**STRATEGIA NETHERLANDS, INTERNATIONAL MANAGEMENT ORGANIZATION**

**NAME: OKELLO BONIFACE**

**COURSE: ONLINE -POST GRADUATE DIPLOMA**

**IN**

**WATER, HYGIENE AND SANITATION**

**YEAR: 2019**

**Assignments 5**

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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.

(a) Which types of latrine are possible choices for him?

Under Paul’s home condition, dry toilets such as compositing toilets, urine diverting toilets, container based toilets and simple pits latrines are the best choices that I recommend for him.

(b) Which types of latrine would you recommend, and why?

Ventilated Improved Pit latrine (VIP)

It does not require water after use: Unlike flash or pour toilet that need water to send the feaces, Ventilated improved pit latrine has a squat hole, which sends the feaces and urine straight into the pit. This suits Paul’s home conditions, where there is no pipe water within the premise.

This latrine can be constructed with minimum cost and using local material and skills; all these favor Paul conditions.

Ventilated pit latrine is easy accessible by the Paul’s elderly mother:

It is not disguising to use pit latrine since it does not expose the feaces: While using the ventilated improved pit latrine, feaces enter straight into the pit unlike other types of toilets especially flash toilet where water has to first be flashed in order for the feaces to disappear. Most elderly persons don’t want to see feaces including their own, and this is always very common with flash toilets.

(c) What other advice would you give him about the location, design and construction of the latrine?

First and foremost, Paul’s latrine has to be 6-10 meters from home and downwind from the houses. This will avoid the smell to be blown away from home

Secondly, I advice Paul not to build his latrine near the well his family uses. But if his has limited land, then it should be 15 meters away from the water source and the pit should not be less than 2 meters above the water level. This will avoid human wastes from his larine from contaminating the water source.

He has to construct the diversion ditches to avoid water running towards the latrine. He should construct the latrine on the mound so that instead of water running into the pit, it runs away from the pit.

The pit should have a diameter of one meter and not above, because the more meters may lead to collapsing of the pit

The latrine should have a strong and a well build superstructure to give maximum privacy to the users

The floor and the slab should be kept clean, and he should put there the pipe to

The latrine has to be safe for use, and that means that the floor should be made strong and cemented if affordable.

Hand washing facilities should be availed near the latrine, and soap should be available throughout.

The squat hole has to be fitted with the lid so that the excreta is not easily accessible by the flies.

2. Nancy is a laboratory technician. She is analyzing 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.

Effluent is another term of wastewater that flow from any source.

Physical characteristics of the effluent are always assessed by measuring the amount of solid, the level of temperature and the amount of Odour it has.

Under Solid (physical characteristics), as effluent flows from the source through the pipe, up to when it is discharged into the river, it may carry along some solid particles. This solid may be settleable solids or suspended solids. Here settleable solids settle down at the bottom of the pipe, while suspended solids will always float as they flow through the pipe.

Therefore, Worknesh can measure the solids content by using filtering paper and weighing the solid in the given volume of water. To measure this, the filter paper is first weighed and its mass is established and recorded; then the measured volume of water is poured through the paper, and left to dry, which will be weighed again. The different in the mass of the filter paper and after pouring water is the weight of the solids. This is expressed in milligrams, (That is milligrams of solid matter per Littre of water).

Secondly Worknesh can measure the physically characteristic of wastewater by using theomether to ascertain the temperature of the effluent. The effluent is always considered to be warmer than the normal ambient temperature, since it is always generated from different sources, like showering and industrial processes. When the temperature is established, it is always recorded in degree Celsius.

(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?

Biochemical oxygen demand is the measure of quantity of oxygen used by microorganisms in the oxidation of organic matter. The test is usually done in the laboratory and it involves measuring the amount of oxygen required to degrade the organic substances in the wastewater. The process usually takes over a period of five days as the organic matters breakdown. The result of the amount of oxygen used in decomposing the organic matter is always recorded in milligrams per littre.

The higher Biochemical oxygen demand result the more rapidly oxygen is likely to deplete in the river. And the impact is that other living organisms in the river will be deprived of dissolved oxygen, since there are a lot of organic matters in the wastewater that demand / consume the dissolved oxygen as they break down.

The sources of these organic matters in the wastewater include woody debris, leaves, dead plants and animals, animal manure, wastes from papers mills, treatment plant, food processing and other industrial processes.

Oxygen consumed in the decomposition process robs other aquatic organisms of the oxygen they need to live.

The organisms which are more tolerant to low level of oxygen will always replace the diversity of natural water systems that contain bacteria, (aerobic) that need high level of oxygen to survive on.

When the oxygen level of concentration drops below 5 parts per million, precious creatures like fish that live in waters will deplete so fast, since they need oxygen for their survival

3. 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.

Rapid assessment is the process of collecting information for households and institutions to get a quick overview of the situation in urban community.

The assessment is always carried out effectively with a well mixed team of environment health officers, extension health workers, urban health supervisor and other personals among others.

The report is always submitted or shared with the organization that commissioned the assessment and other organization that may be interested in implementing other projects related to sanitation.

Below are the purposes of rapid assessment

The assessment is the only source of information about the state of sanitation and waste management in a particular urban community. Having, a fact, on the state of urban sanitation and waste, helps the community leaders and politicians on the appropriate measures to reduce the risks and also to improve on the situation of the community.

The assessment helps the community leaders in monitoring the how the community is adopting to the set rules and bylaws in regards to sanitation. This is only possible when there is clear information about the whole sanitation situation within the community. In Uganda, the municipal authority uses the assessment report to determine the appropriate fines/ penalty in case a group is found to be deliberately failing to maintain their area clean. The report is also used to find solutions if a group of people are found to be at greatest risks of contracting the diseases associated with poor sanitation.

The baseline rapid assessment is used to get key areas that need project intervention. It is always recommended that all water sanitation and hygiene actors use well laid procedures before their interventions; one of such procedures is to carry out baseline assessment. This helps in informing them about the resources and time needed to intervene.

The baseline assessment helps the responders about the time and the critical and immediate live-saving needs. The decisions can therefore be made based on the number of people, where they are, the available resources and finally what other resources do they need.

Rapid assessment is also conducted to establish the emergency situation. It is only through the assessment that health facilities can plan for emergencies such as mass movement of people to a refugee camp. In Uganda, International organization of migration carried out the assessments in Adjumani and other places where many refugees from South Sudan settled. Mass influx of such people puts a lot of pressure on the host community.

Rapid assessment can also be used to establish the presence of potential hazards in the community.

Rapid assessment is also very important in predicting likely scenarios. During the assessment, some sections of the community may be found to likely to suffer from some calamities in the near future. And when such are already foreseen, resources can be planned in advance to cater or mitigate such events.

And these are some of the components of the Rapid assessment report

The first component is where/ whom the report is addressed: As noted above, the assessment report is always shared with organization and other agencies, therefore the report must bring out this clearly for better response.

The executive summary is another key component of rapid assessment report. Any report must give first impression to the reader and in this case the organization that might be interested in intervening in areas assessed. This is only possible by bring in clearly the summarized information as executive summary

Another component is the general objective and other specific objectives. Rapid assessment is always carried out for a strong reasons and this is always well indicated in the report as the general objective and broken down further is specific objectives. These are the reasons why the assessment was carried out, which eventually helps in coming out with the root causes and possible recommendations.

The above go in hand with the possible research questions that were used to gather the information. These questions are always generated prior to the assessment. But it is always information to indicate these questions since they guide the readers and in this case the interested organization. Any report must bring out these questions quite clearly.

Methods used, the sample population, the areas where the assessment was conducted are a key component of this report. All these help in the project intervention.

Another component is the findings. The rapid assessment always presents these findings after thorough analysis, in graphs, statistics, numerical to the funders or organization. These findings always lead to conclusion and recommendations.

Finally the report has got conclusion and recommendation component. These are the basis of project intervention of further assessment.

Additionally, the report has got the reference component where other information can be obtained and utilized.

4. Explain five ways in which urbanization creates challenges for effective sanitation and solid waste management.

Urbanization is the population shift from rural area to urban areas.

Sanitation means prevention of humans from getting into contact with all forms of wastes, by providing facilities and services for proper treatment and disposal of such wastes produced from homes, public buildings and institutions.

Waste management is the collection, treatment and disposal of wastes produced at homes, public places, workplaces and other institutions.

Therefore, unplanned rural urban movement greatly affects the provision of effective sanitation and waste management in urban areas as seen below;

Limited access to waste sites by the municipal vacuum trucks containers: In Uganda, many urban centers are not surveyed and planned well, and hence when people come from rural areas they only, acquire land and settle without the approval from town council, or municipal authority. Some households settle on the road reserves, near dumping sites or communal dumping containers; and all these make it hard for municipal authority to reach and collect the hug generated wastes. Sometimes these wastes take months without being removed, especially during raining season due to poor road network within the households, making the municipal communal containers to overflowing and filling the entire community.

Excessive administrative costs in service provision, regards to sanitation and waste management facilities and services. In Uganda, most urban areas keep receiving new people day and night, without the attention of the urban official. This has always pilled hug costs beyond the annual budget. The municipal authorities are shouldering extra costs of providing dustbins, recruitment of more sanitation community sanitation promoters. The only challenge is that this affects the standard of sanitation facilities structures and services contrary to what was planned. In some towns, private companies have been contracted to play the role of sanitation and waste management, but this to some extent is also failing since the users are not willing to pay some fees for waste collection. Many households have been seen pilling wastes near their houses for weeks without immediate disposal. And many end up dumping in drainage channels, rivers around these towns; this has always caused flooding, which affect the quality of drinking water, hence diseases such as cholera, typhoid are unavoidable. Malaria outbreaks are so rampant since there are lots of water loggings around homestead, as a result of indisposed wastes.

Lack of space, construct and place latrines, communal containers, and landfill. Still in Uganda, due to rampant corruption and prior urban planning, most people managed to encroach on public lands that could have been used for the construction of drainage challenges, sewerage, and landfills or used for dumping the waste. At the household level, most poor urban dwellers cannot afford to buy big piece of land for setting up an improved sanitation facilities, and therefore when the first dug latrines are full, many households end up remaining with now or limited space for constructing new one. This has to some extend forced many families to practice open defecation, or defecating in polyethylene bags and later on in the night, throwing them in the drainage channels or in an open areas; causing hazardous conditions.

Urbanization causes flooding: In Uganda, 90% of big urban areas have concrete that don’t absorb water whenever it rains; the running waters always wash all the chemicals, wastes into the drinking water, streams, and rivers. Sometimes, floods breakdown building, latrine and drainage systems, hence causing water emergency situation. When floods break roads, it becomes hard to reach garbage collection sites. This has always affected the annual waste management budget, since the urban authority has to pass out some supplementary budget to cater for such emergencies.

Urbanization comes with increment in the costs living. Not all people who come to urban areas can afford to rent a room or build a house, and this has always forced some section of people especially helpless children to sleep and defecate along corridors. Some families do not have capacity to dig a pit latrine; some can’t even afford to pay the sanitation users fees. And at the end, most of them defecate and urinate in buckets, and these are always dumped along the sewerage channels. All these unrecommended disposals end up blocking the drainage channels, becoming very expensive for the urban water sanitation and hygiene department to empty or clear up the mess.

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

Sanitation is the process of providing facilities and services that safely dispose of human wastes and maintain public health; such include providing and using facilities like toilets and latrines, cleaning water sources and safe disposal of garbage.

Sanitation and waste management is a global concern therefore good sanitation and waste management practices are the fundamental to good health, education, economic and social conditions and the Environment as noted below.

a) Health

Good sanitation and waste management have direct link to human health because they can prevent the spread of dangerous diseases. At the global context, diseases such as diarrhea, cholera, typhoid, parasitic diseases, malaria, skin and eye diseases pneumonia etc are caused by poor sanitation and waste management.

Therefore sanitary conditions such as proper toilets facilities, clean running water, and garbage storage and transportation facilities are key in preventing incidences of such diseases.

In the health facilities, safe disposal of human wastes and other used equipments helps a lot in preventing other patients, staff and visitors from contracting other diseases, especially tuberculosis. It has also been confirmed that people especially women and young girls who don’t have latrines, are at the highest risk of getting sexually harassed by hunters or cattle keepers and other untrusted men, as these women go to defecate in the bush. There is possibility of such women contracting other infections such as HIV/ AIDs form these rapists.

b) Education

Good sanitation and waste management directly contribute to educational performance of a child and a school at large. Schools that provide child-friendly private and separate toilets for girls and boys, clean water sources attract and retain higher percentage of attendance. But where such facilities are not available, children, especially girls dropout after reaching puberty stage. Further still poor sanitation and waste management are the causes of diseases such as diarrhea, typhoid, parasitic worms that affect and retard a child performance; a child that keeps suffering from such diseases become malnourished since the body can absorb food nutrients and when and it takes long without medical attention, such a child becomes mentally retarded.

c) Economic conditions

Any community with good sanitation and waste management always is healthy and the healthy community always produces health workforce that is always productive. According to Unicef, if everyone in the world had access to basic water and sanitation facilities, the drop in diarrheal disease would save the health sector $11.6 billion and the economy would gain more than $5.6 billion productive days per year. According to the United Nations, improving sanitation therefore could yield $9 worth of benefits for every $1 spent in improvements.

d) The environment

Sanitation plays an important part in protecting the environment and promoting sustainability.

Good sanitation and waste management always include proper disposal of all human wastes; and literally when rubbish and other excreta are well disposed, the environment will definitely look nice and healthy. Further still industrial waste are well treated before being disposed in water, rivers, lakes which are part of environment will always be healthy. Water pollution is a major cause of the depletion of other aquatic living things in rivers, swamps, lakes etc.

Air pollution is a major cause of other respiratory infection and cancerous diseases. Therefore, when industrialists are properly managing their industrial wastes there will be no air pollution which means the environment is healthy.

According to the United Nations, reusing human waste through ecological sanitation can produce fertilizers which can be used in agriculture and this means that there is no underground water pollution. When the municipal authority perfectly built the landfill, there will always be not spillage or leakages of other wastes into the underground water, hence protecting the environment.

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