Abstract--- A considerable amount of water will be lost every day, during the refilling of water tank by overflowing it in our houses. We can avoid this by introducing the simple circuit or device which can be developed by using available Electronic waste (E-waste) at home. This paper aims at developing a water tank overflow alarm using the damaged mobile charger (one of the E-waste). This type of recycling of E-waste will greatly reduce the disposal rate of E-waste to environment.

Keywords: E-waste; Recycling; Overhead tank; Overflow alarm; Low cost

I. INTRODUCTION

Anything that has a wire, a plug, a battery or runs on electricity, that probably aren’t going to use ever again comprises of Electronic waste (E-waste). E-waste, as it’s popularly known, includes the broad spectrum of electronic appliances, products, components, and accessories that - due to exhaustion (batteries, light bulbs and fluorescent tubes), or obsolescence. This new form of waste is now one of the fastest growing waste streams around the world and needs imperative action today. E-waste is the by-product of the technological revolution. When disposed in a landfill, it becomes a conglomeration of plastic and steel casings, circuit boards, glass tubes, wires, resistors, capacitors, fluorescent tubes, and other assorted parts and materials (see Fig. 1). It is both valuable as a source of secondary raw material, and toxic if treated and discarded improperly. Rapid technological change, low initial costs and even planned obsolescence have resulted in a fast growing e-waste crisis around the globe.

A. Benefits of recycling E-waste

Recycling of E-waste has following benefits:

1) Saves landfill space due to reduced E-waste volumes entering landfill.
2) Recovery of raw materials such as glass, precious and non-precious metals, and plastic.
3) Reduced contamination of landfill sites.
4) Increases reusability of parts: Even if a product does not work, there could be some parts that can be removed and reused.

E-waste is of concern largely due to the toxicity of some of the substances if processed improperly. The toxicity is due to lead, mercury, cadmium and a number of other substances. A typical computer monitor may contain more than 6% lead by weight. Up to thirty-eight separate chemical elements are incorporated into E-waste items. The unsustainability of discarded electronics and computer technology is another reason for the need to recycle. The management of electronic waste in India has been discussed in various forums since 2003. The issue has gathered momentum owing to high obsolescence rates of electronic and electrical appliances, increased disposal rates and enhanced awareness on toxicity and hazard potential due to improper disposal. Taking cognizance of this emerging issue, the Indian government has issued the Guidelines for environmentally sound management of E-waste and also by drafting legislation on safe E-waste management.

Attero is the only E-waste recycling company in India which does complete end-to-end processing of E-waste with zero landfill processes. It stepped in to fill the gap of responsible E-waste disposal and recycling with the aim of managing the challenges of sustainable solutions for the E-waste problem in India. Attero extracts maximum value from the E-waste as a result of its unique recycling process. It does an end to end processing of E-waste by not only dismantling the materials but also– treating it in the indigenously developed metallurgical unit. It recycles E-Waste in the most efficient and environmentally friendly manner at state of the art plant in Roorkee. It utilizes cutting edge technology coupled with a simple approach that makes electronics recycling and IT asset disposal straightforward, secure and affordable.

Fig. 1: E-Waste

Fig. 2: Number of items recycled from E-waste
From the Fig. 2 it can be seen that, since August 2009, Byron Shire Council has collected and sent 54 tonnes of electronic waste to Brisbane for recycling. This includes 457 televisions, 250 computer monitors and 226 computers.

II. CONCEPT TO RE-USE E-WASTE

We may have witnessed the electronic devices would not be performing its function as desired due to damage in some portion of the circuit or wiring. In some cases repairing the damage will not be cost effective when compared to the actual product cost. So this leads to more and more E-waste. Hence here a concept is introduced to reuse the product instead of disposing it as an E-waste.

One such product considered here, that would not perform its function as desired due to damage in some portion of the circuit or wiring is the mobile charger. Here the damaged mobile charger in conjunction with buzzer is used to build a water tank over flow alarm device. The Fig. 4 illustrates the Over flow alarm device built from E-waste.

III. DESCRIPTION OF ALARM CIRCUIT

The simple circuit which consists of only mobile charger (power supply), a buzzer (tank full indicator), and wire (connectivity) is shown in Fig. 5. The mobile charger will have a +ve and –ve terminal, check the polarities once using the buzzer. Once the buzzer and the mobile charger are confirmed to be in a working condition, in the overhead tank (OHT), the two terminals of the wire should be connected as shown in Fig. 6. One terminal (TA) should be fixed to where water is being pumped into the OHT. Other (TB) should be slightly below, say an inch below, the outflow pipe to avoid overflow.
the other end of the buzzer. The motor circuit and operation will be as usual.

IV. CONCLUSIONS

- The concept of reusing the E-waste described here is simple and easy to install. Similar type of concept/idea can be developed for other E-waste products.
- The over flow alarm/indicator saves water, power and time by preventing over flow of water from overhead tank.
- This water level alarm can be used in houses, apartments, clinics, hotels, lodges, restaurants, educational institutions, hospitals, factories, hostels etc. Also it can be used as an indicator for water supply taps to check the flow of water.
- The alarm can be used with overhead tank of any size, shape and model.
- This type of re-use of E-waste would greatly in reducing the disposal of E-waste to environment.

REFERENCES

[7] Some Important websites: