

A Single Computer

As the demand for new electronics increases the amount of old electronics that must be disposed of also increases. This electronic waste (E-Waste), as of 2003, constitutes over 1% of the total solid waste produced. Much of this E-Waste is hazardous and needs to be recycled. As an example, let us consider a typical personal computer. A typical computer consists of a monitor, keyboard, mouse, and a tower. Inside the tower are a hard disk drive (HDD), CD-Rom drive (CDD), power supply (PSU) and a mother board (with Central Processing Unit (CPU)). Each one of these components has the potential to be hazardous waste.

A major contributor to the hazardous nature of E-waste is lead. Lead is found in the solder used to hold many of the computer components together. If not disposed of properly, lead accumulates in the environment and can affect the nervous, circulatory and endocrine systems of people and animals. According to federal regulations any waste containing more than 5mg/L of lead, by a Toxic Characteristic Leaching Procedure (TCLP) test, is considered hazardous waste. Let us consider the individual components of our example computer.

Monitor: Monitors can be cathode ray tube (CRT) based or Liquid Crystal Displays (LCD). A color CRT contains on average 22.2mg/L of lead and LCDs can contain up to 46 mg/L. Both are well above the regulatory limit.

Keyboard and Mouse: So many different types of keyboards and mice exist that it would be near impossible to gather a representative cross section. However, they all contain lead based solder and many of them will exceed the regulatory limit.

HDD: A computer's hard disk drive contains, on average, 234mg/L of lead. Many modern computers contain multiple HDDs, which increases the amount of lead in that computer.

CDD: The CD-Rom drive is also a large lead contributor, having an average of 279mg/L of lead. Again, many modern systems will have multiple drives in the form of DVD or CD writers.

PSU: Power supplies, although mostly copper, do contain a significant amount of lead, on average 302mg/L.

Mother Board: The mother board has an average of 258mg/L of lead. This not only comes from the motherboard itself, but also from many of the integrated circuits (chips) held on the board, including the CPU. In addition to lead, the mother board and CPU contain many other hazardous metals such as silver (4801mg/L), barium (208mg/L), and chromium (16mg/L). Any waste having silver, barium, or chromium in excess of 5.0mg/L, 100mg/L and 5.0mg/L respectively is considered hazardous waste.

When you add all the lead contributed from a single computer you get a grand total of 1119mg/L. This is over 223 times the regulatory limit for lead. The silver contribution is 960 times the regulatory limit. Barium levels are twice that of the regulatory limit and chromium is three times the regulatory limit.

Note that this is the hazardous waste from just a single computer. With millions of computers thrown out every year, the need to recycle them is obvious. So be sure to recycle them as a Universal Waste. Not only is it going to help the environment but it is also can reduce the facility's generator status. For information on recycling and/or the Universal Waste rule for electronics, please visit www.lee-county.com/pollution or call us at 239-652-6126.