Hazardous Material

Copper, aluminium, steel, gold and palladium are found in computers. In the motherboard, the random access memory (RAM), central processing unit (CPU) and peripheral component interconnects (PCIs) consists of some amount of precious metals. The random access memory (RAM) is for data storage and it is a valuable part because its connectors are gold plated (Au) and coated with palladium (Pd). The hard drive comprises of aluminium (Al). The heat sink is a covering on central processing unit (CPU) which is made of aluminium (Al) and its alloys. The case of a computer is made of steel and the power supply box with stainless steel. In Agbogbloshie, the printed circuit board industry is worth tens of thousands of dollars and is controlled mostly by Nigerian Migrants.

Health

Antimony (Sb) - Lung diseases, heart problems, diarrhoea, severe vomiting and stomach ulcer.
Barium (Ba) - Breathing difficulty, increased blood pressure, stomach irritation, muscle weakness, liver, kidney, heart damage and paralysis.
Cadmium (Cd) - Psychological disorder, cancer, liver & kidney damage, sperm damage, birth defects 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 foot wear and masks, worn to protect workers from dangerous chemicals.

Material Composition

<table>
<thead>
<tr>
<th>Component</th>
<th>Weight Composition (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Iron (Fe)</td>
<td>40%</td>
</tr>
<tr>
<td>Plastic</td>
<td>18%</td>
</tr>
<tr>
<td>Aluminium (Al)</td>
<td>5%</td>
</tr>
<tr>
<td>Copper (Cu)</td>
<td>1%</td>
</tr>
<tr>
<td>Glass</td>
<td>10%</td>
</tr>
<tr>
<td>Gold (Au)</td>
<td>2%</td>
</tr>
<tr>
<td>Palladium (Pd)</td>
<td>2%</td>
</tr>
<tr>
<td>Chromium (Cr)</td>
<td>Trace</td>
</tr>
<tr>
<td>Lead (Pb)</td>
<td>Trace</td>
</tr>
<tr>
<td>Sulphur (S)</td>
<td>Trace</td>
</tr>
</tbody>
</table>

Common Brands:
Acer, Apple, Asus, Dell, Fujitsu, HP, IBM, Lenovo, Medion, Sony, Toshiba

Hazardous Materials:
Beryllium oxide (BeO), cadmium (Cd), hexavalent chromium (Cr VI), lead (Pb), sulphur (S)

Key components/parts:
Case, central processing unit (CPU), hard drive, monitor, motherboard, power supply random access memory (RAM)

Primary materials:
Aluminium (Al), copper (Cu), glass, gold (Au), iron (Fe), plastic

Types:
Desktop, Laptop, Notebook, PC

Weight composition (%): 5% Al, 20% Cu, 18% glass, 1000 ppm Au, 23% plastic, 7% steel, [1]
What is a Computer

A computer is an electronic device which accepts, stores, and processes data. Data is the raw material that comes to a computer. It turns this data into information, according to the desires and commands of the user. This exchange between user and computer, occurs via an interface. External devices that provide input and outputs for a computer are known as computer peripherals.

How it works

The monitor serves as a screen which reflects what the user inputs via a keyboard, computer mouse or other input device. Such inputs serve as commands, which are processed by the system unit linked to the motherboard. Programs can be installed on the hard disk (storage unit) and be used through the above-described process. The diagram of a personal computer and its parts is as shown below.

References & Notes

4. ewasteguide.info

*Calculation on estimated value:
Prices of materials vary in Agbogbloshie 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 Agbogbloshie, copper and aluminium are weighed in pound (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): 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 Agbogbloshie.