**Assignments**

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1. Paul, a resident in the outskirts of your town, consults you about building a latrine in the compound of his house. He is an open-minded man who is keen to improve life for his family. He has a wife and three young children, and his elderly mother also lives with them. He doesn’t have a tap in his house and gets water from a nearby well. The area has heavy soil and the rock below is impermeable.

1. Which types of latrine are possible choices for him?

Paul choices would be to construct a dry latrine system. The possible choices are a ventilated improved pit latrine, an Arborloo, a urine-diverting latrine or a biogas latrine. This is so because he doesn’t have a reliable piped supply of water, or a water well to support a more modern toilet infrastructure

1. Which types of latrine would you recommend, and why?

Considering that Paul is at the outskirts of town a VIP system consisting the Arborloo or urine-diverting latrine would be appropriate Paul could sell these organic compost products including fertiliser coming from both the Arborloo or urine-diverting latrine and so protect the environment.

1. What other advice would you give him about the location, design and construction of the latrine?

He should consider the slope of his land, the wind direction and place the latrine downwind and at a convenient distance from the house. For the safety of the children, he should choose a concrete precast for the slab. He should seek advice about possible materials to be used for the superstructure. The materials should be available locally, so that the system is sustainable. He should install a handwashing basin next to the latrine.

1. Nancy is a laboratory technician. She is analysing a sample of wastewater collected from a pipe that discharges effluent into a river. Name two tests Worknesh could perform to assess the physical characteristics of the effluent.

**Answer**

1. Nancy could measure the temperature of the sample and assess the odour, Temperature however should be done at the point of origin because the temperature could change instantaneously
2. Nancy could also perform a suspended solids test.

(b)As part of the analysis she also does a BOD test on the sample and gets an unusually high result. What does the high BOD tell her about the wastewater? What effect could it have on the river?

**Answer**

Scientifically any signature of a registered high BOD in a sample test result is an indicative of exponential or exaggerated organic matter in the sample. Ecosystem and marine life would be jeopardized if the same would be discharged into the river because it will deprive oxygen molecules from the water

1. What is the purpose of the report of a rapid assessment and who should receive copies of the report? Explain the contents of Rapid Assessment Report

**Answer**

1. The purpose of the report is to summarize the results from the assessment and indicate how well its aims and objectives have been achieved. The report should be sent the Funding Organizations first , then to all those who had an interest in its findings ,g Public Health organization, Government Hospital, WASH officers, HIV/AIDS groups, WATSAN groups, other line INGOs and NGOs, Government Health Ministries etc’
2. Contents of Rapid Assessment Report

* Rapid assessment of sanitation and waste management provides information that will identify improvements needed and indicate possible solutions. It is also used in emergency situations where rapid response is needed.
* Assessment is normally carried out by a survey team of people with a range of skills and experience.
* The process begins with agreeing the scope of the assessment and setting the aims and objectives. This should involve all interested parties, including the community.
* Assessment methods include interviews, observation, community discussions, focus groups, and questionnaires. These should be supported by a review of existing documents and reports.
* The data obtained should be summarised in the form of tables and text as soon as the survey is completed. The data should then be analysed to determine any problems, the cause of the problems and possible solutions. This analysis should then be incorporated into a written report.

1. Explain five ways in which urbanisation creates challenges for effective sanitation and solid waste management.

The challenges of solid waste management include

* inadequate infrastructure

Bad planning and indiscriminate erection of walls and housing structures block water flow channels to form big floods. Bad refuse disposal schemes marked by indiscriminate dumping of solid waste and thrash in drainages and stream channels results in clogging of flow path of rainwater and pollution of surface water systems

* poor environmental planning

The World Bank estimates that only 35 percent of urban residents in developing countries have satisfactory sanitation services. Absence of sewage proper disposal system cause pollution of surface and ground water systems rendering them unfit for human consumption and contributing to fresh water and degeneration of sanitary conditions in urban areas.(Durotoye, 2003). Environmental Education has been described by Eguabor (2008: 78) as: A permanent process in which individuals and the community gain awareness of their environment and acquire the knowledge, value, skills, experience and the determination which will enable them to act individually and collectively to solve present and future environmental problems”.

* budgetary and operational constraints

Poverty, underdevelopment and ignorance are factors that militate against environmental quality and waste management in African cities. This is evidenced by the piling of solid waste in various parts of the urban centres. Refuse heaps have encroached on or completely blocked roads, thereby obstructing traffic in the urban cities. Uncontrolled refuse disposal has always been associated with serious health hazards (Dharam and Vivan, 1995).

* overpopulation

Rapid urbanization of small towns results from fast population increase, force human occupation of flood prone areas. Massive destruction of natural ecosystem in the process of urbanization alter natural flow channels to form big floods. When an area is densely populated, the quantity of waste being generated will be much. The populace disposes the waste both in approved and unapproved sites, thereby causing the problem of waste management in the urban areas

* inadequate environmental education.

It is recommended that environmental education should be included in the school curricula to educate and create awareness, acquire the knowledge, value, skills, experience of the environment and waste disposal methods. Efficient solid waste management mechanism should be put in place for the needed appropriate coping capacity with increasing waste generation consequent upon increasing urbanization

5. How do good sanitation and waste management practices bring a positive effect to urban inhabitants? Give examples for effects on:

1. health
2. education
3. economic conditions
4. the environment

#### Answer

1. **Effects on health:**

* Deter disease transmission to the populace
* Help keep the environment hygienic and free from harmful bacteria
* Avoid the exposure of or reduce risk of pathogenic contamination to air, water and the environment in general
* .Deter people from risk pathogenic niches

1. **Effects on education:**

* healthy children learn better than sick children
* Healthy children spend more time in school than sick ones.
* Providing good sanitation facilities encourages children to attend school

1. **Effects on economic conditions**:

* . Less money is spent on healthcare and people lose fewer days off work through caring for the sick.
* People save money that would rather be use on hospital bills to use it on more meaningful economic venture like buying food and clothes

1. **Effects on the environment:**

* Good sanitation and waste management means that there will be less faeces and waste deposited in public places and less pollution of the water and soil.