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| **WASH** | **September 30**  2019 | |
| **Assignment (4)** | | **Strategia Netherlands** |

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**ASSIGNMENTS**

* 1. **Explain what municipal solid waste (MSW) means.**

Municipal solid waste (MSW) can be defined as all kind of non-hazardous wastes that generated from domestic and non-domestic households. The domestic household wastes include all objects or materials that refused and discarded by households. The non-domestic household wastes include wastes that generated from large and small industries, hospitals, organizations, institutions and commercial places. The wastes in general could be solid or semisolid. Solid Waste can be defined as any object or substances that have been discarded or to be discarded while semi solid wastes include sludge waste and oil wastes. In fact, waste can be categorized into hazardous waste such as chemical wastes and medical wastes or non hazardous waste such as packaging waste. Municipal solid waste is all about non hazardous wastes (Zekkos D. F., 2016).

* 1. **Explain the importance of the following MSW properties in solid waste management or treatment.**

Waste management can be defined as the process of collection, transport, treatment, recycling, monitoring and control of wastes which has been generated by human. Waste management has become an important business in the last years. In developed countries, several policies and strategies were developed in order to reduce the level of wastes and maximizing the level of diversion and quality enhancement while developing countries are still suffering from mismanagement of solid wastes and rely on open areas for the disposal of wastes. However, today decision makers in low-income countries are more aware to give their attention to the issue of solid waste management. They intend to understand properly how to critically manage solid wastes in urban cities. Henceforth, scientists are aiming to develop a sustainable approach for MSW and working in reducing the quantities of solid wastes using ideal strategies and techniques in order to enhance the quality of the environment in urban cities more efficiently and effectively (Matasovic, 2017).

In order to develop an effective waste management plan there is demand to understand the properties of MSW. In fact MSW has physical, chemical and biological properties.

The importance of physical properties of MSW in solid waste management is reflected in the selection of the equipments of the solid waste operation facilities and in the design and analysis of the disposal services. The main physical properties include particle size, density, moisture content, shape, color, optical and magnetic property (Kumar, Dhar, Nair, Bhattacharyya, Vaidya, & Akolkar, 2016).

Regarding the chemical properties of MSW in solid waste management, its important to understand the behavior of the wastes. In order to use the chemical properties of the solid waste, its chemical properties should be understood. Chemical compounds include fats, grease and oils (Zekkos D. P., 2005).

In terms of biological properties, the main goal of understanding the biological properties of MSW in solid waste management is reflected in understanding the treatment process for solid waste management. For instance, understanding the biodegradability of organic matter in solid waste treatment facilities (Zekkos D. S., 2013) .

* 1. **Outline the advantages and disadvantages of source separation of MSW**
* Advantages of MSW can be determined as follows:

The main advantage of separation of MSW at point of collection is the massive improvement in the quality of solid waste management. This idea will lead to improve the quality of waste steam and obtaining more homogenous results. Also, source separation process can result in low operation cost due to the low contamination of wastes. The process also provides more values for recycling process. Moreover, source separation will enhance the environmental performance and improve the economic efficiencies of waste treatment processes options. Source separation is mainly essential when good product quality is needed also its important when mechanical separation is complicated and economically not visible. Addition to this, source separation of MSW will lead to reduce the volume of residual waste to open areas. Residual waste means in general all the substances that remaining after waste treatment processes and would be directed to landfill. Finally, source separation encourages people to separate wastes before disposal process which will lead to increase the awareness and enhance the behavior of the households throughout the community.

* Disadvantages of MSW can be explained as follows:

Source separation is not effective for organic wastes because it cannot offer pure compounds. Also, it is not easy to encourage households to separate their wastes and required motivation, education and incentives for households. The socio economic implications of source separation of MSW interventions are problematic. Addison to this, source separation required organized system and understanding the cost of source separation program is complicated.

* 1. **Discuss the challenges faced in disease surveillance.**

Disease surveillance is the process of monitoring and controlling diseases outbreaks among communities in order to develop patterns of progression. Disease surveillance faces several challenges. Some challenges are technically while others are political and economical challenges (Buehler JW, 2004).

Regarding the technical challenges of disease surveillance, several low-income countries suffer from conducting testing for diseases due to its high cost. The distinguish between two kind of diseases in some cases is not easy and required applying effective testing approach. The tests required tools, equipments and materials that are expensive and not affordable for many countries. Also, Low-income countries suffer from obtaining well trained workers, comprehensive data and availability of advance technology. Disease surveillance faced critical problem from the lack of integration different approach for sustainable and realistic results (Abubakar A, 2010)

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Concerning the political challenges of disease surveillance, the lead organization in the issue of global public health such as WHO suffer in many countries from gaining sufficient reports about diseases outbreak. The reason behind this is that, many countries consider the issue of diseases outbreak as a secret. Also, there is substantial barrier during the implementation of disease surveillance program due to the gap between academia and policy makers in developing countries (A, 2010)

* 1. **Explain 5 diseases that can be prevented by observing proper sanitation**.

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| Number | Disease | Description |
| 1 | Diarrhea | Around 480000 childhood deaths annually due to poor sanitation system. |
| 2 | Cholera | Around 143000 killed annually due to lack of sanitation facilities. |
| 3 | Dysentery | This kind of disease can easily spread during communities |
| 4 | Typhoid fever | Over 161000 deaths on yearly basis. |
| 5 | Polio | This kind of disease spread when human contact with virus from human excreta |

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