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CHARACTERIZATION AND ENVIRONMENTAL IMPACTS OF KITCHEN WASTES FROM FOOD-WASTE DISPOSER DEVICE

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Abstract

Effective kitchen-waste management has become a challenging task because of the unabated population growth, rapid urbanization, and inherent limitations of traditional recycling technologies. The downstream application of food-waste disposer devices is a necessity, but their potential environmental impacts are of concern. This study characterized Chinese kitchen-waste fractions that were separated from the source and evaluated their physicochemical properties at the pollutant-distribution level. The samples of kitchen waste collected from households primarily comprised degradable vegetable waste, fruit, fish, bone, and meat. They had a chemical oxygen demand–total nitrogen–total phosphorus ratio of 376.2:47:1 and a high carbon–nitrogen ratio. Their biochemical oxygen demand–chemical oxygen demand ratio of ~0.5 indicated that an appropriate portion of organic matter was prone to biodegradation. An average wet weight of 160 g/(person/day) of kitchen wastes with >75% moisture content was generated. The household water consumption via food-waste disposer reached 1215 mL/(capita/day), with a crushing time between 1 and 3.5 min for 1800 g of kitchen wastes. Overall, this study revealed the potential of integrating food-waste disposers as alternative solutions to traditional kitchen-waste-disposal techniques without adverse environmental impacts.

Key words: characterization, conversion device, food-waste disposer, food/kitchen waste, impacts

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