

SUBMISSION OF ASSIGNMENT 4 FOR THE DIPLOMA IN WASH

BY

CHITI CHOMBO

**AN ASSIGNMENT SUBMITTED IN PARTIAL FULFILLMENT OF THE REQUIREMENT
FOR THE AWARD OF DIPLOMA IN WATER, SANITATION AND HYGIENE TO THE
AFRICA CENTRE FOR PROJECT MANAGEMENT**

AUGUST 2019

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

Municipal solid waste is defined to include refuse from households, non-hazardous solid waste from industrial, commercial and institutional establishments (including hospitals), market waste, yard waste and street sweepings. Semisolid wastes such as sludge and night soil are considered to be the responsibility of liquid waste management systems. While hazardous industrial and medical wastes are, by definition, not components of municipal solid waste, they are normally quite difficult to separate from municipal solid waste, particularly when their sources are small and scattered. MSWM systems should therefore include special measures for preventing hazardous materials from entering the waste stream and — to the extent that this cannot be ensured — alleviating the serious consequences that arise when they do. Finally, debris from construction and demolition constitute — difficult categories of waste which also require separate management procedures.

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

-the properties to be explained are missing

3. Outline the advantages and disadvantages of source separation of MSW

Separation at source or source separation refers to the practice of setting aside post-consumer materials and household goods so that they do not enter mixed waste streams. In simpler terms, it refers to the separation of municipal solid waste into several categories at the point of generation (source) according to the different characteristics of each material before further treatment or processing. The purposes are recycling, reuse or improved waste management. The concept was coined in affluent societies during the 1980s in contradistinction to the recovery of resources for recycling from mixed post-consumer waste in plants called materials recovery facilities.

Advantages

- i. Source separation helps divert organic wastes from landfill and from incineration, thus reducing the overall emissions of greenhouse gases and the negative environmental and health effects related to these waste disposal methods.
- ii. Source separation produces high-quality waste product that can bring a premium price if markets are available and if recovered products meet market specifications. In fact, some local independent trash haulers, scrap dealers, and scavengers might find source separation more attractive because it protects the part of their income derived from sales of high-grade waste materials.
- iii. It is the only method currently available for the recovery from MSW of recyclable newspaper, office paper, corrugated cardboard, colour-sorted glass, plastics, and rubber;
- iv. It conserves energy by recovering materials whose production from virgin sources is energy intensive;
- v. It requires very little capital investment as compared with centralized resource recovery. Moreover, less money and time is spent on handling and separation at facilities.

- vi. It can be implemented with little delay in comparison with centralized resource recovery facilities; and
- vii. It may be the only way a small or remote community could recycle materials if the population is too small to support a centralized resource recovery plant.

Disadvantages

- i. Only a portion of the waste generated can be recovered.
- ii. It leaves a mixed waste residue that has a somewhat lower fuel content than unseparated mixed waste.
- iii. It strongly depends on individual participation and cooperation.
- iv. It requires modification of the costly collection equipment used by both municipal and private haulers.
- v. Can also be inconvenient to residents.
- vi. New equipment and/or containers might still be required.

4. Discuss the challenges faced in disease surveillance.

A disease surveillance system that continuously and systematically collects, analyses, interprets and utilise health data for decision making at an optimum level is a corner stone of an effective public health system (Brownson, 2011). Disease surveillance systems provide information about disease manifestations and severity, etiological characteristics of the disease, their space-time distributions, the use of and potency of treatments that is vaccines and so on and so on (Elida, 2011).

The main challenges include non-sustainable financial resource strategies, inadequate training and turnover of peripheral staff, erratic feedback, lack of supervision from higher authorities and weak laboratory capacities coupled with scarce job aids such as case definitions, reporting formats and poor communication and transport systems.

Traditionally, surveillance was interpreted and implemented as a vertical activity in most low- and middle-income countries, such as Kenya. To date, several challenges have been identified with vertical, single disease surveillance strategies. The main drawback is that most vertical programmes are designed to merely provide data to central levels with little or no co-ordination between those collecting it, analysing it or those using it for decision-making (Franco et al. 2006). There is also a generalized lack of resources coupled with non-prioritization of surveillance in terms of budget allocation (Lukwago et al. 2012).

- i. Present day challenges to conducting effective disease surveillance arise not only from disease pathogens and the dynamics with their hosts but also from the surveillance systems themselves. First, individual country capabilities to conduct surveillance vary and range from good to practically none (Nsubuga et al. 2010).

- ii. Second, the majority of the surveillance efforts in low- and middle-income countries (where most disease-specific challenges emerge) are limited to humans, when over 60% of the emerging diseases detected between 1940 and 2004 were caused by zoonotic pathogens (Jones et al. 2008).
- iii. Third, surveillance systems in low- and middle-income countries tend to adopt passive approaches to conducting regular surveillance. Given the limited resources, this may be pragmatic, but a lack of co-ordination between the national and sub-national levels often delays both case and outbreak detection, defeating the very purpose of conducting regular surveillance (Todd 2006).
- iv. Other unresolved issues in the surveillance efforts in low- and middle-income countries include weak health infrastructures; use of obsolete methods and concepts to operate surveillance systems; shortage of human, technical and financial resources; alongside uncoordinated policies at different levels of the systems (Hitchcock et al. 2007).

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

Faecal-oral infections are transmitted directly through faecally contaminated hands, food, water, or soil. The pathogen must be ingested to cause infection.

i. Diarrhoea-Diarrhoea and undernutrition form part of a vicious cycle. Diarrhoea can impair nutritional status through loss of appetite, malabsorption of nutrients and increased metabolism (Caulfield et al., 2004; Petri et al., 2008; Dewey & Mayers, 2011). Frequent episodes of diarrhoea in the first 2 years of life increase the risk of stunting and can impair cognitive development (Grantham-McGregor et al., 2007; Victora et al., 2008). At the same time, undernourished children have weakened immune systems, which make them more susceptible to enteric infections and lead to more severe and prolonged episodes of diarrhoea (Caulfield et al., 2004).

ii. Intestinal Parasitic Infections-Soil-transmitted helminth infections – roundworm, whipworm and hookworm – affect millions of people worldwide (WHO, 2013). Soil-transmitted helminth infections are directly caused by poor sanitation. Helminth eggs and larvae can survive for months in the soil and can infect humans when ingested (e.g. via contaminated water or food), by contact with fomites or by direct contact with the skin when walking barefoot on contaminated soil (hookworm larvae).

iii. Soil-transmitted helminth infections can affect nutritional status by causing malabsorption of nutrients, loss of appetite and increased blood loss. Heavy infections with whipworm and roundworm can impair growth (O’Lorcain & Holland, 2000). Hookworm infections are a major cause of anaemia in pregnant women and children. As many as one third of pregnant women in Africa are at risk of hookworm-related anaemia (Brooker, Hotez & Bundy, 2008), which in turn increases the risk of preterm delivery and low birth weight babies and, eventually, child undernutrition (Black et al., 2013). Soil-transmitted helminths (e.g. hookworm

disease and roundworm infection) have to develop in soil before they can infect people. Some of these helminths infect people by penetrating their skin when they are in contact with contaminated soil, others infect people when ingested.

iv. Water-based helminths with two intermediate hosts (e.g. fasciolopsiasis, clonorchiasis) need to develop in two freshwater intermediate hosts before they become infectious to people. Transmission occurs when the second intermediate host is eaten without being properly cooked. Beef tapeworm and pork tapeworm have to be ingested by cattle or pigs and development in them. People are infected by eating poorly cooked beef or pork.

v. Cysticercosis, a complication of pork tapeworm, is transmitted like a faecal-oral infection from person to person.

vi. Leptospirosis is mainly transmitted through direct skin contact with water or material contaminated with the urine of infected rats.

REFERENCES

- Black RE, Victora CG, Walker SP, Bhutta ZA, Christian P, de Onis M et al. (2013). Maternal and child undernutrition and overweight in low-income and middle-income countries. *Lancet*. 382(9890):427–51.
- Brooker S, Hotez PJ, Bundy DA (2008). Hookworm-related anaemia among pregnant women: a systematic review. *PLoS Negl Trop Dis*. 2(9):e291. doi:10.1371/journal.pntd.0000291.
- Brownson RC, Elizabeth AB, Leet TL, Gillespie KN, William R. True, Evidence Based Public Health. 2nd ed. Cape Town: Oxford University Press; 2011.
- Dewey KG, Mayers DR (2011). Early child growth: how do nutrition and infection interact? *Matern Child Nutr*. 7(Suppl. 3):129–42.
- Elida M. Evaluation of Surveillance Systems of Infectious Diseases and Vaccination Coverage in Albania. Milan Universita Degli Studi Di Milano; 2011. p. 219.
- Franco LM, Setzer J, Banke KK., Improving Performance of IDSR at District and Facility Levels: Experiences in Tanzania and Ghana in Making IDSR Operational, 2006 Bethesda, MD .The Partners for Health Reformplus Project. Abt Associates Inc
- Grantham-McGregor S, Cheung YB, Cueto S, Glewwe P, Richter L, Strupp B (2008). Developmental potential in the first 5 years for children in developing countries. *Lancet*. 369(9555):60–70.
- Jones KE, Patel NG, Levy MA. Global trends in emerging infectious diseases, *Nature* , 2008, vol. 451 (pg. 990-3)

- Lukwago L, Nanyunja M, Ndayimirije N. The implementation of Integrated Disease Surveillance and Response in Uganda: a review of progress and challenges between 2001 and 2007, Health Policy and Planning, 2012, vol. 28 (pg. 30-40)
- Nsubuga P, White M, Thacker SB, Jamison DT, Breman JG, Measham AR. Chapter 53: Public health surveillance: a tool for targeting and monitoring interventions, Disease Control Priorities Project , 2006^{2nd} Washington (DC)World Bank
<http://files.dcp2.org/pdf/DCP/DCP53.pdf>, accessed 22nd August 2019
- O’Lorain P, Holland CV (2000). The public health importance of *Ascaris lumbricoides*. Parasitology. 121 (Suppl.):S51–S71.
- Todd EC. Challenges to global surveillance of disease patterns, Marine Pollution Bulletin, 2006, vol. 53 (pg. 569-78)
- WHO (2013). Global Health Observatory (GHO) data: soil-transmitted helminthiases – global prevalence estimates. Geneva: World Health Organization
(http://www.who.int/gho/neglected_diseases/soil_transmitted_helminthiases/en/, accessed 2nd October 2015).