Discarded cell phones, printers, keyboards may be hazardous

THE devices that make possible e-mail, e-news and e-commerce may end their days as e-hazardous waste.

A just-completed study by University of Florida environmental engineers found that electronic-age gizmos ranging from cell phones to computer mice often release enough lead in laboratory tests to be classified as hazardous waste under federal Environmental Protection Agency regulations.

The findings, presented last month in a draft report to the EPA, which funded the study, could prompt the federal government or individual states to change the disposal rules for millions of tons of electronic devices that now routinely make their way into household trash landfills, said UF environmental engineering Associate Professor Tim Townsend, lead investigator on the project.

"The bottom line is that when we tested these devices, in many cases they met the EPA definition for regulated hazardous waste," said Townsend, who presented his findings at an EPA meeting in Chicago.

Rapid changes in technology make the issue of E-waste pressing.

Experts estimate that more than 20 million personal computers became obsolete in 1998 alone, and project more than 60 million personal computers will be retired in 2005, Townsend said.

Five years ago, Townsend headed research that concluded cathode ray tubes - the "picture tubes" that produce images on standard television and computer screens - release enough lead to be classed as hazardous waste. The finding concerned state and federal officials, prompting the EPA to provide Townsend $40,000 to test other electronic devices.

In research that began late in 2001, Townsend and four UF graduate students examined cell phones, printers, flat-panel monitors, keyboards, computer mice, remote controls, VCRs, laptops and central processing units, or CPUs, the components that contain the guts of personal computers.

The researchers subjected many of the e-devices to a standard EPA testing procedure for hazardous waste, the Toxicity Characteristic Leaching Procedure. The procedure involves mixing the ground-up devices with an acid solution designed to simulate potential conditions in landfills. Technicians rotate the mixture for 18 hours in a drum container, and then test the results for eight hazardous metals: mercury, arsenic, cadmium, barium, silver, selenium, chromium and lead.

Every type of electronic device leached lead above the hazardous waste levels in at least some cases, the tests showed. —Science Daily