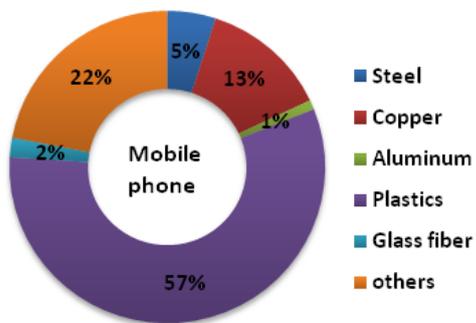
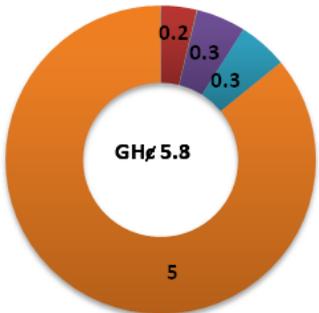


Material Composition



Scrap Value In Agbogbloshie



Urban Mining

Urban mining presents an opportunity to reclaim and recycle precious metals and REEs that are used in prolific consumer and communication goods. One ton of gold ore yields about 5 grams of gold, but one ton of phone circuitry yields about 150 grams, 30 times as much..[REFEE] A phone circuit board (CB) contains precious metals: Gold (Au) and silver (Ag) which can be recovered. Copper (Cu), brass and other valuable metals can also be recovered. All the precious metals can be sold for good value. The circuit board (CB) can be reused and the recovered of gold (Au) can be sold.



Tools For Disassembly

The main tool needed in disassembling a mobile phone is a screwdriver. The steps involved in taking the parts include:

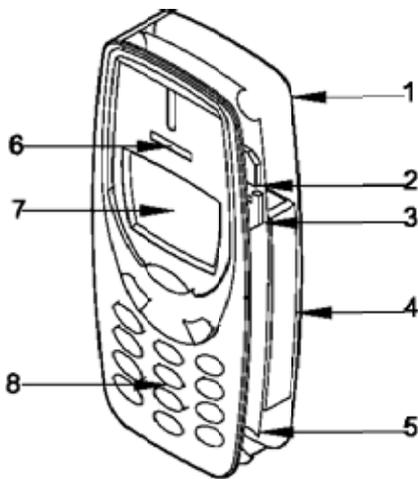


Screw driver

Tools are essential to the process of disassembly and are the primary means by which industrial activities are carried out. Tools have always represented societal advancement. The lack of proper tooling is a major hindrance to the industrialisation drive. In this case, knowledge of how to use them and make them represents a major cultural breakthrough.

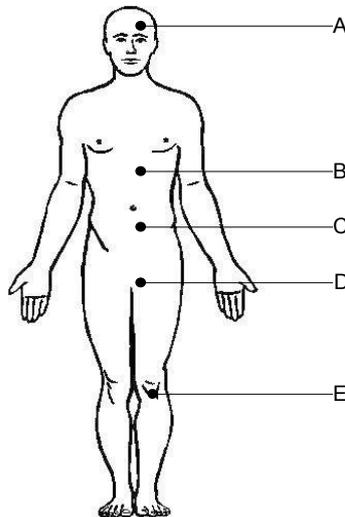
Tools are a potential source of injury. The risk can drastically be minimised by using the right tool for the right job. In addition, all requirements of the tool as provided in various manuals should be adhered to strictly

Mobile Phones



1. Back Cover
2. Power IC
3. Battery
4. Circuit board
5. Micro Processor
6. Earpiece
7. LCD Display(screen)
8. Keypad

Health Hazards



- A. Nervous System
- B. Respiratory system
- C. Immune system
- D. Urinary system
- E. Reproductive system

Step by Step Disassembly

1. Open the back cover and take out the battery. Note that, the battery must be treated with care and specially disposed.
2. Carefully peel off the screen.
3. Loosen all the screws at the back of the phone to get access to the circuit board (CB).
4. The CB consists of different metal like Ag, Au, Cu and brass. These metals should be carefully removed by hand, separating the precious metals from the other parts for sale or reuse.

Mobile Phone Overview

Common Brands:

Apple, Blackberry, HTC, LG, Nokia, Motorola, Samsung, Sony Ericsson

Hazardous Material:

Beryllium (Be), brominated flame retardants (BFRs), cadmium (Cd), chlorine (Cl), lead (Pb), lithium (Li), mercury (Hg)

Key components/Parts:

Battery, circuit board, and display screen.

Primary Materials:

Aluminium (Al), copper (Cu), glass, Iron (Fe), plastics

Types:

Cell phone, iPhone, Smartphone

Weight Composition:

1% Al, 13% Cu, 2% glass, 57% plastic, 5% steel [1]



Mobile phones have several tiny components that should be handled with care during disassembly, to avoid swallowing and other related risks.

Health

Beryllium (Be) - Pneumonia, lung damage, increased cancer risk and DNA damage.

Cadmium (Cd) - Psychological disorder, cancer, liver & kidney damage. sperm damage, birth defects and headaches. **Mercury (Hg)** - Brain and DNA damage, disruption of nervous system, sperm damage, birth defects, skin rashes and headaches.

Safety Gear

The disassembly process exposes the worker to various levels of potential harm. There is a need for protective gear to reduce impact of these practises. Safety gear include gas masks to protect e-waste workers from dust and toxic gases, safety boots, hand gloves and mostly HazMat suits, which are full garments with footwear and masks, worn to protect workers from dangerous chemicals.

They emit enter into the food stream of the city and get passed through mothers to babies.



Circuit Board



Screen



Camera



Switch



Front Cover



The special attention given to the battery is because it contains toxic substances like cadmium (Cd), nickel (Ni) and lithium (Li). These are highly toxic. Incineration of phone batteries should be avoided at all cost, as this is also unsafe.

Re-make

All the precious metals can be sold for good value. The circuit board (CB) can be reused or some amount of gold (Au) can be extracted and sold. The other parts can also be sold to for cash. In general, beyond breaking the parts of the phone down to precious metals, once a part of an old mobile breaks down, other parts can be re-used in other devices. The circuit board, the display and the keypad can all be very useful in other devices.



This DIY basic cell phone by David A. Mellis can be made with parts, sourced from old cell phones. The circuit board can be particularly useful in this regard, as well as the display.

Source: <http://web.media.mit.edu/~mellis/cellphone/>

Made in Agbgbloshie

These e-waste workers in Agbgbloshie created a this means of storing parts of the mobile phoes they recycle from old car tyres.



References/Notes

1. <http://www.product-life.org/chart/wm1.gif>
2. http://img.bhs4.com/68/7/68770B4309E7589344AFA715C676F-1B7918521EF_large.jpg
3. <http://www.lenntech.com/periodic/periodic-chart.htm>
4. <http://www.epa.gov/ttn/atw/hlthef/vinylnchl.html>

*Calculation on estimated value:

Prices of materials vary in Agbgbloshie depending on the local market. Also the state of the materials also influences the price, that's the price of burnt copper differs from that of the unburned by 1 Ghana cedis per pound. In Agbgbloshie, copper and aluminium are weighed in pounds (lbs) and iron/steel is weighed in kilograms (kg). The prices we used in this calculation are that charged as at July, 2014.

Calculation inputs:

Total weight of equipment (W): 35 kg
Weight percent of material (W%): %
Weight of material (Wm): W% * W
Price per material = Wm * amount in GHC per kg
(1 kg = 2.204 pounds)

** These types of EEE are mostly found and dismantled in Agbgbloshie.



For more information, visit:
<http://qamp.net/Mobile phones>

What is a Mobile Phone

A mobile phone is an electronic device connected to a wireless network which is used in making and receiving data via radio wave or satellite transmission. It's a portable device which can be carried anywhere and helps users connect with the world at any time. The 'engine' of a mobile phone is the circuit board (CB). It is responsible for passage of electrical signal, data collection, storage, and processing.

How it works

A mobile phone is covered with a case made of metals, plastics, mainly acrylonitrile butadiene styrene (ABS), polycarbonate (PC) and carbon fiber. It has a screen where displays are shown and which could be made of liquid crystal display (LCD) or light emitting diode (LED). The keypad, which is made from plastics, allows one to type text and scroll through data. Smartphones are the newer generation phones with internet connectivity and most of such do not have a physical keypad.



Mobile Phones

