Unit among others.

The capacity of two laboratory personnel in POPs analysis has been built namely: Dr. Bola Oketola Adeyi in United Kingdom (University of Wales, Cardiff, Wales), and Ms. Omotayo Sindiku (Fraunhofer Institute, Germany; and University of Umea, Sweden). Hitherto, the Director of BCCC-Africa, Pro. O. Osibanjo has several years national and international experience in POPs analysis. The laboratory has since become operational. The laboratory is poised to serve as a national and regional center of excellence in the analysis of POPs contaminated sites for Africa.

ongoing
Project

PiP Project

Person in the Port (PiP) Project,
2015 in collaboration with StEP



Participants at the inception workshop on Person in Port (PiP) project funded UNU/StEP in Lagos

Background

The United Nations University (UNU), the U.S. Environmental Protection Agency (US-EPA), and the Basel Convention Co-ordination Centre for Africa (BCCC) in Nigeria – all members of the Solving the E-waste Problem (StEP) Initiative in partnership with Electronic Recyclers International, Inc. got funding from US-EPA and Senior Expert Service in Germany for six months (February to July, 2015) to gather information and reliable data on import of used electrical and electronic equipment (UEEE) and e-waste into Nigeria as Nigeria is one of the major destinations of e-waste export from developed countries to the countries in West Africa. The picture above shows participants at the PiP inception meeting in Lagos held 5 - 6 February, 2015.

Objectives of the project

The main objectives of the project are to identify the types and amounts of used EEE and e-waste imported into Nigeria, functional status, the packaging, labeling and transportation, its origin (exporting country) and what would become of it on arrival in Nigeria.

Expected Outcome

- The information collected would provide an opportunity to understand the scope of the problem in Nigeria: how imports are characterized (in terms of what is stated in the shipping document versus what is really in the containers);
- The economic drivers influencing used EEE imports and the prevalence of illegal practices;
- The information would help to analyse how these illegal practices can be curtailed; while maintaining the beneficial aspects which makes inexpensive used EEE available to lower income people in developing countries who would otherwise have no access to new EEE.
- The project is currently on-going and a midterm report has been submitted for review and discussion.

Director, BCRC-EGYPT visited BCCC-AFRICA to promote South - South cooperation.



Prof. Mostafa Kamel, with Prof. O. Osibanjo with the BCCC-Africa staff

The Director of Basel Convention Regional Center for Training and Technology Transfer for the Arab States (BCRC-Egypt), Professor Mostafa Hussein Kamel visited Basel Convention Coordinating Centre for the African Region (BCCC-Africa) on the 17th to 18th of July, 2014.

The Director was welcomed by the Director of BCCC-Africa, Professor Oladele Osibanjo and staff and later conducted round the Basel building and the Geo-Environmental Research Centre (GRC) Laboratory.

The outcome of the visit is the request by Director BCRC Egypt for GRC Laboratory to help train experts from twelve Arab States in Africa in POPs Analysis which has been scheduled for June 2015.

upcoming
Project

Training for Arab Countries



Training of Experts from Arab speaking countries on the analysis of Persistent organic Pollutants (POPs) in environmental samples set to hold in the 3rd quarter of 2015. The training will:

- 1 Enhance the knowledge of participants on POP's analysis and management.
- 2 General laboratory hands-on experience with emphasis on POPs
- 3 Identification and assessment of POPs contaminated sites.
- 4 Introduction to UNIDO toolkit on POPs
- 5 Train-the-trainer capacity on POPs and other chemicals
- 6 Laboratory report writing.



THE INTERNATIONAL ADVISORY GROUP MEETING ON GEF FUNDED ETHIOPIAN ELECTRONIC WASTE MANAGEMENT PROJECT (EWaMP)



Basel Convention Coordinating Centre for the African Region (BCCC - Africa) along with UNIDO, UNU, Original Equipment Manufacturers (DELL) and International E-waste Recyclers is a member of International Advisory Group (AG) on Ethiopian Electronic Waste Project (EWaMP) (See picture above).

A 2 day meeting of the International Advisory Group on Ethiopian Electronic Waste Management Project (EWaMP) where BCCC-Africa played a major role was held in Addis Ababa in Ethiopia on 11 and 12th of June, 2014. Representatives from some Ethiopian Government ministries and private sector also participated.

The main objective of the project is, to identify, analyze and recommend options on how the dismantled e-waste fractions from the Electronic Demanufacturing Facility can be sold to environmentally and socially sound players in the national and international downstream markets, thereby enabling effective and efficient material sales at best prices.

During this meeting, BCCC-Africa presented a paper entitled 'The implication of E-waste Export from Ethiopia with regards to Regulations by Basel Convention' to inform the team of the requirements of transboundary movement of e-waste.

RECYCLING OF MANUFACTURE FIRED CLAY BRICKS A waste-to-wealth



 Fig 1: Raw materials for the manufacture of bricks/tiles



 Fig 2: Fired bricks and tiles from slag/clay mixture

RECYCLING (ABM) SLAG INTO BRICKS AND TILES

Waste to Wealth Initiative

Background

Slag from ABM is a by-product of smelting operations where pure Pb is extracted from galena (PbS) for use in battery electrodes manufacture. Slag is a hazardous waste because it contains high Pb levels. In Nigeria, ABM slag is managed in an environmentally unsustainable manner. For instance, it is disposed of in nearby bushes and farmlands within the vicinities of ABM factories. High levels of Pb have been found in soil, water and plants samples collected from these dumpsites with potential risk to human health and the environment.

This study was carried out to investigate the potential of recycling ABM slag into building bricks and tiles, a waste to wealth initiative. Different series of clay and slag (Fig. 1) were mixed, and each series was wetted with water, moulded, dried and fired in a furnace to obtain glassy fired products (Fig 2). Physico-chemical, technological and microscopic properties of the fired materials were determined using standard methods.

Toxicity Characteristic Leaching Procedure and Synthetic Precipitation Leaching Procedure tests conducted on the optimum slag/clay mix proportion showed Pb leachability within the US-EPA limit of 5mg/L.

This study presents a sustainable and novel method of recycling ABM slag high in Pb into fired bricks and tiles, with positive socio-economic dividends. This provides cheap materials for road construction and building houses.

The Science

The formation of new $PbO \cdot Al_2O_3 \cdot 2SiO_2$ crystals found in fired product containing slag, but absent in those without slag (Fig 3) is thought to be according to the following equations:



The Pb from ABM slag firstly reacts with oxygen during firing to form PbO and the PbO formed in turn reacts chemically with aluminosilicate ($Al_2O_3 \cdot 2SiO_2$) in the clay to form $PbO \cdot Al_2O_3 \cdot 2SiO_2$ crystals.

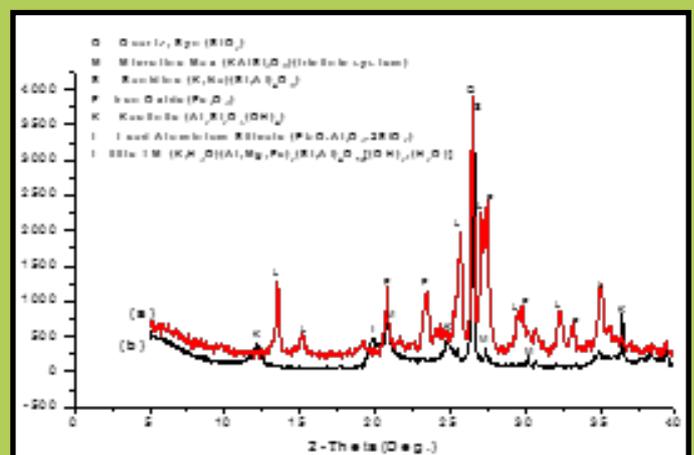


Fig 3: XRD charts of fired materials with (a) optimum slag/clay mixture (b) 0% slag

Mandatory training workshop for Federal Ministry of Environment Accredited consultants

The workshop was organized by the BCCC-Africa region and Federal Ministry of Environment – University of Ibadan Linkage Centre For Cleaner Production Technology and Hazardous Waste Management, University of Ibadan, Oyo State.

Objectives of the workshop were to:

- To enhance capacity building and the transfer of extant and the emerging know- knowledge to accredited environmental consultants to improve their performance and quality service delivery.
- To promote knowledge and experience sharing among environmental consultants as well as FMENV regulators
- To promote good ethics of professionalism among environmental consultants.
- The workshop covered a wide spectrum of environmental issues namely:
 - National Environmental Governance.
 - Registration Process for Environmental Consultants.
 - Ethics and Professionalism in Environmental Governance.

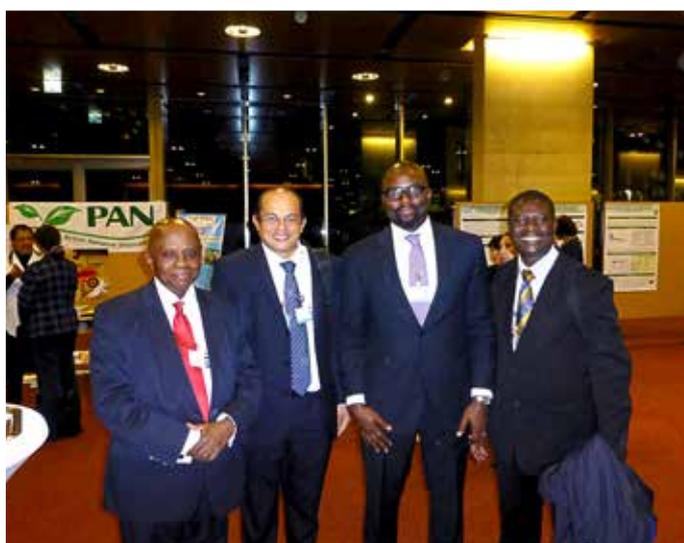
- Environmental sampling and Analysis Technique including Environmental Data and Report Writing
- Management of Contaminated Environment.
- Environmental Management Systems.

In attendance were 66 participants (Accredited Consultants), 21 Resource persons, 5 representatives from the FMENV and 5 members of staff of BCCC-Africa.

BCCC-Africa organised a three-day capacity building workshops for environmental consultants in Lagos in February 2014 and Port Harcourt in November 2014 respectively.



Fotorama



📁 Director BCCC-Africa with Dr. Rolf Payet, Executive Secretary, BRS Secretariat and Mr Mohammed Omotoal, Program Officer, SAICM Secretariat and Dr. Sam Adukumi, Ghana



📁 Participants at Prepcon meeting of BRS COPs in Nairobi, Kenya, March 2015

Ozone Machines



Since 1992, UNIDO's efforts in various sectors have cumulatively eliminated 22,000 Ozone Depleting Potential (ODP) tons of annual Ozone Depleting Substances (ODS) consumption from developing countries. Of this total, 17% was in Africa, amounting to about 3,740 ODP tons. UNIDO's intervention in Nigeria therefore contributed about 8.6% of this continental elimination of ODS. In order to further consolidate on these achievements, the Federal Ministry of En-

vironment in partnership with UNIDO distributed 32 low-pressure foaming machines to qualified ice machine manufacturers in Nigeria. There were 16 in Abuja and 16 in Ibadan.

The event held at the University of Ibadan with BCCC-Africa playing its role as the local organizing committee.

These machines will enable ice machine manufacturers in Nigeria to meet market demands in a way that is both cost-effective and environmentally friendly.



☑ Director BCCC-Africa with Dr. Kasimu Bayero, Director Fed. Ministry of Environment, Abuja and other members of the Nigerian delegation at the Regional Prepcop of BRS COPs, Nairobi 24th -25th March 2015.

ongoing
Project

TECHNICAL ADVISORY SERVICES (POPS INVENTORY AND ASSESSMENTS) FOR THE "

ENABLING ACTIVITIES TO REVIEW AND UPDATE THE NATIONAL IMPLEMENTATION PLAN (NIP) FOR THE STOCKHOLM CONVENTION ON PERSISTENT ORGANIC POLLUTANTS (POPS) IN NIGERIA



☑ Mr. Fukuya (UNIDO) Vienna with participants at the inception workshop.

Nigeria received a grant from Stockholm Convention Secretariat for the "Enabling Activities to Review and Update the National Implementation Plan (NIP) for the Stockholm Convention on Persistent Organic Pollutants (POPs)" project with UNIDO as implementing agency.

BCCC-Africa was offered Advisory Services to undertake the following tasks:

- Develop a comprehensive work plan for executing the contract;
- Review draft report prepared by national Experts and, ensure format, sequence, numbering and schedules of draft reports are in conformity with UNEP/Stockholm Convention Guidance documents on NIP development;
- Collect and synthesize stakeholders contributions and comments on POPs inventory and other assessment reports;
- Confirm that all draft reports, action plan and road maps are submitted to the Project Coordinating Unit in time and with enough notice for substantive comments;
- Stimulate and facilitate discussions among Technical Experts on contents of prepared draft reports, vis-vis UNEP/Stockholm Convention Guidance Document;
- Provide technical advice on effective NIP Review and update Project Implementation.

Partnership Events

South-South Cooperation between BCCC-Africa in Nigeria and Basel Convention Regional Centre for the Asia and Pacific (BCRC-AP), China



In 2010, the Directors of BCCC-Africa, Professor Oladele Osibanjo and BCRC-AP, Professor Jinhui Li had a Memorandum of Understanding (MoU) to have a South – South Cooperation to exchange knowledge between the two centres on environmentally sound management of hazardous wastes. The picture above shows the BCRC-AP team with Dr Adie.

To honour this MoU, Dr. Gilbert U. Adie from BCCC-Africa visited the BCRC-AP in China for six months from June 1 to November 30, 2013 to under study the management of electrical and electronic wastes in China with the intention of replication within the African sub region.

Dr Adie during this visit had opportunity to go on internship at the Total Environment Solution-Asset Material Management (TES-AMM), the largest formal e-waste recycling company in China, located in Shanghai. He also participated fully during the POPs expert meeting held at the BCRC-AP in August, 2013, Global workshop on updating the National Implementation Programmes (NIPs) on POPs in articles and revising PCDD/PDCF inventories also held at BCRC-AP. Also in August, 2013 and many other conferences and workshops organized by the centre in China. He also visited many e-waste recycling companies in China to see work in action on e-waste dismantling and processing to recover precious metals.

Dr. Adie participated in the 8th International Conference on Waste Management Technology (ICWMT 8) organized by BCRC-AP from October 22 to October 25, 2013 in Shanghai, China where he presented a paper titled 'Trends in toxic metal levels in discarded laptop printed circuit boards'. He characterized different e-waste samples collected in Nigeria for selected metal levels in the laboratory managed by BCRC-AP

South – South Cooperation between BCCC-Africa and CETESB, Sao Paulo, Brazil

Promoting Synergy between Basel and Stockholm Conventions

The Environmental Agency of Sao Paulo (CETESB), Brazil which is also Stockholm Convention Regional Centre (SCRS) on Persistent Organic Pollutants (POPs) for Latin America and the Caribbean Region, signed a Memorandum of Understanding (MOU) with BCCC-Africa during the EXCOP Regional fair in Geneva in May 2013.

As a follow up, Director CETESB Brazil, Ing Lady Virginia Traldi Meneses, invited the Director BCCC-Africa Prof Oladele Osibanjo as Resource Person to give five (5) lectures at the 3rd International Training Programme on Environmentally Sound Management (ESM) of Chemicals and Wastes, especially on Persistent Organic Pollutants (POPs) and Mercury (Hg) held 20th January 2014 – 7th February 2014, at Sao Paulo, Brazil, funded by JICA and organised by CETESB. Director of BCCC-Africa also undertook a tour of CETESB facilities and held discussions with the Director of CETESB and the management team on the need to strengthen scientific and technical cooperation between the two centres.

As a follow up, Director CETESB Brazil invited the Director BCCC-Africa as Resource Person /Speaker at the 3rd International Training Programme on Environmentally Sound Management (ESM) of Chemicals and Wastes, especially on Persistent Organic Pollutants (POPs) and Mercury (Hg) held 20th January 2014 – 20th February 2014, at Sao Paulo, Brazil, funded by JICA and organised by CETESB.

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The lecture presentations can be sighted on the website of CETESB, Sao Paulo, Brazil.

UNIDO Representative and Regional Director Visits BCCC-Africa

United Nations Industrial Development Organization (UNIDO) Representative and Regional Director, Dr. Patrick Kormawa visited the Basel Convention Coordinating Centre for the Africa Region situated at the campus of University of Ibadan, Ibadan, Nigeria in June 2014 to see the situation of things in the Geo-environmental Research (GRC) Laboratory.

The Geo-Environmental Research Centre (GRC) is one of the main outputs of the GEF/UNIDO/Ghana-Nigeria Regional Project to develop appropriate strategies for identifying sites contaminated by chemicals listed in annexes A, B and/or C of the Stockholm Convention.

The Director who came in company of Mr. Oluyomi Banjo, UNIDO, National Environment Expert; and two other UNIDO staff; Evang. Aanu Basil – Deputy Director, Federal Ministry of Environment and Head GRC- Nigeria; Ms Comfort Odunlami, Deputy Director, Federal Ministry of Environment and Head of GRC, Lagos was welcomed by the Director, BCCC-Africa, Professor Oladele Osibanjo and staff of the BCCC-Africa. The visitors were later conducted round the laboratory by the Manager of GRC laboratory, Dr. Bola Oketola -Adeyi.



 **UNIDO Regional Director, Dr. Patrick Kormawa**
Discussing with Director, BCCC-Africa, Prof. Osibanjo

Activities on ESM of Mercury and the 6th International Negotiating Committee on Mercury (INC6)



 **Experts meeting on the Practical Source Book on Mercury Storage and Disposal**

BCCC- Africa has been active in the area of ESM of mercury (Hg) waste as well as monitoring of environmental levels of mercury. The centre was invited as a reviewer of the Draft " Practical Source Book on Mercury Storage and Disposal" being coordinated by ISWA and UNEP Chemicals. It also participated in the Face -to- Face Meeting of the Experts Group for the Development of a " Practical Source Book on Mercury Storage and Disposal", in Vienna, Austria 27-28, August 2014 organised by UNEP IETC, Osaka, Japan, UNEP Chemicals and ISWA. The meeting discussed in details the draft document, suggested revisions and agreed in principle the final content of the document which would be launched during COP 12.

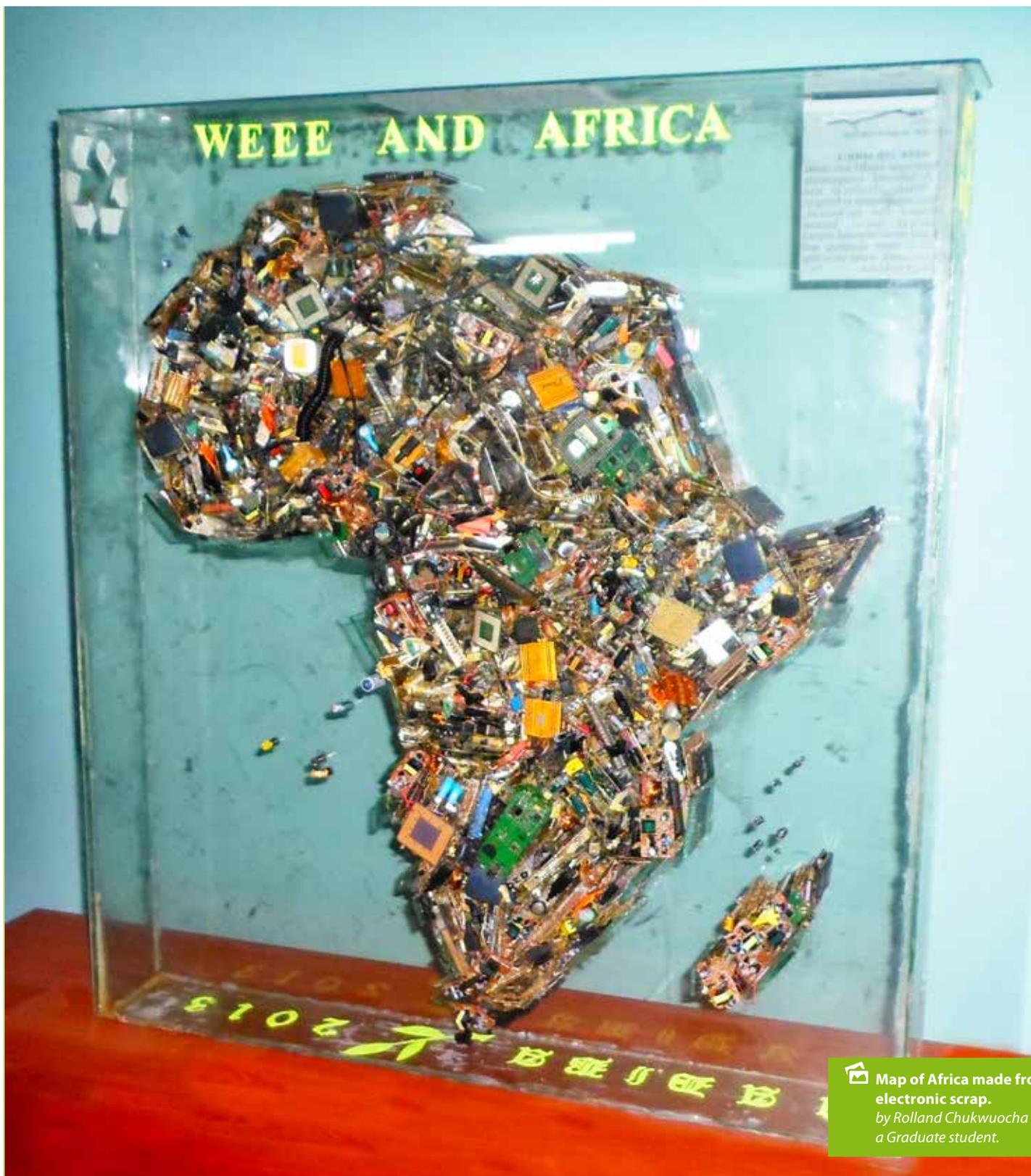


 **Some African delegates at Mercury INC6 in Bangkok**

The director BCCC-Africa was also appointed by the African Union Commission (AUC) in Addis Ababa, Ethiopia as a Policy Advisor to the African Group of Negotiators (ANC) at the Intergovernmental Negotiating Committee (INC 6) on mercury (Hg) held in Bangkok, Thailand from 3rd to 7th November 2014.

ongoing
Project

PARTNERSHIP FOR ACTION ON CLIMATE CHANGE (PACE) AT THE 9TH OPEN ENDED



 Map of Africa made from electronic scrap.
by Rolland Chukwuocha
a Graduate student.

COMPUTING EQUIPMENT WORKING GROUP (OEWG 9)



Director BCCC-Africa co-chairs with Marco Buletin of Switzerland, the Basel Convention multi-stakeholder Partnership for Action on Computing Equipment (PACE) Working Group teleconferences and at least once a year physical meeting of the working group in different UN regions. It is a multi-stakeholder partnership under the umbrella of the Basel Convention that provides a forum for representatives of : - Governments, - Personal computer manufacturers, - Recyclers, - International organizations, - Academia, - Environmental public-interest non-governmental organizations to tackle the environmentally sound management, refurbishment, recycling and disposal of used and end-of-life computing equipment. PACE Membership comprises: 25 Parties and Signatories to the Basel Convention; 11 Basel Convention Regional Centres for Training and Technology Transfer (BCRCs); 11 Research and Academic Institutions, and other UN Bodies; 14 NGOs, Industry, and Industry Associations.

Activities include organization and presiding at monthly working group teleconferences, organization of PACE Side Event at 9th open-ended working Group OEWG9 of Basel Convention on 16 September 2014; and Super-COP Side events in 2013 including giving reports on PACE in plenary

of Basel COP 11 in 2013; and Basel OEWG 9 in September 2014 on efforts made or being made to achieve ESM of e-waste. Other activities include the development , review and approval of PACE tools (guidelines) on repair, refurbishment, Materials Recovery except the guidance on transboundary movement (TBM) which has to await the Basel Working Group on E-waste Technical Guidelines to conclude its work. PACE reports and guidelines are on SBC website. Review and approval of project group reports.

BCCC-Africa drew attention to the spiralling e-waste challenge in Africa by displaying at the PACE Side Event during Basel OEWG 9, at International Conference Centre in Geneva on 16 September 2014, an Artwork of Map of Africa made solely from de-soldered components from assorted Waste electrical and electronic (WEEE) equipment . The Artist is Mr. Rolland Chukwuocha, an MSc project student under Prof Oladele Osibanjo, Director BCCC-Africa.

Reports on PACE Activities can be found in Basel Convention website: www.basel.int . See picture of artwork map of Africa solely from e-waste on BCCC-Africa website and Facebook. It is also part of the annex to this report.



📁 Directors of Basel and Stockholm Centres in Africa in Nairobi, March 2015 at Precon meeting of BRS COPs



📁 Dr. Rolph Payet, Exec. Secretary BRS Secretariat with Directors of Basel and Stockholm Centres from Africa and Spain and Mr Ibrahim Sow of GEF at the meeting of Basel and Stockholm Directors in November 2014

Preliminary Assessment of New POP's OctaBDE and HBB Entering Africa Via e-Waste; Development Of Methodology And Analysis of PBDEs In e-Waste Promoting Synergy between Basel and Stockholm Conventions

POP-PBDEs are new POPs listed in Annex A of the Stockholm Convention which prohibits production, use, import, and export. Recent studies have revealed that plastic from waste electrical and electronic equipment (WEEE) containing PBDE is largely uncontrolled and therefore the flow and the recycling flow of PBDE/PBB containing WEEE plastic need to be understood and controlled. There are only a few data of PBDE and HBB levels in WEEE plastic measured in mainly WEEE plastic in Europe, no studies on PBDE in WEEE entering developing countries via E-waste or used electronics have been measured. Hence BCCC-Africa made a proposal to Stockholm Convention Secretariat to put two PhD students on a project to screen WEEE plastic from imported used EEE and WEEE into Nigeria for PBDE to ascertain substance flow (PBDE) into developing country in addition to material flow from UEEE and WEEE. The proposal was approved. The project exemplifies synergy between the Basel and Stockholm conventions.

The following expected outcomes of the project were accomplished:

- Methodological guidance on sampling and analysis of POP-PBDEs (and PBB) from WEEE developed;
- Preliminary baseline data of POP-PBDE and PBB in plastic from electronic waste entering Nigeria/Africa from different regions North America, Europe and Asia;
- Data for key electronics entering Nigeria/Africa;

- Indication if manual separation of old electronics could lead to a significant reduction of POP-PBDE (and PBB) in WEEE plastics;
- Preliminary conclusion on the relevance of POP-PBDE imported and present in Africa from different world regions via WEEE;
- Capacity building for two PhD students in PBDEs analysis in WEEE polymers achieved.
- Capacity building : One Nigerian female PhD student , Omotayo Sindiku, trained in BFR analysis at Fraunhofer Institute Germany for 3 months in 2011 and University of Umea, Sweden for 6 months in 2012. Her training has made BCCC-Africa the first institution to successfully undertake BFR analysis in WEEE in Nigeria and one of the few in African region.
- Two other PhD students in our centre (Joshua Babayemi and Kikelomo Alao) are currently working on PBDEs research.

BCCC-Africa continued the project to 30/12/2013

The report of the project can be found in Stockholm Convention website. The project is significant in three aspects (i) analytical methodology for PBDEs in WEEE polymer/plastic has been developed and published in a reputable high impact international journal; (ii) Material Flow Analysis (MFA) and Substance Flow Analysis (SFA) of PBDEs in WEEE from Europe, North America, and Asia to Africa and Nigeria in particular has

Some publications from the study above which already appear in reputable international scientific journals

1. Sindiku O, Babayemi JO, Osibanjo O, Schlummer M, Schlupe M, Weber R (2011), Screening E-Waste Plastics in Nigeria for Brominated Flame Retardants Using XRF - Towards a Methodology for Assessing Pops PBDEs in E-Waste Exports (PDF). Link: <http://www.dioxin20xx.org/pdfs/2011/1909.pdf>
2. Sindiku, O, Babayemi, JO, Osibanjo, O, Schlummer, M, Schlupe, M, Weber, R (2012), Assessing BFRs and POP-PBDEs in e-waste polymers in Nigeria. Link: <http://www.dioxin20xx.org/pdfs/2012/1338.pdf>
3. Babayemi, J, Osibanjo, O, Badejo, B, Mojekwu, S, Sindiku, O, Weber, R (2012), PBDE inventory in the transport sector of Nigeria - A Step for Stockholm Convention Implementation. Link: <http://www.dioxin20xx.org/pdfs/2012/1145.pdf>
4. Mellendorf, M, Alvarez, J, Arndt, R, Babayemi, JO, Cueva Jacome, AH, Eisa, M, Li, L, Lim, M, Osibanjo, O, Ovuike, S, Posner, S, Säll, L, Schlupe, M, Turner, B, Volenik, J, Weber, R, Iino, F (2012), PBDE and PFOS Inventory Guidance for the Stockholm Convention Link: <http://www.dioxin20xx.org/pdfs/2012/1144.pdf>
5. Sindiku O, Babayemi J, Osibanjo O, Schlummer M, Schlupe M, Weber R (2014),

PentaBDE, Used Electronics/ Technology For Sampling

ions

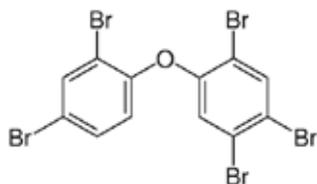
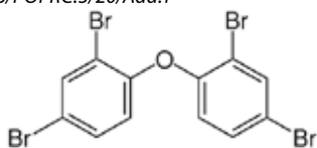
been shown for the first time. It supports SAICM ICCM2 decision II/4 in 2009 which adopted hazardous substances in the lifecycle of electrical electronic equipment as one of four emerging environmental policy issues, and (iii) Results from this project have been utilised by Stockholm Convention Secretariat/UNIDO in the development of PBDEs and PFOS Inventory Guidance for National Implementation Plan (NIP) Update. (See Stockholm Convention Secretariat website.)

Tetrabromodiphenyl ether and pentabromodiphenyl ether

Proposal: 2005, Norway

Risk profile: UNEP/POPS/POPRC.2/17/Add.1

Risk management evaluation: UNEP/POPS/POPRC.3/20/Add.1



Originally proposed as:

“Commercial mixture of pentabromodiphenyl ether”
Mixture of brominated organic chemicals, main components are penta- and tetra- congeners.



Polybrominated diphenyl ethers listed as Stockholm Convention POPs and other brominated flame retardants and heavy metals in e-waste plastic in Nigeria. *Environ Sci Pollut Res Int* DOI: 10.1007/s11356-014-3266-0

6. Omotayo Sindiku, Joshua Babayemi, Oladele Osibanjo, Martin Schlummer, Mathias Schluep, Alan Watson, Roland Weber (2014) : Polybrominated diphenyl ethers listed as Stockholm Convention POPs, other brominated flame retardants and heavy metals in e-waste polymers in Nigeria. *Environ Sci Pollut Res Int*, DOI 10.1007/s11356-014-3266-0

Activities on Strategic Approach to International Chemicals Management (SAICM)

BCCC-Africa participated actively in the Priority Setting Workshop of the African Regional meeting on the Strategic Approach to International Chemicals Management (SAICM) in Pretoria, South Africa, 18-21 November 2013, preparatory to SAICM OEWG2 In December 2013 in Geneva. Director BCCC-Africa chaired the working group that prepared the Action Plan and Strategies for effective further implementation of SAICM in the African Region towards SAICM OEWG2 in 2014 and SAICM ICCM4 in 2015.

BCCC-Africa in partnership with UNEP Chemicals (SAICM Secretariat)/Secretariat, UNIDO, GEF and HP organised a side event on e-waste at the Second Meeting of the Open-ended Working Group (OEWG2) of the International Conference on Chemicals Management (ICCM) 15-17 December 2014 | Geneva, Switzerland. The side event which occurred on Wednesday 17 December 2014 had the theme; “E-waste management in developing countries: Taking stock and future perspectives”. The side event was in the form of a panel discussion in which Director of BCCC-Africa was both a speaker as well as the Moderator of the side event. Greater understanding of the e-waste issue including material flow and substance flow; the challenges faced in developing countries by OEWG2 participants, Sharing of knowledge and experience among stakeholders; Feedback on progress and anticipated challenges and opportunities for cooperation were some of the expected outcomes of the side event.

The panelists and the titles of their presentations were as follows:

- Substance flow in UEEE and WEEE by Prof. Oladele Osibanjo, Director, Basel Convention Regional Coordinating Centre for Africa (BCRCC- Africa) – Moderator
- UNIDO Green Industry E-waste Management Programme by Ms. Elisabeth Herbeck, United Nations Industrial Development Organization (UNIDO)
- GEF perspectives and supported projects on e-wastes by Mr. Ibrahima Sow, Senior Environmental Specialist, Global Environment Facility, (GEF) .
- Hazardous substance within the life-cycle of electrical and Electronic Products and E-Waste by Mr. Muhammed Omotola, SAICM Secretariat/UNEP Chemicals Branch Focal Point on E-Waste.
- E-waste as an opportunity: solution model for emerging markets by Mr. Herve Guilcher - Environmental Programs Director, Hewlett Packard, France

Report on the side event is obtainable on SAICM Secretariat.



Coming Soon

PACE Technical Guidelines / e-Waste Workshop in Lagos, Nigeria

📅 25th - 28th August, 2015

2nd Pan-Africa Forum on e-Waste

📅 4th - 6th November, 2015

UNEP Headquarters, Nairobi, Kenya

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Executive Director

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