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QUANTIFICATION AND CHARACTERIZATION OF WASTE ELECTRICAL AND ELECTRONIC EQUIPMENT DISPOSAL: A CASE STUDY FROM BRAZIL

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Abstract

This work presents a survey conducted in a middle-class region of the city of Caruaru (Brazil) in 2018/2019. In this study, questionnaires addressing consumer habits, characterization of electronic products, and socioeconomic data were received from 380 families. The characterization of electrical and electronic equipment considered the following eight devices: desktop computer, laptop, printer, tablet, mobile phone, CRT TV, LCD/Plasma TV, and LED TV. Descriptive statistics, Chi-square and Spearman's correlation tests, and Robinson's approach method were used in evaluating and analyzing the data obtained. The analysis of the questionnaires resulted in some important findings: (i) the interviewed families have between 5 and 16 electrical and electronic equipment (EEE) (in use and not in use) in their homes; the amount of EEE is strongly linked to the family income ranges; (ii) an average of 292,015 kg (4.70 kg/capita) of e-waste is generated from those eight devices each year by Caruaru households; and (iii) obsolescence and failure are the two main reasons for the end of the EEE' useful life, with obsolescence being the main reason for discarding mobile phones. The results of this survey, together with data collection made by the municipality itself, should assist in developing and implementing e-waste management actions that consider the collection, reuse, and recycling of electronic equipment.

Keywords: Brazil, characterization, developing countries, E-waste management, quantification

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