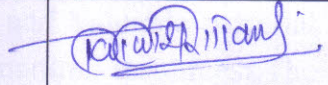
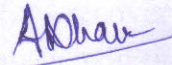



GIT GHARDA INSTITUTE OF TECHNOLOGY	GIT-Standard Operating Procedure for E-waste management		Page 1 of 12
	Document No : GIT/GH/001	Revision No : 0	Eff. Date : 01.06.2016

Standard Operating Procedure For E-waste

INDEX

Sr. No.	Description	Page No.	
1.	Introduction	3	4
2.	E-waste Policy principals	4	4
3.	Objective	4	5
4.	Scope	5	5
5.	E-waste Management & Handling (Rules 2011)	6	7
6	Management of E-waste	7	9
7.	Institutions functioning process for E-waste Mgmt.	9	10
8	Role of Scrap Committee	10	10
9.	Flow chart for E-waste Management	11	11
10.	Summery	12	12

Authority	Designation	Signature
Prepared by	System Analyst	
Approved by	Registrar	
Reviewed by	Principal	

1. Introduction:-

E-waste has been defined as “waste electrical and electronic equipment, whole or in part or rejects from their manufacturing and repair process, which are intended to be discarded”. Whereas Electrical and electronic equipment has been defined as “equipment which is dependent on electrical currents or electro-magnetic fields to be fully functional”.

In the recent years, there has been increasing use and dependence on electrical and electronic gadgets like mobile phone, personal computers, laptops, server, data storage devices, photo copying machines, TV(CRT/LED/LCD), washing machine, refrigerators and air conditioners, etc. resulting into generation of large quantities of E-waste.

The electrical and electronic equipment (EEE) have valuable materials and hazardous/toxics substances in their components. The electronic products and electrical equipment after their useful life may not cause any harm if it is stored safely in households/stores. However, if the E-waste is opened-up and attempts are made for retrieval of useful components or material in an un-scientific manner or if the material is disposed in open, then it may cause health risks and damage to environment. E-waste can be considered as a resource that contains useful material of economic benefit for recovery of plastics, iron, glass, aluminum, copper and precious metals such as silver, gold, platinum, and palladium and lead, cadmium, mercury etc. However, at the same time presence of heavy metals (As, Cd, Hg, Pb etc.) and other toxic substances such as polychlorinated bi-phenyls (PCBs), etched chemicals, etc. may pose risk to health and environment during handling and recovery operations. E-waste is a problem of increasing proportions especially when crude methods are adopted for recovery of useful components from E-waste.

There is a need to encourage recycling of all useful and valuable material from e-waste so as to conserve the ever depleting natural resources. The E-waste thus presents a scenario of urban mining for recovery of ferrous/non-ferrous/ rare earth metal and precious metal in addition to plastics and glass. However, presence of hazardous and toxic substances in the component of e-waste necessitates environmentally sound management of e-waste including collection and recycling/treatment

Ours is an engineering institute having good infrastructure, modern equipments, advance lab, library, experienced and dedicated teachers. To offer quality education at an affordable cost for the benefit of ambitious and intelligent students of rural region, aspiring to become engineers. As we are in education field we do not generate e-waste in tons but in kilos. Although we are small generator of E-waste it's our kind responsibility to dispose it in manner prescribed by state government and importantly an environmentally sound manner.

2. E-waste Policy principals :-

1. Environmental conservation – the institute endeavors to ensure environmental conservation and protection from the effects of e-waste.
2. Safe disposal- The institute recognizes the need to dispose e-waste in a manner that is safe and sound with respect to its staff, student, and institutional operations.
3. Policy framework- The institute recognizes the need to establish clear guidelines on e-waste management.

3. Objective:-

The need for preparing a guidance document for implementation of the provisions of the E-Waste (Management & Handling) Rules, 2011 that may help the Producers, Consumer & Bulk Consumer, Collection Centre, Dismantler, Recycler and Regulatory agencies (SPCBs/PCCs) for effective compliance/implementation of these rules.

In developing this policy, Institute seeks to meet the following objectives:

1. To minimize the e-waste generation.
2. To provides guidelines on standard of electronic equipment that is there/imported in institute

As an educational institute we have computers and other electrical devices in our infrastructure. So after completion of warranty period and doing maintenance for reuse and then we declare it as end of life of the material or end of part from that material. So our objective is to give this e- material to authorized vendor so as to recycle it and dispose it in correct manner so as to avoid environmental damage.

4. Scope of the Policy:-

This policy covers GIT's main campus, departments and sections. It covers electronics equipments and devices and e-waste management operations on e-waste resultant from staff and student's activities within the institute

Source of e-wastes	Constituent	Health effects
Solder in printed circuit boards, glass panels and gaskets in computer monitors	Lead (PB)	<ul style="list-style-type: none"> • Damage to central and peripheral nervous systems, blood systems and kidney damage. • Affects brain development of children.
Chip resistors and semiconductors	Cadmium (CD)	<ul style="list-style-type: none"> • Toxic irreversible effects on human health. • Accumulates in kidney and liver. • Causes neural damage. • Teratogenic.
Relays and switches, printed circuit boards	Mercury (Hg)	<ul style="list-style-type: none"> • Chronic damage to the brain. • Respiratory and skin disorders due to bioaccumulation in fishes.
Corrosion protection of untreated and galvanized steel plates, decorator or hardner for steel housings	Hexavalent chromium (Cr) VI	<ul style="list-style-type: none"> • Asthmatic bronchitis. • DNA damage.
Cabling and computer housing	Plastics including PVC	Burning produces dioxin. It causes <ul style="list-style-type: none"> • Reproductive and developmental problems; • Immune system damage; • Interfere with regulatory hormones
Plastic housing of electronic equipments and circuit boards.	Brominated flame retardants (BFR)	<ul style="list-style-type: none"> • Disrupts endocrine system functions
Front panel of CRTs	Barium (Ba)	Short term exposure causes: <ul style="list-style-type: none"> • Muscle weakness; • Damage to heart, liver and spleen.
Motherboard	Beryllium (Be)	<ul style="list-style-type: none"> • Carcinogenic (lung cancer) • Inhalation of fumes and dust. Causes chronic beryllium disease or beryllicosis. • Skin diseases such as warts

5. E-Waste (Management & Handling) Rules, 2011:-

The e-waste (Management & Handling) Rules, 2011 have been notified in May 2011 and are effective from 01-05-2012. These rules were notified in advance to give the various stakeholders adequate time to prepare themselves and also to place the required infrastructure for the effective implementation of these rules.

Applicability

1. These rules shall apply to every producer, consumer or bulk consumer, collection centre, dismantler and recycler of e-waste involved in the manufacture, sale, purchase and processing of electrical and electronic equipment or components as specified in schedule – I the regulatory agencies involved are SPCBs/PCCs and CPCB.
2. The rule will not apply to lead acid batteries as covered under the Batteries (Management and Handling) Rules, 2001. The rules shall not apply to, Micro and Small enterprises as defined in the Micro, Small and Medium Enterprises Development Act, 2006 (27 of 2006) and radio-active wastes as covered under the provisions of the Atomic Energy Act, 1962 (33 of 1962) and rules made there under. The Ministry of Micro Small and Medium Enterprises has awarded a study to 'The Energy and Resources Institute' (TERI) to examine the quantum of e-waste generated and the management of e-waste from the products manufactured by them at the end of life. The study is likely to be completed in three months time. Based upon the finding of the study, the matter regarding the inclusion of Micro and Small Enterprises would be reviewed."
3. The e-waste Rules apply to all electrical and electronic equipment (EEE) listed in Schedule 1 (annexure-IV) and put on market in India, **including** their components and consumables which are part of the product at the time of discarding.

substances in electrical and electronic equipment. Every producer of equipment listed in Schedule 1 of the Rule shall ensure that the covered products do not contain lead, mercury, cadmium, hexavalent chromium, poly-brominated biphenyls or poly-brominated di-phenyl ethers above a specified threshold. The threshold for cadmium is 0.01% by weight in homogeneous material, for all other substances, the threshold is 0.1% by weight in homogeneous material.

5. In case of any doubt regarding applicability of these rules the matter would be referred to an inter ministerial committee comprising of technical experts and industry representatives.
6. Equipment or system that is not listed in Schedule-I but has a part or component that is listed in Schedule-I as an integral part of that equipment or system is considered to be outside the scope of the rules. However, waste generated from such components or parts may be accepted for channelization to recycling facility as long as it is recyclable.

6. Management of E-Waste:-

It is estimated that 75% of electronic items are stored due to uncertainty of how to manage it. These electronic junks lie unattended in houses, offices, warehouses etc. and normally mixed with household wastes, which are finally disposed off at landfills. This necessitates implementable management measures.

In industries management of e-waste should begin at the point of generation. This can be done by waste minimization techniques and by sustainable product design. Waste minimization in industries involves adopting:

- Recovery and reuse.
- Buy back.

Recovery and Reuse: Useful components of motherboard are dismantled and re-used as per requirement.

Reuse- Reuse the product spare parts and high-value equipment for a longer life instead of manufacturing or buying new parts which may be rather expensive, thus reducing the overall expenditure and increasing the environment

GIT GHARDA INSTITUTE OF TECHNOLOGY	GIT-Standard Operating Procedure for E-waste management		Page 8 of 12
	Document No : GIT/GH/001	Revision No : 0	Eff. Date : 01.06.2016

Recycle - the process of recycling converts the hazardous waste and scrap into a usable form giving it a rebirth. Recycling is the last and most effective way of disposing your e-waste in an eco-friendly manner.

Buy back- We concentrate to purchase the new item related with computer periphery or electronic through buy back of e-waste. E.g. printers we have purchased with buyback option. UPS batteries.

General procedure for disposal of E-waste

The process for the Management, Recycling and Disposal of E-Waste is as per the 'Implementation of E-Waste Rules 2011, Guidelines' issued by the CPCB and under the directives of the MoEF (Ministry of Environment and Forest). E-Waste comprises of Electronic and Electrical waste listed in Schedule-I (Annexure IV) including all type of Industrial Electrical & Electronic Equipment, Secondary Computer, Monitor, Laptop, Cell Phone, Phone, Fax, EPBX, Printers, Xerox, CD, DVD, Floppy, Tapes, Pen drives, Wires, Cables, Entertainment device, Television, Refrigerators, Air Conditioners, Compressors, Washing Machine, SKADA, PLC Systems, Logic Controllers, Control Panel, Fans, Lights, Bulbs, Switches, Hospital and Medical equipment and all working/repairable/ un-repairable electronics to be "Commodities", which is dumped or which may be illegally sold to scrap dealers. Our services of environmentally sound Management of e-waste ranges from Collection, Documentation, Segregation, Dismantling, Recycling and Disposal of waste.

Responsibilities of manufacture

- (1) Collect e-waste generated during the manufacture of any electrical and electronic equipment and channelize it for recycling or disposal;
- (2) Apply for an authorization in Form 1 (a) in accordance with the procedure prescribed under sub-rule (2) of rule 13 from the concerned State Pollution Control Board, which shall give the authorization in accordance with Form 1 (bb);
- (3) ensure that no damage is caused to the environment during storage and transportation of e-waste;
- (4) Maintain records of the e-waste generated, handled and disposed in Form-2 and make such records available for scrutiny by the concerned State Pollution Control Board;

Responsibilities of Producer

Collection and channelization of e-waste generated from the 'end-of-life' of their products or 'end-of-life' products with same electrical and electronic equipment code and historical waste available on the date from which these rules come into force as per Schedule I in line with the targets prescribed in Schedule III in Extended Producer Responsibility - Authorization;

Extended Producer Responsibility - Authorization should comprise of general scheme for collection of waste Electrical and Electronic Equipment from the Electrical and Electronic Equipment placed on the market earlier, such as through dealer, collection centers, Producer Responsibility Organization, through buy-back arrangement, exchange scheme, Deposit Refund System, etc. whether directly or through any authorized agency and channelizing the items so collected to authorized recyclers;

7. Institutions functioning process for E-waste management:-

- E-waste committee under Scrap committee is formed.
- The committee is looking for e-waste for every month for electrical items and for Desktop Computer/Laptop, Printers, Scanners we have these products with manufactures warranty thereafter we are reusing it by doing maintenance. Lastly committee decide these items/components or part of it as end of life.
- All these items are listed in FORM 2 and annually in FORM 3 (amendment done as Rule changed from 2011 to Oct.2016)
- For few products we do buy back procedure. E.g. UPS batteries, printers.

Responsibility:-

- ❖ As we have six department each containing computer labs. So one person (Teaching/Lab technician) from each department is appointed as E-waste coordinator.
- ❖ The lab technician is maintaining list of material with quantity of e-waste for every month in FORM 2
- ❖ Prepared list will be sent to the committee for further procedure.

Structure of E-waste management

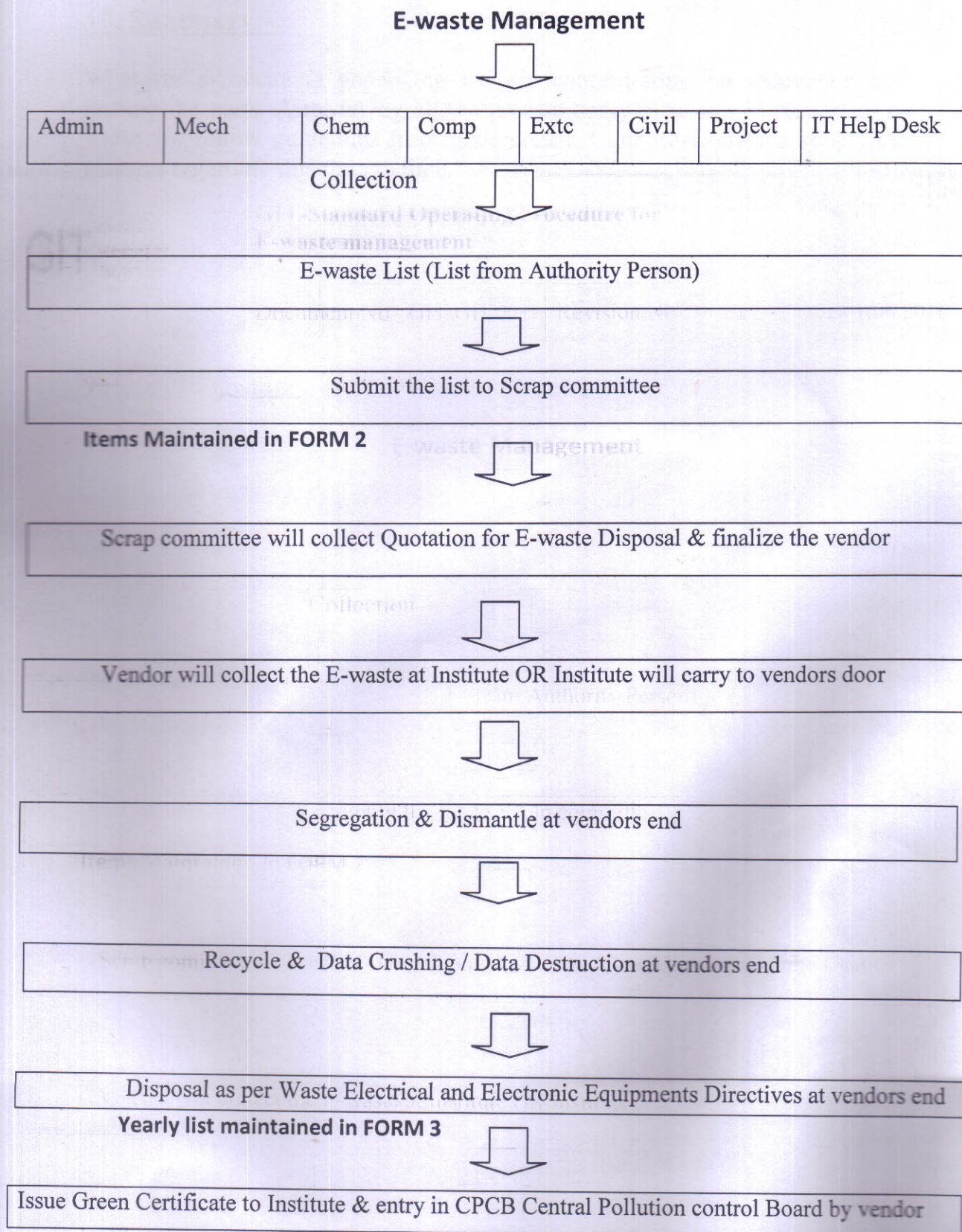
1. E-waste committee is working under Scrap committee.
2. HOD and departmental e-waste coordinator is looking e-waste of their respective department.
3. Lab in charge in coordination with HOD prepares the list of e-waste from their department for every month in the FORM 2
4. Lab in charge is submitting the list to Scrap committee and maintain register for E-waste.

8. Role of Scrap committee:-

1. Oversee implementation of this policy
2. Develop procedure and work instruction for collection, sorting, storage and disposal of E-waste.
3. Encourage decisions consistent with the national policies.
4. Provide flexibility to adopt changes time to time.
5. Advise review/improvement of this policy from time to time.
6. Collect the list from all department categories it and prepare a consolidate list of E-waste and maintain in FORM 2 and for annually in FORM 3
7. Communicate with Authorized vendors for disposing of E-waste.
8. Collect quotation from authorized vendors.
9. Dismantle the E-waste and dispose it with the help of vendor.
10. Collect Green Certificate of disposal and other documents (like form no 10, Entry in CPCB registration passbook) from the vendor

GIT GHARDA INSTITUTE OF TECHNOLOGY	GIT-Standard Operating Procedure for E-waste management		Page 11 of 12
	Document No : GIT/GH/001	Revision No : 0	Eff. Date : 01.06.2016

9. Flow Diagram:-



10. Summary:-

Whatever e- waste is generating we are concentrating on recovering and reusing the parts. After taking all the precautionary measures in respect of e-waste we follow guidelines from government. Committee always adopts the changes regarding this time to time.