State e-waste disposal bans have been largely ineffective

September 10 2013

One of the first analyses of laws banning disposal of electronic waste (e-waste) in municipal landfills has found that state e-waste recycling bans have been mostly ineffective, although California's Cell Phone Recycling Act had a positive impact on cell phone recycling. However, e-waste recycling rates remain "dismally low," and many demographic groups remain unaware of their alternatives for properly disposing of e-waste, according to the study.

Presented here today at the 246th National Meeting & Exposition of the American Chemical Society (ACS), it found that providing more information to women and older people could increase the effectiveness of e-waste disposal bans and recycling programs. The meeting of the world's largest scientific society continues through Thursday, with almost 7,000 reports on new discoveries in science and other topics.

"The patchwork of state-by-state or even city-by-city measures that have been adopted to deal with e-waste have been ineffective," said Jean-Daniel M. Saphores, Ph.D., who reported on the study. He is with the University of California at Irvine. "To implement more sustainable policies, producers, regulatory agencies and non-governmental organizations should adopt policies that focus on the big picture, which includes looking at the whole life cycle of products to minimize adverse environmental and public-health impacts."

Estimates suggest that more than 84 million obsolete or broken television sets were gathering dust in closets, attics, garages and basements in

households in the United States in 2010. There were almost 200 million obsolete or broken cell phones, and millions of old computer monitors and other electronic gear. The glass in old-fashioned TV sets contains lead, and electronic circuit boards contain arsenic, antimony, beryllium, cadmium, copper, lead, mercury, nickel and zinc. The rechargeable batteries in cellular phones contain cobalt, zinc and copper.

Concerned that lead and other potentially harmful materials used in those devices could enter the environment, states and municipalities have moved to prevent disposal of electronic waste with conventional trash. Saphores realized that there had been few studies on the effectiveness of those restrictions, so he conducted a survey of U.S. households to find out about how many broken, obsolete or unused cell phones and televisions they had in storage, what their intentions were regarding these items and what they had done in the past with old cell phones and TVs.

The Cell Phone Recycling Act of 2003, for instance, required retailers to establish and promote a system for accepting and collecting used cellular phones for reuse, recycling or proper disposal at no cost to the consumer. The Electronic Waste Recycling Act of 2003 established a series of requirements for manufacturers and retailers of electronic products that contain cathode ray tubes (CRTs) and liquid crystal display (LCDs) panels to encourage recycling and proper disposal.

Saphores' 2010 survey of 3,156 households that are representative of the U.S. population concluded that California's Cell Phone Recycling Act did have a significant positive impact in encouraging consumers to recycle old phones. Consumers typically keep a cell phone for about 18 months before upgrading, and the law fostered recycling of the old phones rather than junking them. However, state bans for CRTs and LCDs was "largely ineffective," according to the study.

"The research found that women and the elderly are less aware of the

recycling programs intended to properly deal with old electronics," said Saphores. "The effectiveness of similar laws around the country could perhaps be improved by providing more information about the importance of proper disposal to those individuals. However, given the relative ineffectiveness of previous policies, it is time to implement deposit-refund systems, which have worked quite well for beverage containers."

Saphores spoke at a symposium, "Environmental Impacts of Electronic Technologies, Products and Processes: The Search for Sustainable Electronics."

Provided by American Chemical Society