

**USING GREEN INFORMATION TECHNOLOGY AS A SAFE  
APPROACH TO SOLVE THE PROBLEMS OF  
ENVIRONMENTAL POLLUTION WHICH IS DUE TO  
ELECTRONICS WASTES**

Submitted By

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B.Sc. of Electrical Engineering, Faculty of Engineering, Banha University, 2007  
Diploma in Environmental Sciences, Institute of Environmental Studies & Research,  
Ain Shams University, 2009

A Thesis Submitted in Partial Fulfillment  
Of  
The Requirement for the Master Degree  
In  
Environmental Sciences

Department of Environmental Engineering Sciences  
Institute of Environmental Studies and Research  
Ain Shams University

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**APPROVAL SHEET**  
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## *Abstract*

This thesis, different types of electronic components and their combinations were studied from different elements to be used, but at the end of their life there are many problems to get rid of them, some of which are harmful waste. The letter will review these problems and their environmental effects. It will also review the efforts exerted in this regard by different countries and review some of the efforts in Egypt. Recommendations were also made to those concerned to protect the environment from the harmful effects of electronic waste.

Electronic waste is an increasing problem globally due to the quick replacements of electronic devices and components. E-waste includes discarded electronic appliances such as mobile phone, computers, and televisions etc.

E-waste consists of a large variety of materials, some of which contain a range of toxic substances that can contaminate the environment and threaten human health if not appropriately managed. E-waste disposal methods include landfill and incineration, both of which pose considerable contamination risks.

Proper methods of waste disposal have to be undertaken to ensure that it does not affect the environment around the area or cause health hazards to the people living there.

Information Technology (IT) offers many benefits including increased productivity, access to information, and convenience. Green IT enhances the sustainability of computing through manufacturing lower impact materials and products, reduced energy consumption of data

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centers and computers, and better recycling and end of life management.

Overall, the effects of GIT through effective use of E-waste management are all positives. Implementing E-waste management in the environment provides society's needs in ways that do not damage or deplete natural resources. Mainly this means creating fully recyclable products, reducing pollution, proposing alternative technologies in various fields, and creating a center of economic activity around technologies that benefit the environment.

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## *List of Abbreviations*

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| <b>AC</b>       | <b>Alternative current.</b>                       |
|-----------------|---|
| APME            | Association of Plastic Manufacturers in Europe.   |
| BCRC            | Basel Convention Regional Center.                 |
| BFR             | Brominated flame retardant.                       |
| CD              | Compact Disc.                                     |
| CECP            | China Energy Conservation Program.                |
| CFC             | Chlorofluorocarbon.                               |
| CNDRC           | China National Development and Reform Commission. |
| CO <sub>2</sub> | Carbon dioxide.                                   |
| CPU             | Center Processing Unit.                           |
| CRT             | Cathode Ray Tube.                                 |
| CSE             | Center for Science and Environment.               |
| DSC             | Differential Scanning Calorimetry.                |
| DVD             | Digital Versatile Disc.                           |
| DNA             | Deoxyribonucleic Acid Genetic.                    |
| EDS             | Energy Dispersed Spectroscopy.                    |
| EEE             | Electrical and Electronic Equipment.              |
| EERC            | Egyptian Electronic Recycling Co.                 |
| EoL             | End-of-life.                                      |
| EPA             | Environmental Protection Agency.                  |
| EPEAT           | Electronic Product Environmental Assessment Tool. |
| etc             | et cetera.  |
| EU              | European Union.                                   |
| E-waste         | Electronic Waste.                                 |
| GHG             | Green-House Gas.                                  |
| GIT             | Greening Information Technology.                  |
| GPS             | Global Positioning System.                        |
| ICC             | International Computer Company.                   |

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| AC    | Alternative current.                                    |
|-------|---|
| ICT   | Information and Communications Technology.              |
| IFG   | International Federation of Green.                      |
| IT    | Information Technology.                                 |
| ITG   | International Technology group.                         |
| JES   | Jordan Environment Society.                             |
| LCA   | Life Cycle Assessment.                                  |
| LCD   | Liquid-Crystal Display.                                 |
| MAIT  | Manufacturers' Association for Information Technology.  |
| MENA  | Middle East and North Africa.                           |
| MoE   | The Ministry of Education.                              |
| MSW   | Municipal Solid Waste.                                  |
| NDRC  | National Development and Reform Commission.             |
| NGOs  | Non-Governmental Organizations.                         |
| OECD  | Organisation for Economic Co-operation and Development. |
| OEMs  | Original Equipment Manufacturer.                        |
| PC    | Personal Computers.                                     |
| PP    | Paper Page.   |
| ROW   | Rest of World.  |
| SEM   | Scanning Electron Microscopy.                           |
| SRI   | Sustainable Recycling Industries.                       |
| TV    | Television.   |
| UAE   | The United Arab Emirates                                |
| UNDP  | United Nation Development Program.                      |
| US    | United States.  |
| USB   | Universal Serial Bus.                                   |
| USEPA | United States Environmental Protection Agency.          |
| VCR   | Video Cassette Recording.                               |
| WEEE  | Waste Electrical and Electronic Equipment.              |
| XRF   | X-ray Fluorescence Spectrometry.                        |