Diploma in WASH

Assignment

Brian Tedley Otieno O.

Reg. G.E., Civil Engineering (Water and Sanitation)

07 September 2019

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

MSW refers to non-hazardous solid refuse from households as well as industrial, commercial and institutional establishments, market waste, yard waste and street waste. Collection, transfer, recycling and disposal of such waste in urban settings is the responsibility of municipalities.

* 1. ***Briefly describe waste management***

Waste management is a concept that encompasses cyclic, systematic, established, planned, budgeted, monitored and evaluated procedures of operation and maintenance through which waste is collected, transferred treated, recycled, recovered and or disposed. The goals of waste management are to protect public health and especially of the low-income groups; mitigate environmental degradation and conserving the ecosystem in urban areas; encouraging sustainable use of materials and resources through minimization of waste generation and to create employment and incomes during the various stages of the waste management cycle.

* 1. ***Discuss the challenges facing local authorities in your Country in Waste Management.***

MWSM interventions must be adapted to prevailing conditions in a given setting. Local authorities in my country face similar challenges related to their society, economy, politics and environment.

* Political challenges- The level of cooperation between local governments and the central government about waste management in particular is not adequate. Despite decentralization of several roles, there is still significant interference as well as opposition between local and national government bodies. There is insufficient goodwill at the national level to implement or pass legislation that supports the efficient management of waste at the local level. This is due to politicization of such matters. This has also resulted in decentralization of roles of waste management without commensurate budgetary allocations to local governments, to enable them fully execute their mandate.
* Socio-cultural challenges- A significant challenge faced by the various local governments is the handling patterns and underlying attitudes of the urban population towards waste generation and handling. Local authorities have lacked the capacity to promote behavior change as well as to capitalize on the community willingness to manage waste. This has resulted in a failure to develop a sense of ownership of waste management initiatives due to lack of community participation.
* Economic and financial challenges- Different towns have different rates of economic development. This means that certain towns have a much lower demand for waste management services as well as a significantly smaller population willing to pay for such services. This makes funding of such services by the local governments very difficult. In addition, they lack the knowledge and capacity to develop robust financial models based on cost-oriented revenues and sound budgeting and accounting skills to cover operational costs for waste management sustainably.
* Technical and institutional challenges – Local governments struggle with the burden of solid waste management without commensurate decentralization of powers and funding. They lack technical and managerial capacity to organize waste management in their jurisdictions. They also have minimal experience in developing holistic waste management systems that involve the consumers and private sector and that operates at minimum costs while remaining effective.
* Environmental challenges- Most local authorities are struggling with preventing pollution of the environment including water bodies. This is partly due to weak legislation and partly due to lack of adequate capacity to enforce existing legislation. In some poor neighborhoods however, the challenge is due to a lack of interest in the community to manage solid waste due to having other more significant needs.
  1. ***Outline the advantages and disadvantages of source separation of MSW.***

The international standard for waste management outlines the hierarchy for handling municipal solid waste in terms of desirability. Top of the list in terms of desirability is Avoidance of waste generation followed by recovery, reuse, reprocessing, recycling, energy recovery and finally disposal of waste. Source separation is vital in achieving the hierarchy described as concerns waste management.

The advantages of source separation are as follows.

* Source separation of waste directly supports material recovery resulting in a more homogeneous and higher value stream, which is easier to recover. Contaminated or mixed waste on the contrary has lower value because they are more difficult and costly to separate. Source separation therefore allows for processing of certain waste to higher value products than would be possible for mixed waste.
* Source separation also reduces contamination of waste streams
* It also reduces the diversion from and volumes of waste sent to landfills.
* It provides the basis for best practice for improving resource recovery and reducing the volume of residual waste where it is adopted.
* It can also play a significant role in affecting positive behavior change of householders and businesses and can increase awareness of waste materials and the recycling process. In the end, it could teach consumers waste avoidance.

The disadvantages of source separation in Waste Management are;

* Technical capacity required- This is a major challenge especially in developing countries where the problem of solid waste management is the biggest challenge. There is insufficient technical capacity to develop and sustain such a system in such economies.
* Financial constraints- source separation requires a well-functioning and efficient waste collection system. This is difficult to finance in developing economies where revenues collected by local authorities barely cover the costs of waste management.
* Legislation- Source separation requires adequate legislation. This requires political goodwill, which is difficult to garner in many developing countries and local authorities.
* Consumer goodwill- For source separation to work, there must be sufficient support from the community. In developing countries, those mostly affected by poor waste management are the poor who do not prioritize waste management in their needs.
  1. ***Discuss the challenges faced in disease surveillance.***

Effective disease surveillance requires accurate and up-to-date data to enable sufficient analysis of the distribution, occurrence and causes of a disease in a given area. Obtaining such data is very challenging. Other challenges faced include the following.

* Reported rates of infections always lag at least one incubation period behind the actual infection rates. Cases identified at any given time were infected one incubation period earlier. Newly infected people since then are developing infections but remain asymptomatic.
* Inefficient communication of field data to the central registration point for disease surveillance also compounds the problem above.
* Difficulty in identifying cases in a timely manner in the field also poses a great challenge. Normally, only symptomatic cases can be registered. This usually means that the true scale of an outbreak cannot immediately be seen.
* The actual cause of an outbreak is very difficult to identify at times and can only be done by field investigations.
* Modes of primary transmission of pathogens from one individual to another may vary over time and space. In addition, with secondary transmissions, every new case becomes a potential new source of infection. Analysis of data in actual disease outbreaks becomes very difficult due to the dynamic nature of transmissions.
  1. ***Explain five diseases that can be prevented by observing proper sanitation.***

Observing improved hygiene and sanitation behavior is crucial in preventing a number of diseases that are water-borne, food-borne, vector-borne or water-washed.

* Fecal-oral infections- these diseases are transmitted through consumption of foods contaminated with pathogens. These infections can be water-borne, food-borne and water washed. Their transmission is significantly reduced through adoption of better hygiene and sanitation practices to prevent direct and indirect ingestion of pathogens. Such diseases include diarrheal diseases including cholera, bacillary dysentery, typhoid, hepatitis and poliomyelitis.
* Leptosoriasis- The main reservoir for the disease is rats and the infection leaves the animal host through urine. Humans contract the diseases through direct contact with water, moist soil or vegetation contaminated with urine from infected hosts. Improved hygiene and sanitation is key in controlling rat populations and thus minimizing risk of spread of this disease.
* Infections of direct contact- The diseases are transmitted directly through contact with contaminated hands, clothes, domestic flies or any other contaminated material. They affect the skin or eyes and include diseases such as conjunctivitis, trachoma, yaws and scabies. These diseases are water-washed and therefore thrive due to poor persona hygiene. Improved personal and domestic hygiene greatly reduces the risk of infection.
* Soil-transmitted helminths- These worms leave the body through faeces as eggs or larvae and afterwards develop to maturity in the soil. They enter the human body either through ingestion (food-borne or water-washed) or by penetrating the skin. Observing proper hygiene in preparation and handling of food helps mitigate infections.
* Water-based helminths- These pathogens also leave the body through excreta and require an intermediate host living in fresh water. Schistosomiasis are released in to water by fresh water snails and people are infected when their skin comes in to direct contact with infected fresh water. Other water-based helminths have two intermediate hosts and food-borne as they infect plants and fishes which are consumed by humans. Examples of such infections are fluke disease and clonorchiasis. Improved hygiene and sanitation in a community provides safer alternatives for fresh water as well as improved behavior leading to better handling and preparation of foods as well as an awareness of risks of infection.