Municipal solid waste, disease surveillance and WASH diseases.

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Assignment 4.

# Explain what municipal solid waste (MSW) means.

Municipal solid waste commonly called trash or garbage is the waste consisting of everyday items such as product packaging, yard trimming, furniture, clothing, bottles and cans, foods, newspapers, appliances, electronics and batteries. This category of waste is generally refers to as household waste as well as office and retail waste but excluding industrial, hazardous and construction wastes.

Sources of municipal solid waste include residential wastes and wastes from commercial and institutional locations such as businesses, schools and hospitals.

## Outline the advantages and disadvantages of source separation in municipal solid waste.

Source separation refers to the practice of setting aside consumer materials and household goods so that they do not waste system when mixed.

**Advantages.**

Source separation aids proper planning for waste treatment in terms of resource allocations because different types of waste needs different methods of handling and this different types of waste will be identified during the source separation.

Source separation reduces health risks among the waste handlers since the different types of waste are isolated at the source so they will be aware of the types of the waste being handled so that they are carefully when handling waste like glasses which can easily cause injuries if not handled well.

Source separation also enable proper record keeping on the amount and the types of waste being produced as well as their sources which encourage early planning because the municipal will be aware of the types and the amount of waste produced.

Source separation eliminates the risk of contamination of the recyclables and increases their marketing possibilities.

Source separation also makes Anaerobic digestion (AD) easy since the digestible will be separated from the non-digestible at the point of production.

Source separation also reduces environmental and health effects associated with land filling. The organic wastes should be separated and treated separately because when mixed with other wastes and buried, it produces very high amount of methane with a high negative impact on the environment (global warming). Methane has a very high global warming potential. Over a period of 100 years, each molecule of methane has a direct global warming potential which is 25 times higher than that of the molecule of carbon dioxide (Solomon et al 2007).

Source separation improves on the food quality and safety since the farmers and the food processing industries accept digestate as fertilizers for crop production which is only possible if the waste used the feed stock for Anaerobic digestion has been separated.

Source separation enables efficient treatment and reuse of organic wastes since they need proper treatment which is only possible if they are separated at the source.

**Disadvantages.**

Experts. Source separation requires the work of expertise since the different types of wastes needs different methods of handling.

Machines. Source separation requires technical machines to isolate the different types and these machines are expensive and need trained persons to handle which increases the cost of treatment.

Labourforce. The entire process needs an increased work force to run the separation process which adds on the total cost of waste treatment.

Time consuming. The process of source separation is time consuming which delay the overall process of waste treatment.

Sensitization. The process requires resources to be allocated to sensitize the waste producers so that they know what is demanded of them which further increases the treatment cost.

Costly. Source separation is an expensive process which require a lot of money hence increasing on the municipal budget for waste treatment.

### Discuss the challenges faced in Disease surveillance.

Disease surveillance is the ongoing systematic collection, analysis and interpretation of outcome specific data for use in planning, implementing and evaluating public health policies and practices. During disease surveillance the following challenges are faced;

Data management. Effective data management is critical to the public health surveillance mission, however, appropriation of quality of the data needed for appropriate inferences and interpretation is often lacking. Data management is the development, implementation and maintenance of plans, policies and programs that control, protect and enhance the value of the data.

Shortage of skilled staffs. Human resources to accomplish analytical data management, statistical analysis, methods for performing geographic and other information displays, visualization of data and effectively communicating the uncertainty in health data evidence are needed in public health surveillance. However, persons and teams with the required skills and experience are in short supply.

Inadequate computing resources. With the increase in the number of sources and volume of data available for analysis, insufficient resources in the computing environment is a limiting factor on timely processing of data and communication of results.

Health infrastructure. Health facilities provide the primary opportunity for detecting cases for unusual or clusters of diseases but health care facilities are absent or inadequate in resource-limited countries in Africa, Asia and other parts of the world. Consequently these countries do not have adequate domestic diseases detection or response capabilities which creates gaps in regional surveillance systems. The result is a porous patchwork of surveillance systems that is exacerbated by differences in focus, approach, intended audience and resource base and by inadequate integration and poor coordination between surveillance systems.

Methodology. There is no consensus on the preferred methodologists, performance characteristics, or outcome measures for surveillance programs. There is no clear measures of effectiveness or cost effectiveness of the infectious diseases surveillance systems.

Technical resources. Diagnostic tests are essential for rapid screening and confirmatory diagnosis of sick patients in primary care or emergency facilities. Either these tests do not exists or they are too expensive and or too technical for use in resource-limited health infrastructures. In the absence of etiologic diagnosis, the opportunity for surveillance and response including the proper medical care treatment, appropriate vaccination and use of effective control procedures will be lost. The global communication networks to support infectious diseases surveillance systems are inadequate.

Finance and human resources. The legal framework for global surveillance of and response to human disease lacks funds for implementations. Many resource-limited countries do not have money available to establish the surveillance and response systems. The designated human and finance resources of the world health organization are inadequate to fulfill the available responsibilities.

Policy. Perceived economic consequences due to disruption of trade and travels caused by disease outbreaks deter reporting and delay verification.

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

Diarrhea. This condition is linked to many viruses, bacteria and protozoans and ultimately depletes a person of water and electrolytes which for many without oral rehydration solution leads to death. It causes 480,000 children deaths yearly. Signs and symptoms include watery stool without visible blood, vomit, dehydration and high fever. One of the most important factors in eliminating diarrheal deaths, next to proper hand sanitation is hand washing. It is transmitted when one get into contact with fecal matter containing the pathogen.

Cholera. It is caused by the vibrio cholera bacteria. Signs include rice-water stool with or without vomiting, dehydration and shock. Contact with waste from an infected individual either directly or indirectly (food and water) perpetuates the cycle of infection at an alarming rate.

Typhoid fever. It is caused by salmonella typhi bacteria. Signs include low grade fever, malaise, and dry cough, abdominal discomfort, diarrhea or constipation, altered mental status and multiple complications. It is transmitted through drinking water contaminated with human and animal faeces and faeces contaminated food.

Poliomyelitis. It is caused by polio virus. In non-paralytic form the signs are fever, muscle pain, tiredness, headache, intestinal problems, and backache. In paralytic form, the patient develops rapid onset acute flaccid paralysis and meningeal systems. It is contracted through food and water contaminated with infected faeces, nose and infected secretions.

Hepatitis A. caused by hepatitis A virus. Signs and symptom are fever, tiredness, nauseas, digestive problems and later jaudience, dark urine and whitish stool. It is transmitted through food and water contaminated with the virus, crowding, wastewater with human and animal faeces.

References

Lenglet. A & Hernanez, G. Comparison of the European Union Disease Surveillance Networks. (2007) volume 5, number 3.

Nnebue. C, onwasingwe. C, Adogu. P & Adinma. E . Trop Med Res. Challenges of Data Collection and Disease Notification in Anambra state, Nigeria. (2014) 17:pp 1-5.

Center for Disease Control and Prevention (CDC). Analytical Challenges for Emerging Public Health Surveillance. (July 27, 2012). 61(03) pp 35-39.

World Health Organization (WHO). Communication Diseases Surveillance and Response Systems. Guide to Monitoring and Evaluating. (2006).

Spanish Red Cross. Diseases Related to Water, Sanitation and Hygiene.

Center for Sustainable Systems, University of Michigan. Municipal Solid Waste Factsheets. (2018).

Seadi. A, Owen. N, Hellstrom. H & Kange. H. source Separation of Municipal Solid Waste. (2013).

United States Environmental Protection Agency. Report on the Environment. Municipal Solid Waste.