

# Chapter 9

## Sustainable Waste Management

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### ABSTRACT

*This chapter discusses waste management from the viewpoint of sustainability. Waste is generated any-time and anywhere. As human life goes on, it is not possible to avoid the generation of waste. The aim, in this situation, is not to avoid the generation of the waste—minimize maybe—but to separate waste according to the types and avoid paying unnecessary costs for useless treatment and (just the opposite) gain the advantage of gaining income from the waste. Waste reduction in the individual and industrial level will be discussed in the sense of integrated waste management. Sustainability can only be executed only if the waste allows beneficial revenue. Separating and processing the wastes accordingly will help in solving the waste problem and also derive profit.*

### INTRODUCTION

The population around the world is increasing, related to that, protecting public health and the environment becomes a crucial problem. Increasing population means also, increasing garbage which is technically called “solid waste” or only “waste”. Semisolid food wastes and municipal sludge may also be included in solid waste. Liquid wastes such as lavatory and bathroom wastes are called as “grey-water” or “waste water”, which should also be collected and removed from the public life through sewer system. As there is water supply system in a house, then there should also be sewer system for that house. It is under the ground and if there is no leakage or blocked pipe problem, nobody is aware that their waste

water is collected through pipes. However, solid waste is not as lucky as waste water, because it is always in front of the people, occupying a great space in front of their houses. If there is a delay in collecting and removing the solid wastes from the public life, it causes a great social problem that should be avoided. Same as before, if the solid wastes are quickly removed from the public life, then nobody cares of where their waste is going. In order to maintain the social peace, local governors spend great effort and high costs for these services to refrain from any problem. On the contrary, waste can earn money or at least decrease the high cost of treatment by integrated waste management system [IWM]. It is possible to maintain the sustainability through integrated waste management.

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The cost or the public health, which is more important? This question can be discussed in many different aspects. However, the author focuses on the public health in the viewpoint of waste handling. Of course, there is always a threat to the public health from unorganized waste handling. On the other hand, industrial wastes always pose a potential danger to public health, more so than the municipal wastes. This is a fact that, for a better life, there should be less environmental problems, less illnesses and less solid wastes. For less solid wastes, there should be consciousness on the subject as source reduction, separate collection, reuse & recycle, etc. These precautions can be taken both by individuals and also by the governments.

The definition of waste can be very subjective, what represents waste to one person may represent a valuable resource to another (Williams, 2005). This attitude can be taken as advantage in the waste management process. All the materials thrown to garbage will not be taken as waste. Some portion of them can be considered as important and can be feedstock to some other groups.

According to EPA (2012), “solid waste” means garbage, refuse, sludge, and other discarded solid materials, including solid waste materials resulting from industrial, commercial, and agricultural operations, and from community activities, but does not include solid or dissolved materials in domestic sewage or other significant pollutants in water resources, such as silt, sand and gravel, dissolved or suspended solids in industrial wastewater effluents, fly ash, cement kiln dust waste, dissolved materials in irrigation return flows or other common water pollutants, drilling fluids, densified-refuse-derived fuel and any toxic or radioactive waste. These are not solid wastes, however they are hazardous wastes and any types of hazardous wastes needs some pre-treatment processes before exposed.

Whatever the definition, today solid waste is accepted as a major problem of our society and should be handled by authorized and educated

personnel. Waste management [WM] means to take care of any type of garbage in a technical and systematic way. The waste should be removed from peoples’ daily life as immediate as possible. This phase requires cooperation from people and business establishments. Wastes are accepted as one of the major problems of our society and they should be handled by authorized and educated people. In fact, the importance of waste management service can only be understood when there is a technical or social problem such as malfunction of the system or a strike of garbage collection workers.

Integrated waste management system [IWM] means a comprehensive form of waste management by choosing the appropriate techniques and systems according to the situation of the waste, region, climate and social life.

## **BACKGROUND**

The discharge of wastes reflects people’s life styles and social activities. Garbage is generated from daily life and social activities and therefore, the district-wise differences may result from industrial structure, physical distribution and people’s consciousness about garbage. In general, the amount of wastes is larger in cities than rural areas. Communities with a high economic level produce less organic material and ash, ceramics, etc. Municipal solid waste generation will continue to increase unless source reduction starts.

On the other hand; it is possible to define “waste” as any kind of material that the owner does not want anymore. This means that; there might be some wastes which is useful for others. This gives the idea of “reuse”, before the process of “recycle” which means “reducing” the quantity of waste. There is a trend as “3R”; as Reduce, Reuse and Recycle. Reducing the amount of the waste should be the first step. Later on, reuse and recycle processes start. Recently this trend has already turned to “4R” with the inclusion of “recovery” as energy regain.

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