

## **E-WASTE MANAGEMENT**

### **What is e-waste?**

E-waste or Electronic waste is any electrical or electronic equipment that's been discarded. This includes working and broken items that are thrown in the garbage or donated to a charity reseller, their components, consumables, parts, and spares. E-waste is particularly dangerous due to toxic chemicals that naturally leach from the metals inside when buried.

It is divided into two broad categories:

1. Information technology and communication equipment. Examples: Cell phones, Smartphones, Desktop Computers, Computer Monitors, Laptops. Circuit boards, Hard Drives
2. Consumer electrical and electronics. Examples: microwaves, heaters, remote controls, television remotes, electrical cords, lamps, smart lights, treadmills, smartwatches, heart monitors, etc.

### **Harmful effects of e-waste:**

#### **1. Effects on Air quality:**

Contamination in the air occurs when e-waste is informally disposed of by dismantling, shredding, or melting the materials, releasing dust particles or toxins, such as dioxins, into the environment that cause air pollution and damage respiratory health.

Chronic diseases and cancers are at a higher risk to occur when burning e-waste because it also releases fine particles, which can travel thousands of miles, creating numerous negative health risks to humans and animals.

#### **2. Effects on Soil**

When the improper disposal of e-waste in regular landfills or in places where it is dumped illegally, both heavy metals and flame retardants can seep directly from the e-waste into the soil, causing contamination of underlying

groundwater or contamination of crops that may be planted nearby or in the area in the future.

### **3. Effects on Water**

After soil contamination, heavy metals from e-waste, such as mercury, lithium, lead, and barium, then leak through the earth even further to reach groundwater.

When these heavy metals reach groundwater, they eventually make their way into ponds, streams, rivers, and lakes.

### **4. Effects on Humans**

Electronic waste contains toxic components that are dangerous to human health, such as mercury, lead, cadmium, polybrominated flame retardants, barium, and lithium. The negative health effects of these toxins on humans include brain, heart, liver, kidney, and skeletal system damage. It can also considerably affect the nervous and reproductive systems of the human body, leading to disease and birth defects.

### **E-waste Management Rules in India**

The Environment, Forest, and Climate Change Ministry (MoEF&CC) have announced the E-Waste Management Rules 2016. These new rules replaced the earlier E-Waste (Management and Handling) Rules of 2011.

#### **Key Points of E-waste Management Rules 2016:**

- ✓ Local bodies with a population of one lakh or above were supposed to establish solid waste processing facilities within two years,
- ✓ Census towns below a lakh would be given three years to establish solid waste processing facilities
- ✓ Old and discarded dump sites would have to be shut-down or bio-remedied within five years.
- ✓ The rules on solid waste management have been amended after 16 years.

- ✓ Garbage management is the responsibility of municipal bodies, they would have the rights to charge user fees and levy spot fines for littering and non-segregation.
- ✓ A transition period of two to five years would be in place beyond which fines would be imposed as per the country's Environment Minister.

### **Handling of E-waste**

To avoid these toxic effects of e-waste, it is crucial to properly re-cycle, so that items can be recycled, refurbished, resold, or reused.

To separately collect, effectively treat, and dispose of e-waste, as well as divert it from conventional landfills and open burning, it is essential to integrate the informal sector with the formal sector.

The competent authorities in developing countries need to establish mechanisms for handling and treatment of e-waste safely and sustainably.

Increasing information campaigns, capacity building, and awareness are critical to promoting environment-friendly e-waste management programs.

More efforts are required on the improvement of the current practices such as collection schemes and management practices to reduce the illegal trade of e-waste.

Reducing the number of hazardous substances in e-products will also have a positive effect in dealing with the specific e-waste streams since it will support the prevention process.

### **OCCUPATIONAL HEALTH AND SAFETY MANAGEMENT SYSTEMS**

An Occupational Health and Safety Management System (OHSMS) is **a fundamental part of an organization's risk management strategy** to protect its workforce and others under its control.

It aims at **providing a method to assess and improve performance in the prevention of workplace incidents and accidents via the effective management of hazards and risks in the workplace.**

According to the National Safety Council, an effective safety management program should:

- Reduce the risk of workplace incidents, injuries, and fatalities through data-driven measurements and improvements
- Involve people from different parts of the organization to make safety a shared responsibility
- Be well organized and structured to ensure consistent growth and performance
- Be proactive, preventive and integrated into the culture of the entire organization

The 8 key components of occupational health and safety (OHS) management systems are.

1. **Planning**
2. **Incident reporting**
3. **User-friendly interface**
4. **Training**
5. **Risk assessments**
6. **Certification**
7. **Convenience**
8. **Performance**

Methods of -Solid Waste Hazardous waste –Plastic waste—Biomedical waste-Hazardous waste & E-waste management – Case studies on Occupational Health and Safety Management system (OHASMS).