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Improving municipal solid waste management through recycling

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Recycling has been a by-word in the modern world as virgin resources, with which we produce various goods are becoming scarce. As the population grows, so do the demand for a variety of consumer goods, the packaging of which, will most likely end as garbage. Indeed, municipal solid waste has been increasing at an alarming rate. Local governments are hard put at trying to come up with strategies in order to contain the massive generation of municipal solid waste. One way to improve management of municipal solid waste is through recycling, as this helps to reduce the volume of waste being disposed in the landfill, divert the solid waste to recycling companies, to be converted to new materials. It also gives a new form of livelihood to the poor people who could not find a job, which requires a higher level of educational attainment. Nowadays, most of the materials being used for production are made from recycled things, whether paper, plastic, tins, bottles, and others. Specifically, plastic waste is the single most problematic material in the waste stream. Plastic materials from packaging are highly recyclable, yet most people discard this material and throw them randomly just about anywhere. Philippines, for example, has been mentioned as the third largest producer of plastic waste in Asia. There is an on-going campaign to prevent plastic waste from going into the oceans as these are almost choking with plastic waste. In order to do this, an efficient and sustainable strategy to recover plastic for recycling will surely help to reduce and divert this type of recyclable waste away from the seas, from landfills and from the environment. This will greatly help to improve municipal solid waste management.

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CRT glass recycling

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The amount of waste electrical and electronic equipment (WEEE) or e-waste generated in the world is growing rapidly. The content of hazardous components in electrical and electronic equipment (EEE) is a major concern during the waste management phase. Ideally, the materials in electronic products should be re-used when the products reach the end of their lifetime. In the European Union (EU), WEEE represents about 7.5 million tons each year, where computer monitors and TV sets containing cathode-ray tubes (CRTs) represent about 80% of the total electronic waste. In the United States, it is estimated that 300,000 tons of e-waste ended up in landfills in 2000 and CRTs represent about one-third of electronics waste tonnage. The three kinds of glass constituting the CRT monitor contain hazardous and heavy elements (lead, strontium, antimony, barium, europium, selenium, etc.) and weigh between 50% and 85% of the total weight of a computer monitor or a television set. Currently, collected monitors are dismantled and treated, and the CRT glass generally ends up in a special landfill licensed for hazardous waste. Hence, in Europe almost all of them are in landfills. As the lead content in these waste products represents as much as 80% of the toxic metals in discard electronics, CRTs represent a clear potential pollution danger to the environment. To investigate the potential applications of waste CRT glass, characterizations of these materials need to be carried out. Waste CRT glass can be classified as being part of either color or black & white monitors, and by their manufacturer. However, at this stage only general CRT glass composition and properties are available, as no systematic studies have been carried out by manufacturers. Several studies have been carried out to investigate how the waste CRT glass could be re-used. CRT glass should be recycled in a closed-loop system (i.e. in the manufacture of new CRTs glass) or an open-loop system (i.e. the glass is used in other outlets).

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