Proceedings

Training Course on the Environmentally Sound Management of Electronic and Electrical Wastes

31 March-1April, 2010 in Phnom Penh, Cambodia
Department of Pollution Control
Ministry of Environment

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TRAINNG REPORT

1- INTRODUCTION

The Ministry for the Environment of the Kingdom of Cambodia organized a training course on the Environmentally Sound Management of Electronic and Electrical Wastes (E-Wastes) in Phnom Penh, Cambodia, from 31 March to 1 April, 2010. The training course was funded by Government of Japan through the Basel Convention Technical Trust Fund of the Secretariat of the Basel Convention. The training course was attended by 55 workers and scavenger involved with used electronic and electrical equipment and electronic and electrical wastes in the twenty four project participating provinces and cities in Cambodia (Phnom Penh Municipality, Kampong Chhnang Province, Pursat Province, Battambang Province, Banteay Mean Chey Province, Stung Treng Province, Rotanakiry Province, Mondolkiry Province, Kratie Province, Prey Veng Province, Svay Rieng Province, Kampong Cham Province, Kampong Thom Province, Siem Riep Province, Prea Vihear Province, Oudor Meanchey Province, Paylin City, Koh Kong Province, Keop City, Sihanoukville City, Kampot Province, Kandal Province, Takeo Province and Kampong Speu Province), The list of participants is presented in the proceeding.

1.1 Objective of the Training Course

The objective of the training course is to promote the awareness of the workers and scavengers towards the Environmentally Sound Management of Electronic and Electrical Wastes in the twenty four project participating provinces and cities in Cambodia.

2-CEREMONIAL

2.1 Welcome Address by H.E.Mr. HENG Nareth, Adviser to the Ministry and Director of Pollution Control Department, Ministry of Environment

Statement made by H.E.Mr. HENG Nareth, Adviser to the Ministry and Director of Pollution Control Department, Ministry of Environment of Kingdom of Cambodia at the training course on the Environmentally Sound Management of Electronic and Electrical Wastes in Cambodia, 31 March to 1 April, 2010 at Center of Cambodian Education and Waste Management Organization “COMPED” , Phnom Penh, Cambodia.

Ms.Cynthia Indriani, International Expert, Basel Convention Regional Centre for Southeast Asia

Distinguished delegates, Lady and Gentlemen!

As allowed by *H.E Dr. Mok Mareth, Senior Minister, Minister for the Environment*, I have the honour and pleasure to preside over the training course on the Environmentally Sound Management of E-Wastes organized by the Department of Pollution Control, Ministry of Environment (MoE), and sponsored by the Secretariat of Basel Convention (SBC).

I am very proud to have opportunities to meet all participants from various private sectors which involved directly with the collection, transportation, storage and reconditioning of Electronic and Electrical Equipment (EEE) and Used Electronic and Electrical Equipment (UEEE) and always cooperate with the MoE in environmental quality protection throughout the Kingdom. On behalf of Dr. Mok Mareth, the MoE's leaders and myself, I would express my sincere thanks and warm welcome for your presents which positively responded to the Ministry of Environment's invitation. Meanwhile, I would like to thank a lot to project team of the Department of Pollution Control in charge with the Basel Convention who organized this important training.

Distinguished Delegates, Lady and Gentlemen,

EEE serves importantly for human and the numbers of using EEE have been increased from year to year. By increasing number of EEE uses, we have seen many harmful effects on the environment and human health due to improperly EEE use, maintenance and management according to the technical standard/practice.

We together should pay attention and elaborately consider in detail about this concerned issue due to awareness of people on the use and ESM of UEEE is still limited, especially, with regard to the EEE management in reconditioning shops, waste collection yards and recycling site of UEEE,...etc. Separately, means and managerial mechanism including regulation, law on UEEE management and other management activity/program related to the EEE occupation is still insufficient. Through dimension of health impact to EEE operator as well as an impact to the environmental quality, all constraints are the main obstacles to implement the current Governmental Policy on Poverty Alleviation.

Dear Participants.

By seeing the problem just mentioned, Cambodia ratified many International Conventions including the Basel Convention. To fulfill the obligations under the conventions, Cambodia has been receiving full technical and financial support from the Secretariats of the Basel Conventions in capacity building programs to strengthen the understanding of governmental officials as well as the planning of national activities focusing on environmental and human health protection according to the guidelines of the conventions.

Dear Distinguished delegates, Ladies and Gentlemen.

The Training Course on the Environmentally Sound Management of Electronic and Electrical Wastes in Cambodia that has been organized today is an event that confirms the Secretariat of the Basel Convention's support for our program for the environmentally sound management of E-wastes. During the course of this two day

training course I do hope that the discussions and exchanges between the concerned institutions, both public and private sectors will be fruitful and contribute to the expected outcome of the training course.

Before the end of my speech, I would like to express deep thanks to the SBC for providing the support for the training course organization and to **Ms.Cynthia Indriani**, representing the BCRC-SEA and all distinguished participants that attend this training course.

Finally, I would like to wish the training course a successful and fruitful outcome.

I therefore open the training course on the Environmentally Sound Management of Electronic and Electrical Wastes in Cambodia. Thank you.

2.2 Keynote Speech by Ms.Cynthia Indriani, International Expert Basel Convention Regional Centre for Southeast Asia

Your Excellency, Mr. Heng Nareth, Adviser to the Ministry
Mr. Sam Phalla, Deputy Director of Cambodian Education and Waste Management Organization
My dear friends of Cambodia,
Good morning and peace to all of you.

I am glad to be present at this training here in Cambodia to represent the Basel Convention Regional Centre for South-East Asia. It is my pleasure and great honour to have been invited to talk about the Basel Convention and environmentally sound management of wastes electronic and electrical equipment with all of you here. I would like to express my deepest thanks to the Ministry of Environment of Cambodia for inviting me to this training.

We are very happy to have been working with the Ministry of Environment of Cambodia on activities on e-wastes, such as to jointly organized the Regional Workshop on the Enviromentally Sound Management of E-Wastes in Siem Reap in 2007. We are also very honoured to have been invited to the National Training Workshops on the ESM of E-wastes in 6 cities and provinces in Cambodia in 2008.

The technology of electronics has been rapidly developed since the last half century. Various electronic products (e-products) have been significantly manufactured and made available to virtually all communities accordingly. The e-products have helped us perform various important activities and tasks as well as provided entertainment. Hence, they have made our daily life easier. There has also been a trend that the technology of many e-products getting higher while the price getting lower so that many types of the products have become more affordable to more people. The increase of e-products uses with their limited lifetime as well as people's lifestyle has also resulted in the increasing generation of second-hand e-products and WEEE or e-wastes. Some

second-hand e-products can be reused, sometimes after being repaired or refurbished, and some becomes waste. Some of the e-wastes still contain valuable materials such as metals and plastics that can be reused or recovered. Therefore, it has also driven economic activities of some people, especially, in the developing countries. However, due to the hazardous properties of various electronic components as well as the way they are handled, e-wastes has also been posing hazards to both occupational safety and health and the environment.

The fact that e-wastes has two opposing advantages and disadvantages has drawn attention of various countries and communities, especially when most developing countries have become destination for used e-products and e-wastes export. Most developing countries have no adequate technology and facilities for handling the e-wastes properly and in environmentally sound manner. So, either the used e-products or e-wastes will eventually pose serious environmental problems in such countries.

Many countries and organizations have demonstrated their serious attention to the e-wastes issues by making multilateral agreements, establishing policies, regulations, guidance and various programs for managing e-wastes properly. The Basel Convention, one of the three conventions under UNEP, includes the e-wastes on its lists of hazardous waste. The Convention has also set the e-wastes as one of its priority waste streams during its 6th Meeting of the Conference of Parties in 2002.

The Basel Convention Regional Centre for South-East Asia (BCRC-SEA) located in Indonesia has been established and operated to assist the parties to the Basel Convention in the South-East Asian region in implementing the Convention. Since its development, with the support of the Secretariat of the Basel Convention and the other stakeholders, the BCRC-SEA has conducted a number of regional training workshops and developed several technical guidelines for the Environmentally Sound Management (ESM) of Hazardous Waste, including the e-wastes, related to the implementation of the Basel Convention in the Region. Also in relation with the activities on E-wastes, we are currently conducting the project on development of regional database on e-wastes, and are also planning to conduct a Regional Workshop on ESM of E-wastes, focusing on activities of collection and separation in Indonesia this year.

Cambodia is one of the first countries in the Southeast Asian region that have paid serious attention to the e-wastes issue. The Ministry of Environment of Cambodia has demonstrated its leadership by conducting studies and first national inventories of Used Lead-Acid Batteries (ULABs) and other e-wastes types in the Country under the Basel Convention and also in cooperation with UNEP.

BCRC-SEA has also made the results of the e-wastes studies in Cambodia, in addition to those conducted in some other countries, as part of the references for the

development of its two Technical Guidelines for the ESM of E-wastes.

Both Technical Guidelines, for National Inventories and 3Rs of E-wastes, are available for download on our website. Despite primarily intended for the Parties to the Basel Convention in the Southeast Asia region, the technical guidelines can also be used by any parties outside the Region as reference.

Ladies & Gentlemen,

Finally, I would like to wish you all a fruitful and productive training, and I hope that our good cooperation and friendship will always continue in the future. Thank you.

3.0 TRAINING COURSE PRESENTATIONS

3.1 Overview of the Basel Convention on the Control of Transboundary Movement of Hazardous Wastes and Their disposal Presented by Ms.Cynthia Indriani, International Expert of BCRC-SEA

The Basel Convention was adopted on 22 March 1989 and entered into force on 5 May 1989 with 172 Parties as of March 2010. Currently, 8 (eight) members of ASEAN are Parties to the Basel Convention (Brunei Darussalam, Cambodia, Indonesia, Malaysia, Singapore, Thailand, Vietnam). The main goal of the Convention is to protect, by strict control, human health and the environment against the adverse effects which may result from the generation and management of hazardous wastes and other wastes, by controlling transboundary movement and environmentally sound management of such wastes. The provisions of the Convention have to be implemented strictly, in full, by each Party. The three key elements of the movement control system are notification, consent and movement document.

The definition of wastes by to the Basel Convention is according to Article 2 paragraph 1 and the wastes that are subject to the Convention is as in Article 1 of the Convention. There are 4 (four) stages of the procedures for the transboundary movement of hazardous wastes and other wastes, namely notification, consent and issuance of movement document, transboundary movement of wastes, and confirmation of disposal. The definition and sanctions of illegal traffic according to the Basel Convention is set out in Article 9 of the Convention.

The Basel Convention has provided support for implementation of the Convention by providing a number of manual and guidelines which can be downloaded from its website. Article 14 of the Convention also requires the establishment of the Basel Convention Regional Centres (BCRCs) which provide capacity building for Parties to implement the Convention. Currently there are 14 (fourteen) BCRCs in the world. Basel Convention Regional Centre for South-East Asia (BCRC-SEA), which covers 10 (ten) countries in south-east Asia, is located in Jakarta, Indonesia.

3.2 Basel Convention implementation in Cambodia Presented by Mr. Ken Choviran, Project coordinator, Ministry of Environment

- Relevant activities have done by Cambodia under the BC's Framework include as follows:
  - ✓ Research on ULAB flow, its consuming and ULAB waste in Cambodia.
  - ✓ Preparation of Action Plan on the Environmentally Sound Management of ULAB.
  - ✓ Research on EEE flow and their residues management,
  - ✓ Training organizations on ESM of E-wastes in 6 regions in Cambodia

- Relevant waste management activities link to BC such as:
  - ✓ Industrial waste management: storage, collect disposal, and dumpsite waste management (generated from industrial production process and wastewater treatment system).
  - ✓ Hazardous waste management within hospital/healthcare center/clinic.

Relevant Cambodian Legislation to Basel Convention

Currently, the environmental laws and related sub-decrees already entered into force for the protection of human health and the environment, such as the Sub-Decree on Solid Waste Management; Sub-Decree on Water Pollution Control. However, these are not specific to E-wastes management, and they do not control the transboundary movement of E-wastes. The matter of responsibility for the health and safety of the workers who are exposed to UEEE has to be resolved. It is unclear where the responsibility lies and this is further compounded in the absence of occupational health monitoring and any specific laws or regulations on the safety of handling UEEE

- Law on Environmental Protection and Natural Resources Management (1996)
  - ✓ Article 12 and Article 13 – focused on the preparation of mechanism to cope with toxic substances and hazardous substances in Cambodia.

- Sub-Decree on Solid Waste Management (1999)
  - ✓ Article 20: "The exportation of the hazardous waste from the Kingdom of Cambodia to abroad could be conducted if there are an agreement from the Ministry of Environment, export license from the Ministry of Trade, and permit from the import country. The exportation of the hazardous waste shall be consistent with the provisions and principles of the Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal.
  - ✓ Article 21: "The importation of hazardous waste from abroad into the Kingdom of Cambodia is strictly prohibited."
  - ✓ Other relevant Article in Chapter 3 and Chapter 4
  - ✓ Hazardous waste criteria highlighted in the Annex of the Sub-Decree

- Article 8 of the Sub-Decree on Water Pollution Control, stipulated that "The disposal of solid waste or any garbage or hazardous substances into public water areas or into public drainage system shall be strictly prohibited. The storage or disposal of solid waste or any garbage and hazardous substances that lead to the pollution of water of the public water areas shall be strictly prohibited."

- Custom and Excise Department– Announcement on the Ban of importation of old computers and spare-parts for occupation purpose, except, for self consumption and/or charity in minor amount (12/03/02).

- Sub-Decree on Business Facilitation by Risk Management (2006) is another important legal instrument of Cambodia, aiming at:
  - improving the imported/exported processes of goods and other facilities in complying with the national laws/regulations and international agreements/protocols,
  - effective management and monitor,
  - providing low cost in service comparing to other adjacent countries,
  - authorizing functions/duties of line institutions at check-points,
  - facilitating a rapid and easier way to importers/exporters.

3.3 Introduction of Electronic and Electrical Wastes (Definition, Types of E-waste, Electronic Components Presented by Ms.Cynthia Indriani, International Expert of BCRC-SEA

There are several definitions on e-wastes, among others, which are according to the European Union on Waste Electrical and Electronic Equipment (EU WEEE) Directive, Basel Action Network, and Organisation for Economic Co-operation and Development (OECD). The e-wastes generation can be caused by normal use and disaster. According to the EU WEEE Directive there are several categories of e-waste and also examples of each of the category. The categories are large household appliances, small household appliances, IT and telecommunications equipment, consumer equipment, lighting equipment, electrical and electronic tools, toys, leisure and sports equipment, medical devices (except implanted and infected), monitoring and control instruments and automatic dispensers. E-wastes contain several components, which are the casing, mechanical parts, electronic parts, display, output, input and power unit. The major materials in e-wastes are metals, plastics, rubber, glass, and other chemical compounds. Some examples of the chemical content in e-products are lead in cathode ray tube (CRT), nickel-cadmium, lead and lithium in batteries, various metals and plastics in printed circuit board.

Based on literature review on e-wastes management in developed and developing countries, there are several common e-waste handling practises. Those practises are repair, reuse, recycle and disposal. The methods used for disposal are thermal treatment, by incinerator and open burning, and land disposal, by landfill and open dumping. The hazards related to e-waste are caused by intrinsic hazard of materials, in

form of physical and chemical hazard, and by improper handling practises. E-wastes also pose risks to occupational health and safety.

3.4 Current Situation of Electronic and Electrical Wastes Management in Cambodia Presented by Mr. Ken Choviran, Project coordinator, Ministry of Environment

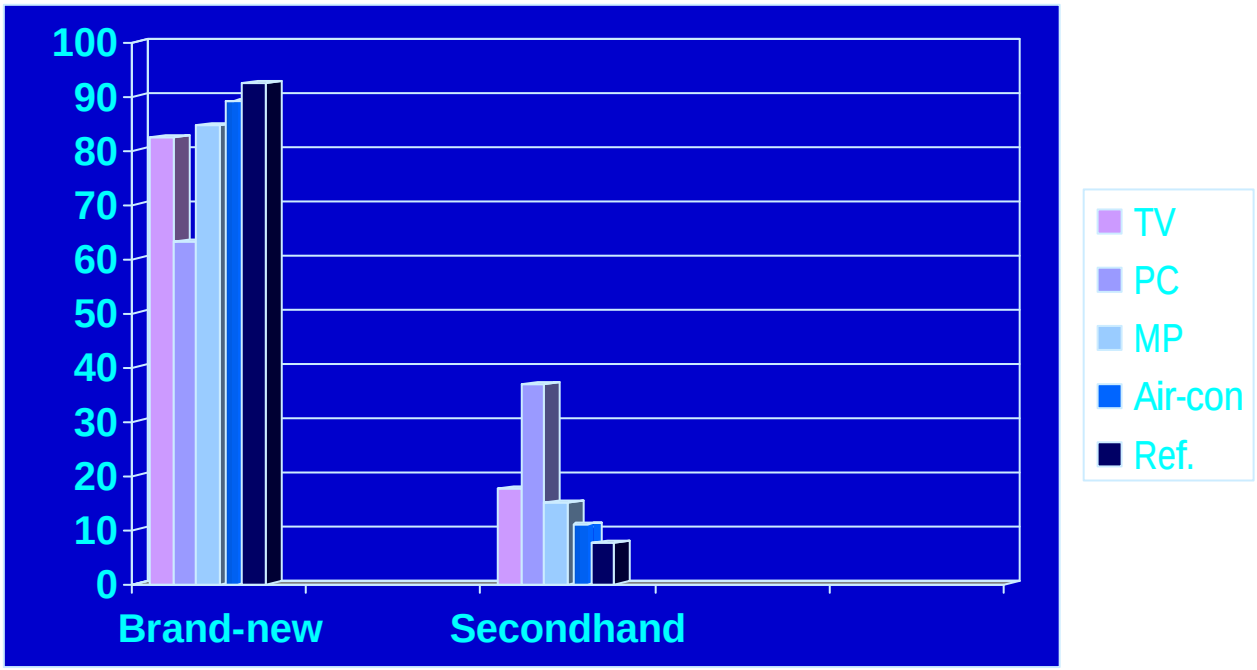
Background information

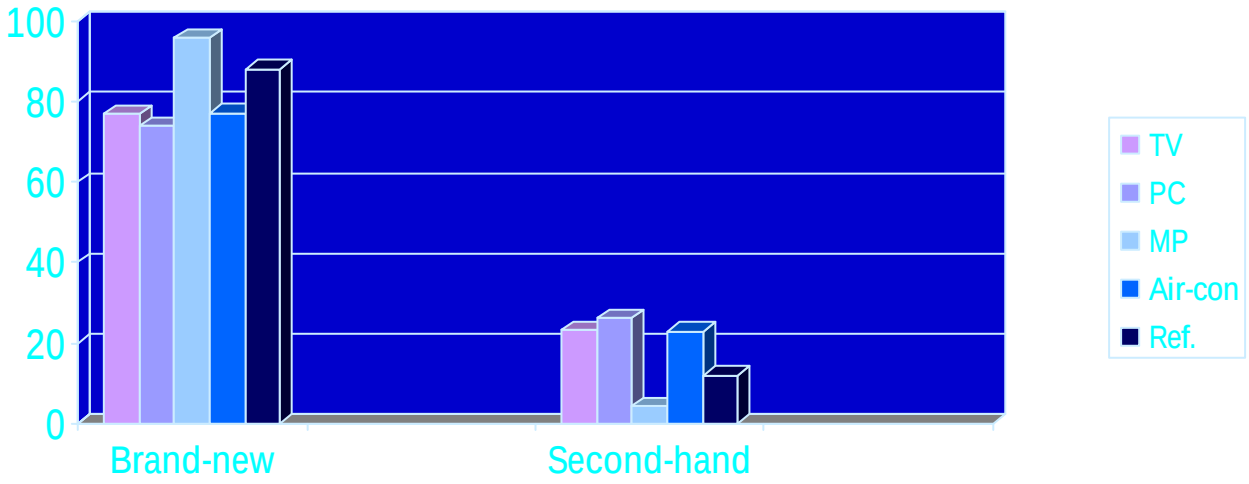
- Brand new electric and electronic equipment (EEE) and used electric and electronic equipment (UEEE) are imported into Cambodia for domestic consumption.
- Cambodia is not a country that produces EEE products and/or exports to other countries.
- Some imported UEEE have low quality or improperly function, which required to either repair or dismantle.
- Awareness and capacity dealing with UEEE and its residues management is commonly limited.
- There is no information or official report addressing the Electronic and Electrical Waste collection (EEW), transportation, recycling, as well as environmental and health related issues:
  - Repairing, dismantling and recycling activities
  - Collection, storage, transportation and disposal of EEW, which generated from households, business entities, and residues from repairing and dismantling process
- Some recyclable wastes were locally collected reflecting to domestic and international markets.
- There is not a specific institution that responsible for managing and recycling EEW.
- Specific law and/or regulation to properly manage, recycle and dispose EEW has not yet existed.
- The project namely “Environmentally Sound Management of Electrical and Electronic Waste in Cambodia” provides opportunity to Cambodia to do an UEEE inventory – a basic preparedness of strategic plan and activities to manage UEEE and its residues in a proper way.
- Today training course is prioritized as major part of the UEEE management strategic plan.

Repairing/dismantling/recycling

- Repairing and dismantling process to few items of UEEE is simply done, due to insufficiency of modern technology, and sectoral awareness.
  - First testing to identify problems as well as other useable parts
  - Connecting or replacing a spare-part from dismantled items to get a new one with appropriate functioning, although it has lower quality
  - Retesting will be done in order to emphasize the function of repaired EEE. If this repaired EEE does not function and/or improperly function, the repairing will be done once more.
- Beside the use of simple method of repairing, some broken/un-functioning EEE, e.g. laptop computer was sent to overseas for repairing in according to the negotiation between shop owner/manager and customer.
- Same as a repairing process, there is no technology has been presented and used for dismantling and recycling of the six selected items of UEEE although in Phnom Penh Municipality

EEE/UEEE Used pattern for households (%)

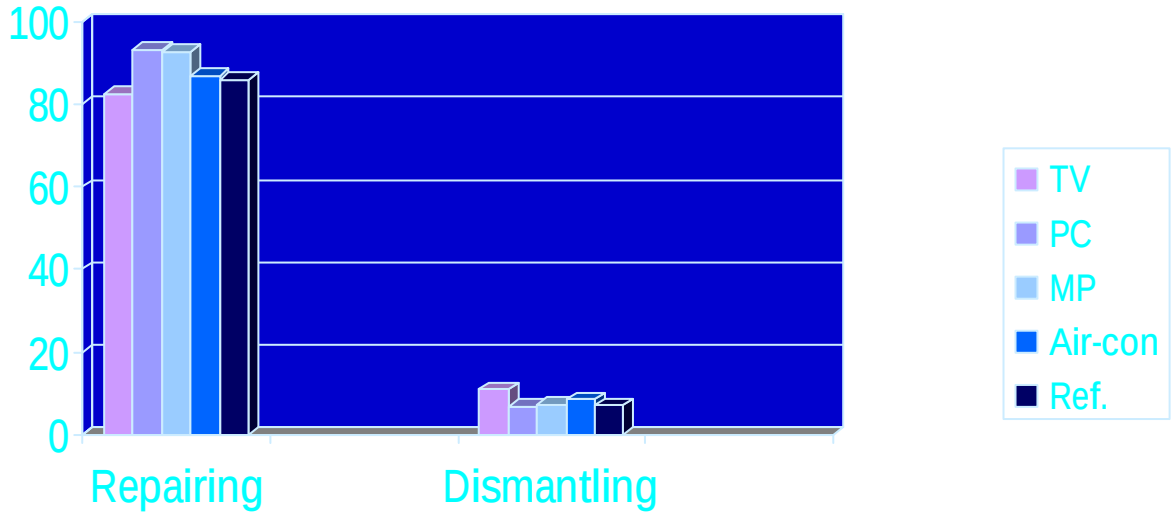




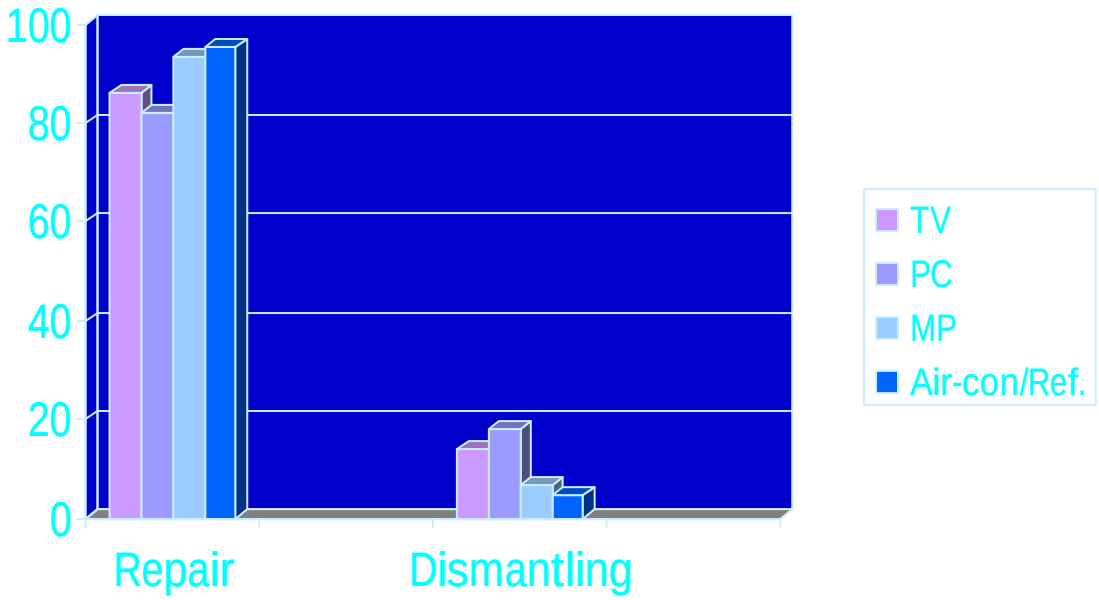
EE consumption in %, by survey

Survey sources	Type	EEE				
		TV	Computer	Mobile phone	Air-con	Refrigerator
Households	Brand-new	82.30	63.20	84.45	81	92.37
	Second-hand	17.70	36.80	15.15	19	7.63
Offices	Brand-new	76.78	73.72	95.76	77	87.93
	Second-hand	23.22	26.28	4.24	23	12.07

Repairing and dismantling shops (in %)



EEE residues generation (in %)



Disposal of EEE residues

- Two ways of disposal found in Cambodia: (i) the residues from dismantling and repairing operation, which disposed directly to municipal trash-bin; and (ii) some residue sell to waste-picker (and finally to scrap yards).
- Cambodia does not have a technology and capability to do an EEE/EEW recycle itself.
- Cambodia does not have EEW collection system. Take/buy back policy to EEW by produced countries does not take into account.
- Lacking of specific capacity/capability in EEW management and recycling as well as take back policy, therefore, EEW are being improperly disposed at dumpsites and opened areas as well.

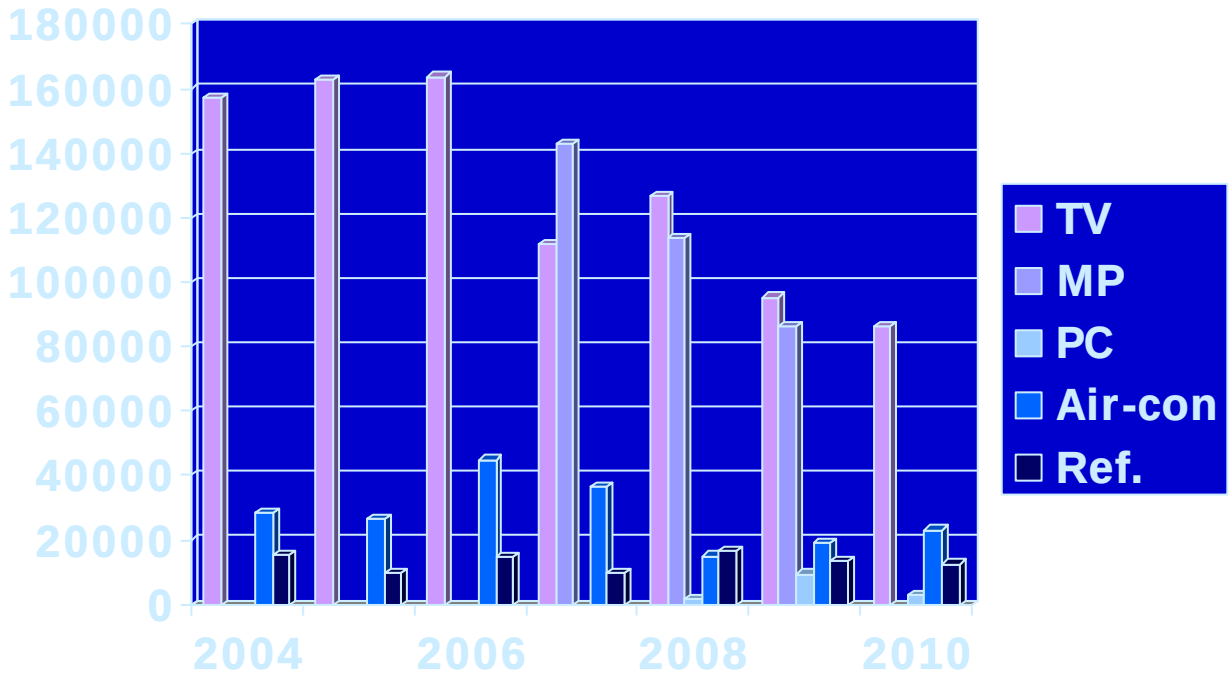
Lifetime uses of EEE/UEEE

- The consuming lifetime of EEE (brand-new and second-hand) is varied depending on:
  - Type, quality, particular maintenance and consuming condition
  - Changing of updated series/models
  - Providing to someone, who has less affordability in buying it.

Lifetime uses of EEE/UEEE based on the survey outcomes

No.	EEE Product	Use period (year)			
		Brand-new	Second-hand		
			Use period as second-hand	Use period as brand-new	Total
1	TV	5	4	6	10
2	PC	5	3	6	9
3	MP	3	2	5	7
4	Air-con	4	3	9	12
5	Refrigerator	5	3	9	12

Estimated residues, 2004-2010 (set)



Environmental and human health related issues

- As an observation, there is not any cause and/or harmful problem to the environment, although environmentally unsound reuse/recycling or disposal of used EEE were done.
- Incident might be rarely occurred due to either technical mistake or carelessness, for example, capacitor-exploded, cable-fired.
- However, some impacts might be occurred to human health, especially, one who get directly involve with the processing of UEEE repairing/dismantling without using safety facilities, for example, mass, glove, sun-glasses, etc.
- Residues of UEEE mixing with domestic wastes are disposed at dumpsites and burned. That is a cause of potential risk and hazard to scavengers/waste pickers and atmospheric pollution (also releasing of unintentional POPs by-products)
- In some areas, EE residues are disposed closed to/behind the repairing/dismantling shops, and finally are burned while municipal-waste collection service cannot access.

3.5 Harmful Substance in Electronic and Electrical Wastes and Its Effects Presented by Ms.Cynthia Indriani, International Expert, BCRC-SEA

The harmful substances in e-wastes are halogenated compounds, heavy metals and other metals, radio active substances and others, such as toner dusts. Each of the substances can be found in various parts of e-wastes, e.g, polychlorinated biphenyls in condensers and transformers, polyvynil chloride in cable insulation, toner dusts in toner cartridges for laser printers/copiers, etc. These hazardous substances in e-wastes also have many effects on human health, which affect various organs of human body, such as lung cancer, damage to heart, liver, spleen, kidney, severe hormonal disorders, etc. They can be released from e-waste during various processes of e-wastes recycling and disposal. For example, barium oxide as dust, can be released during the dismantling and handling of CRTs of TV and PC monitor, and beryllium, cadmium and lead may be released as oxide dust during high temperature of metal processing,etc.

Based on study by Basel Action Network on unenvironmentally sound processes of e-wastes in Guiyu, China in 2002, there is a list of potential occupational and environmental hazards caused by those processes. For example, breaking and removal of copper yoke and dumping of CRTs can cause silicosis, cuts, and inhalation or contact with phosphor containing cadmium or other metals, as well as leaching of lead, barium and other heavy metals into groundwater and release of toxic phosphor. Another examples are inhalation and air emission of tin, lead, brominated dioxin, beryllium, cadmium and mercury caused by de-soldering and removing computer chips of printed circuit boards.

3.6 Environmentally Sound Management of Electronic and Electrical Wastes (Introduction to ESM Strategy, Guidance for Inventory, Guidance for 3R facility, Sorting and temporary storage, Collection presented by Ms.Cynthia Indriani, International Expert, BCRC-SEA

The strategies for ESM of E-wastes cover assessment and inventories, policy and legal instrument, public awareness raising, partnerships and infrastructure and technology.
One of the strategic approaches to the ESM of E-waste is establishing a national inventory of hazardous waste covering the e-waste stream, which serve as basis for national policy development or review, and other specific objectives as well as the option of adapting the inventory in the future. Currently, there are several guidelines of inventory of hazardous wastes and e-wastes available prepared by the Secretariat of the Basel Convention (SBC), BCRC-SEA and UNEP DTIE-IETC. Based on technical guidelines prepared by BCRC-SEA, the methodology for e-waste inventory is inventory program establishment, preparatory works, database development, use and maintenance and evaluation and improvement. Inventory management system includes responsibilities and organisation, planning, processes, procedures, practises and resources. Inventory at national level can be conducted by compilation and validation of inventory at local and provincial levels. BCRC-SEA can be used to assist Parties in the region for inventory reporting to SBC.

The general requirements for good e-waste facility are proper authorization by local, regional or national government, provision of high degree of protection to public health and the environment, good recording, etc. Safety and health control requirements require, among others, training for personnel, periodic inspection, appropriate equipment for processing and controlling environmental releases, periodic medical test for workers, etc, Eenvironmentally sound and safe disposal of residues from facilities must be ensured. Landfill should be environmentally sound and appropriately authorized and specific licensing by the competent environmental authority for disposal procedure.The residues should be characterized to determine appropriate pre-treatment of disposal method, e.g. solidification/stabilization process. Landfilling of e-waste must be minimized. The Basel Convention has published guidance documents for operation of downstream materials recovery and recycling.

3.7 Environmentally Sound Management of Electronic and Electrical Wastes (Transport and handling, Dismantling end of life appliances and Transboundary movement) presented by Ms.Cynthia Indriani, International Expert, BCRC-SEA

The practises for e-wastes cover collection, transport and handling, sorting and temporary storage, dismantling of end of life appliances and transboundary movement. Sources of used electronic appliances can be from formal and informal sectors. Collection frequency depends on the kind of appliances to collect, sources of used electronic appliances, staff in charge for collection, collections time, and type and availability of vehicle. ESM practises for collection include good working relationship with local authorities and retailers, separate collections with other household goods in future, etc.

For transportation, there are requirements such as appropriate vehicles and equipment (weight, height, space for desired amount of items), items are loaded and handled correctly, secured in the vehicle, in the correct position for transportation, protected by a reusable wrapping, etc. There is also a check list for transportation such as to consider chance of people being struck or run over by the vehicles and what might cause that, appropriate layouts of the routes, vehicle safety features, appropriate vehicle maintenance, etc. There is availabe reference for transportation which is the United Nation Recommendations on the Transport of Dangerous Goods and United Nation Globally Harmonized System for Classification and Labeling of Chemical**.** (http://www.unece.org).

ESM practises for sorting and temporary storage, among others, are to have procedures for the sorting of appliances, set up records and labeling for spares and stored materials, and good facilities for storage, which include a designated collection bay for first-point assessment and sorting, adequate number of storage areas, waste appliances storage,waste materials containers or bays, hazardous waste materials storage, etc.

The legislation of a country should result in industry and the regulators setting standards and codes of practice for the dismantling of waste appliances. It is therefore advisable that all workshops try to meet expected guidelines and become accredited.
Transboundary movement of hazardous wastes in e-waste, as far as is compatible with their ESM, should be disposed of in the country where they were generated, and follow procedures of The Basel Convention on Transboundary Movement of Hazardous Wastes and their Disposal.

4.0 TRAINING COURSE CONCLUSION AND RECOMMENDATIONS

Based on the discussion in the plenary and questionnaire received, participations agreed to a number of recommendations. Those are summarized below:

i) The participants informed that the course was very useful and expressed their gratitude to the Ministry of Environment for organizing these courses and to the Secretariat of the Basel Convention for providing supports including the resource person,

ii) Participants expressed that the presentation materials provided very important information related to the ESM of E-wastes, in spite the fact that it was not so easy for them to understand,

iii) Participants have requested the project team or other donors to provide the protective equipment such as shoes, masks and glove due to they work daily with the UEEE.

iv) Most participants expressed their willingness to participate in the Demonstration programme of ESM of E-waste at the Recyclable Waste Collecting Site which is going to begin in the July, 2010.

Appendix - I Programme of the Training Course

Time	Contents
Days one	
8:00 - 8:30	Registration
8:30 - 9:30	- Opening Ceremony - Opening address by Basel Convention Regional Centre for Southeast Asia "BCRC-SEA" - Opening address by Ministry of Environment, Cambodia - Video of the Digital Dump - Photos session
9:30 - 10:00	Coffee break
10:00 – 10:45	Overview of the Basel Convention on the Control of Transboundary Movement of Hazardous Wastes and Their disposal Presented by **Ms.Cynthia Indriani,** International Expert, BCRC-SEA
10:45 - 11:30	Basel Convention implementation in Cambodia Presented by **Mr. Ken Choviran**, Project coordinator, Ministry of Environment
11:30 - 12:00	Discussion
12:00 - 13:30	**Lunch**
13:30 - 14:30	Introduction of Electrical and Electronic Wastes (including the Definition, Sources, Types of E-Waste, E-Waste Components and Materials, Hazardous Material Components, Common Handling Practices, and Safety & Health and Environmental Risks) Presented by **Ms.Cynthia Indriani,** International Expert, BCRC-SEA
14:30 - 14:45	Discussion
14:45 - 15:30	Current Situation of E-Wastes Management in Cambodia Presented by **Mr. Ken Choviran**, Project coordinator, Ministry of Environment

15:30-16:30	Harmful Substance in E-Wastes and Its Effects Presented by **Ms.Cynthia Indriani,** International Expert, BCRC-SEA
16:30-17:00	Discussion
Day two	
08:30 -09:30	Environmentally Sound Management of E-Wastes (Introduction to ESM Strategy, Guidance for Inventory, Guidance for 3R facility Sorting and temporary storage and Collection) Presented by **Ms.Cynthia Indriani,** International Expert, BCRC-SEA
09:30-10:00	Discussion
10:00 - 10:30	Coffee Break
10:30 – 11:00	Environmentally Sound Management of E-Wastes (including Transport and handling, Dismantling end of life appliances and Transboundary movement) Presented by **Ms.Cynthia Indriani,** International Expert, BCRC-SEA
11:00 -11:30	Discussions
11:30-12:00	Dissemination of Brochure of E-Wastes Presented by **Mr. Ken Choviran**, Project coordinator, Ministry of Environment
12:00 - 13:30	**Lunch**

Appendix - II Participants List

No	Name	Position /organization
1.	H.E. Mr. Heng Nareth	Adviser to Ministry of Environment
2.	Ms. Cynthia Indriani	International Expert, BCRC-SEA
3.	Mr. Ken Choviran	Project coordinator, Ministry of Environment
4.	Mr.Som Khan	EEE Retail Shop, Kampong Speu Province
5.	Mr.San Seak	UEEE Repairing Shop, Kampong Speu Province
6.	Mr.Kry Heng	UEEE Repairing Shop, Phnom Penh
7.	Ms.Von Dany	Scavenger, Phnom Penh
8.	Ms.Von Vy	EEE retail shop, Takeo Province
9.	Mr. San San	Scavenger, Takeo Province
10.	Mr. Phat Lay	UEEE Repairing Shop, Kampong Chhnang Province
11.	Mr. Pheun Sokny	Scavenger, Kampong Chhnang Province
12.	Mr. Peou Khen	UEEE Repairing Shop, Pursat Province
13.	Ms. Yen Nok	Scavenger, Pursat Province
14.	Mr. Som Ok	UEEE Repairing Shop, Battambang Province
15.	Ms. Som Neang	Scavenger, Battambang Province
16.	Mr. Chun Leng	UEEE Repairing Shop, Banteay Mean Chey Province
17.	Ms. Yim Srey Mao	Scavenger, Banteay Mean Chey Province
18.	Mr. Pheun Reun	UEEE Repairing Shop, Stung Treng Province
19.	Mr. Eang Leng	Scavenger, Stung Treng Province
20.	Mr. Seng Vuthy	UEEE Repairing Shop, Rotanakiry Province
21.	Mr.Hun Kheak	Scavenger, Rotanakiry Province
22.	Ms.Vy Vanny	UEEE Repairing Shop, Mondolkiry Province
23.	Ms.Hun Neang	Scavenger, Mondolkiry Province
24.	Mr. som Klo	UEEE Repairing Shop, Kratie Province
25.	Mr. Keov Ly	Scavenger, Kratie Province
26.	Mr. Ouk Tung	UEEE Repairing Shop, Prey Veng Province
27.	Ms. Khorn Yuk	Scavenger, Prey Veng Province
28.	Mr. TeumYan	UEEE Repairing Shop, Svay Rieng Province
29.	Mr. Soun Sok	Scavenger, Svay Rieng Province
30.	Ms.Ouk Mao	UEEE Repairing Shop, Kampong Cham Province
31.	Mr. Keo Yat	Scavenger, Kampong Cham Province
32.	Mr. Chea Seap	UEEE Repairing Shop, Kampong Thom Province
33.	Mr.Hun Mao	Scavenger, Kampong Thom Province
34.	Mr. Boy Bo	UEEE Repairing Shop, Siem Riep Province
35.	Mr. San Sam	Scavenger, Siem Riep Province
36.	Mr. San Saray	UEEE Repairing Shop, Prea Vihear Province
37.	Ms.Pheun Phy	Scavenger, Prea Vihear Province
38.	Ms. Pheun Phan	UEEE Repairing Shop, Oudor Meanchey Province
39.	Ms. Chrey Sokheun	Scavenger, Oudor Meanchey Province
40.	Mr. Reum Sophak	UEEE Repairing Shop, Paylin City
41.	Ms.Son Vanny	Scavenger, Paylin City
42.	Mr.Luch Srey Mao	UEEE Repairing Shop, Koh Kong Province
43.	Mr.Chim Phak	Scavenger, Koh Kong Province
44.	Ms. Yong Srey Peouv	UEEE Repairing Shop, Keop City
45.	Mr. Seum Song	Scavenger, Keop City
46.	Mr. Oul Em	Scavenger, Sihanoukville City

47.	Ms. Phu Ny	UEEE Repairing Shop, Sihanoukville City
48.	Mr. Eam Chamroeun	Scavenger, Kampot Province
49.	Mr. Sang Hy	UEEE Repairing Shop, Kampot Province
50.	Mr. Em Hul	Scavenger, Kandal Province
51.	Mr. San Sarith	UEEE Repairing Shop, Kandal Province
52.	Mr. Pouv Bo	Scavenger, Phnom Penh
53.	Mr.Hun Tho	EEE retail shop, Phnom Penh
54.	Mr. Kong Savuth	Project assistant, Ministry of Environment
55.	Iv Sophal	Project assistant, Ministry of Environment