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A TEMPORAL HISTORICAL ANALYSIS ON HOW SELECTIVE COLLECTION OF RECYCLABLE WASTE IS INFLUENCED BY EDUCATION-RELATED AND REGIONAL FACTORS AT A UNIVERSITY

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Abstract

The aim of the study was to determine the relation between the composition of university recyclable material collected (plastic, paper, metal and glass), education-related factors such as the academic calendar and work stoppages, and regional factors such as climate, regional economy and composition of the urban waste collected over an 8-year period. The study was conducted based on the composition of recyclable dry solid wastes at the Federal University of Rio de Janeiro, quantified after their selective collection between 2010 and 2017. The average proportions of the materials collected were: 63% paper; 19% metal; 8% plastic; 5% glass; and 5% other materials with recycling potential, including Tetrapak™ packaging. The amount of waste was around 20% lower during vacations and long weekends compared to academic periods. There was also a relation between local ambient temperature and plastic composition, which declined in cooler months. The recyclable materials collected in Rio de Janeiro, where the university is located, have different compositions from those of the university, with 41% plastic, 34% paper, 3% metal, 7% glass and 14% of other recyclable materials. For the historical series assessed, it remained unclear whether the economy affected the composition and amount of waste collected. A significant amount of paper was collected at the academic facility, so efforts to decrease its use and/or increase its recycling should be prioritized. This work was one of the first to evaluate an 8-year historical series of waste data collected within a university.

Keywords: characterization, selective collection, solid waste, university

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