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1. Describe an ideal way of ensuring that hand washing is a culture and not a belief
2. In your own view, what should be done to communities who use one source of water for various purposes i.e. drinking, bathing, washing clothes and utensils, swimming and livestock use
3. There are communities who do not belief in fathers sharing sanitation facilities with their daughters, how would you handle a situation like this if you are a volunteer promoting digging of latrines in such a community
4. Explain how you will come up with a system for disposal of sanitary towels in rural and remote villages where it is even a taboo to use sanitary towels
5. Explain the main objectives of an efficient operation and maintenance of water supply system
6. In remote and rural villages, how would you design and make sure that the inhabitants have an efficient operation and maintenance of water supply system
7. What are the duties of the municipal/county government in ensuring an efficient operation and maintenance of water supply system
8. Community management of operation and maintenance of water supply system has been termed as efficient for rural projects. Do you agree with the statement? Explain your answer
9. Explain the difference between an eosin latrine and a standard pit latrine.
10. What are the potential risks posed to the environment in using dry pit latrines?
11. List the materials you would need to make a simple device for hand washing
12. Explain how you will ensure that a latrine is user friendly to those who are disabled?

**Answers to question one.**

Hand washing, also known as hand hygiene, is the act of cleaning hands for the purpose of removing soil, dirt, and microorganisms. If water and soap is not available, hands can be cleaned with ash instead. Medical hand hygiene refers to hygiene practices related to medical procedures.

This aims to increase awareness and understanding about the importance of washing your hands with soap as something that’s an easy, effective, and affordable way to prevent diseases and save lives.

Everyone can protect themselves, their families, and their communities through handwashing with soap and clean running water. It requires few resources - just soap and a small amount of water - yet the benefits are huge.   
  
"Ensuring that the public knows about the role of handwashing in preventing infections and viruses are only part of the battle. The real challenge comes in ensuring that the behavior is practiced at critical times, and for this to happen, people must not just get into the habit of washing their hands; they must have universal, convenient access to functional handwashing stations with soap and running water, whether in hospitals, in schools or in the home

Handwashing with soap improves health and saves lives by preventing infections. Many infections start when hands are contaminated with disease-causing bacteria and viruses. This can happen after using the toilet, changing a child’s diaper, coughing, sneezing, touching other people’s hands, and touching other contaminated surfaces.

Germs that can cause illnesses are present in the dirt, grease, and the natural oils on your hands. Water alone doesn’t remove these germs effectively, but the use of soap as well helps break down germ-carrying materials on your hands. Soap also facilitates rubbing and friction which can remove germs form your hands, and can then be rinsed away with water.

Every person must practice and adopt hand washing as a culture before Eating or feeding children, Applying contact lenses, Giving medication or first aid and after Using the toilet or changing a child’s nappy, Handling pets and domestic animals, Contact with blood or body fluids, Coughing, sneezing, or blowing and scratching the nose,

Contact with a potentially contaminated site and whenever the hands are dirty.

It is important to let the hands dry by themselves instead of using a piece of cloth to  
wipe them dry which might be contaminated rendering the hands dirty than even the way they were before.

**Answers to question two**

The use of one source of water for various purposes is very dangerous that it acts as a potential source of disease causing germs especially where the same source of water is used for drinking, cooking, bathing and animal drinking site in most cases the rivers, streams and wells.

There is need for improved sanitation facilities in the rural areas for people to access water from the boreholes wells and spring. It is therefore the responsibility of the community leaders and role models to sensitize the public on how to manage water and the keep sanitation services to the international standards.

Proper waste disposal systems should be in place in market areas and community meeting places so that they don’t become as sources of diseases and water catchment areas be protected from animals. The community should be trained to adopt with modern way of sanitation.

The community should ensure that they have access to clean drinking and cooking water. Both Drinking and cooking water should be boiled to 100 Degrees Celsius or chlorinated to render it safe for from disease causing germs and food should be well cooked before being eaten.

Taking baths from the water points/ water sources should be stopped. Bathing is a routine aspect for all human beings especially children who are exposed to dirt almost every time. This must be done with clean water, soap and clean clothes be put on after taking bath. Biologically the skin of the body organ for excreting wastes from the pores and there is need to clean it well.

Garbage disposal, There is a bigger issue garbage disposal in rural areas where the communities do not have trash bins/dust bins for collecting the wastes from remains of food and also the disposal of polythene paper bags which are not environmentally friendly and harmful to life stock hence leading to increased animal death and environmental pollution. The rural communities should be sensitized on better methods of garbage disposal.

It should be a personal responsibility of the rural community to sort out garbage,  
whatever that is bio gradable should be used as manure in the farms and whatever  
that is not should be gathered together from collection points where local  
governments collect it from for purposes of managing it and converting it to other  
products. There are issues like burying animals that have died which is a  
responsibility that each and every citizen of a local community should take as a  
challenge.

Finally it’s very important that human fiscal matter be disposed in latrines and this can take different forms depending on the economic status of the community at house hold level examples of these forms include piped sewer system, septic tank, pit latrine or a decomposing toilet. At least each household and institution should have access to one. Sensitization should be done at the community level to educate the people about the importance of using and keeping latrines clean to avoid the high risk of contracting pathogens that may cause disease thus minimizing dearth rates.

**Answers to question three.**

**The use of latrine is a very important aspect in maintaining proper sanitation and improving the health of the public and the households/Families however certain customs prohibit the sharing of toilets facilities for example a father may not want to share a toilet with his grown up girls, I would advise the community be sensitized on the fact sharing a toilet with children is not a taboo and cannot change a person’s gender for that reason one pit latrine can save the entire family.**

**On the other hand, if the community members are rigid to adapt to changes, the same latrine can be constructed in two separate rooms according to the gender as per their customs however there is need to carry out heavy sensitization to eradicate such customs in the community.**

**The government should also come in to subsidize in construction or building up of toilets and latrines and there is need to examine the** various cultural and behavioral aspects that constrain latrine adoption and how to sensitize the communities on adoption of this noble facility.

**Answers to question four.**

**Disposing in the open:** The disposal of sanitary napkins depends on the location where women  
are disposing soiled napkins. Often their behavior differs when they are not at home; women tend to leave the soiled napkins unwrapped in the corners or they throw the used pad in dustbins  
without wrapping them.  
**Disposing in the dustbin/garbage**: when at home urban women dispose their napkins in the garbage;  
most of the times they wrap it and throw it but when not at home there is a tendency of throwing the pad  
without wrapping it, in the dustbin.  
 **Burying the menstrual waste in a pit**: Most rural women bury the menstrual waste in a pit; many would wash the used napkins and then bury the same in a pit. In a pilot study of around 1000 women in West Bengal it was discovered that girls using napkins in school carry the used one’s home and around 78% of the women interviewed would bury them or dispose them alongside ponds.  
**Burning the menstrual waste:** in the above mentioned study only 2% women burn the soiled napkins.  
The burning of used pads is prevalent in rural areas than in urban areas as women have to take care of the final disposal of pads there; whereas in urban areas women forget about the consequences of disposal after they have thrown it in the dustbin.  
**Using incinerators or special disposal dustbins**: Many institutions and schools have started using  
incinerators or ‘feminine hygiene bins’ for proper disposal of napkins. These incinerators are a sigh of relief for the school going girls and working women.

**Flushing the soiled napkins:** as mentioned before the disposal habit changes according to the  
place; in public places, depending on the toilet type; for example when women are using flush  
toilets they try to flush the soiled napkins and if it doesn’t get flushed they may wrap it and  
throw it in the dustbins. Things in this context might be changing now but because of lack of  
information on disposal facilities women even today flush used napkins in the toilet.

**Question Five**

The objective of an efficient operation and maintenance of a water supply system is to provide safe drinking water as per designed quality and quantity, with adequate pressure at convenient location and time at competitive cost on a sustainable basis

Operation refers to timely and daily operation of the components of a Water Supply system such as headwork’s, treatment plant, machinery and equipment, conveying mains, service reservoirs and distribution system etc., effectively by various technical personnel, as a routine function.

Maintenance is defined as the act of keeping the structures, plants, machinery and equipment and other facilities in an optimum working order. Maintenance includes preventive /routine maintenance and also breakdown maintenance. However, replacements, correction of defects etc. are considered as actions excluded from preventive maintenance.

**Answers to question six.**

In remote and rural villages, how would you design and make sure that the inhabitants have an efficient operation and maintenance of water supply system. Water can be produced from different sources by various technical means and supplies can be delivered to the consumers in different ways depending on the adopted technique aimed at delivering adequate quantities of water to the consumers.

Decisions on the level of service to be provided - how, where and in what quantities water will be delivered to users - are crucial in the planning of any water supply project. System design options are:  
• **Single Point** systems, which usually consist of dug wells or small-diameter drilled wells from which water is drawn using a hand pump.  
• **Standpipes**: piped distribution systems which feed a limited number of public taps, each of which serves all households - and other users - in the vicinity.  
• **Household Connections**: piped systems which deliver water to taps in individual household compounds or homes. Piped systems are fed by gravity-flow directly from the source (e.g. a mountain spring) or from an elevated tank into which water is pumped from, for example, a deep bore well.  
Treatment of the supplies, where necessary, is possible in intermediate storage tanks.  
Public water points, whether open wells, hand pumps or standpipes, must always be provided with solid, watertight platforms (aprons) from which waste water is drained away. These can also be supplemented with laundry, bathing and other facilities, including troughs for watering animals and collection systems for watering small vegetable gardens.

Piped systems, especially with household connections, provide greater convenience and are thus preferred by people in most communities. Increased convenience always results in increased consumption/usage, which in itself can be expected to have an impact on health status and yield other benefits. Consumption increases of up to 500 percent have been recorded following the introduction of yard taps.  
Whether the extra cost of pumping, elevated tanks and yard taps can be justified depends on the natural or external resources available for large-scale coverage and the capacity and willingness of users and communities to pay the much higher operating costs of motor pumping.  
**Constraints and choices**the idea of making large quantities of safe water readily accessible to all households is not often easily realizable in many situations. It can be attributed to;

* The resources of safe water available in the area are limited, situated at some distance and/or difficult to access;
* Financial resources are limited, and insufficient to meet the high costs of extensive pipe-work and pumping;
* The technical expertise - the trained workforce and institutional capacity - required to design, establish and operate extensive pumping and piped systems may also be lacking.

The existence of adequate water resources in the locality is, of course, an essential prerequisite. Some programmes have, however, spent much time and money drilling without locating any worthwhile quantities of groundwater. This unproductive effort is not only costly but discouraging for the communities; it can be reduced by proper surveys. Elsewhere, in the Sahel and Bangladesh for example, the level of the groundwater table has fallen considerably since the rates of drilling and pumping, especially of larger wells with power pumps for irrigation or industry, have increased. In consequence, many existing village wells run the risk of drying up. The required water resources legislation and management may be difficult to institute. Deeper set hand pumps are often the only solution.  
The need for good survey data and careful exploration before major drilling activities are undertaken is obvious. Careful and continuous monitoring of the condition of groundwater reserves and control of pumping, where necessary, are no less important.

The limitation on funds available is an obvious major constraint. Where programmers have been planned to provide high levels of service, the number of communities covered has often been small and high proportions of the total population have remained without any reasonable access to safe supplies.  
As a general rule, piped systems are more costly to establish and maintain than single point systems. However, there are situations where standpipe systems are the most economical alternative. Most commonly this occurs in areas with high population densities, such as poor urban areas. There are also cases where communities are willing and able to pay the increased cost for the added convenience of standpipes or yard taps. Finally, in some areas in which point sources are not feasible for technical reasons (usually the absence, or the chemical contamination of groundwater) piped systems are a necessity.

Notwithstanding such instances, sturdy and reliable hand pumps installed in small diameter wells are probably the main way in which water can be provided, at a reasonable cost, close to the homes of the majority of rural people who are presently lacking adequate, safe water supplies.

**Answers to question seven**

The Responsibilities of the Municipal or local government in ensuring efficient operation and maintenance of water supply system are as below.

Prescription of certain sub-ordinate legislation that regulates water services institutions. The local government may prescribes compulsory national standards relating to water services, norms and standards for tariffs, matters to be regulated by a contract between a water services authority and a water services provider, compulsory national standards relating to the provision of water services, the quality of water taken from or discharged into any water services or water resource system; the effective and sustainable use of water resources for water services; the nature, operation, sustainability, operational efficiency and economic viability of water services; requirements for persons who install and operate water services works; and the construction and functioning of water services works and consumer installations. Every water services institution must comply with the standards prescribed by the government.

Norms and Standards for Tariffs the Minister may, with the concurrence of the Minister of Finance, from time to time prescribe norms and standards in respect of tariffs for water services. These norms and standards may differentiate on an equitable basis between:

* different users of water services;
* different types of water services;
* and different geographic areas, taking into account, among other factors, the socio-economic and physical attributes of each area; place limitations on surplus or profit;
* Place limitations on the use of income generated by the recovery of charges; provide for tariffs to be used to promote or achieve water conservation. No water services institution may use a tariff which is substantially different from any norms and standards prescribed by the Minister

Matters which must be regulated by a contract between a water services provider and a water services authority; compulsory provisions to be included in such a contract; and requirements for a joint venture between a water services authority and a water services institution.

The purpose of these regulations is to ensure that water services are provided on an efficient, equitable, cost-effective and sustainable basis; the terms of the contract are fair and equitable to the water services authority, the water services provider and the consumer; and compliance with the Water Services Act. Regulations governing contracts between water services authorities and water services providers have been promulgated.

Monitoring and Intervention The Government and any relevant Province must monitor the performance of every water services institution If a water services authority has not effectively performed any function imposed on it under the Water Services Act, the Minister may, in consultation with Minister of Provincial and Local Government, request the relevant Province to intervene as per the water service Act.

National Information System the municipal must ensure that there is a national information system on water services. One of the purposes of this system is to provide information to water services institutions, consumers and the public to enable them to monitor the performance of water services institutions.

**Answers to question eight.**

Generally, water and sanitation projects experience their most serious problems with operation and maintenance and with cost recovery aspects. Hundreds of projects around the world demonstrate how the newly built infrastructure deteriorates after the project’s termination. Therefore, it is imperative to plan for operation and maintenance, with a planned withdrawal of external support as local ownership builds.

Community Operation &Maintenance at the grass root level ensure that the project sustainability for a long-term

Building on existing local knowledge and management capacities that prevent the systems to collapse creating environmental and health hazards

All social groups feel concerned and can participate freely for the benefits of the entire community in the operation and management process thus ensuring sustainability of the project. Some of the importance’s of community operation and management of water sources are as follows.

* Addressing the true needs of community members based on their activities
* Solutions acceptable to community members
* Solutions adapted to community capacities
* Increased community commitment to improve the situation
* Better understanding of the causes and effects of problems
* Empowering the community and reducing dependency
* Increased sense of ownership and responsibility
* Increased self-consciousness and confidence in own capacities
* Direct interest to have a system well maintained
* Possible improvement of willingness to pay
* Reduced overall and government costs
* Improved reliability and sustainability of systems

**Answers to question nine.**

**Ecosin latrine is an approach to human waste management and disposal unlike standard latrine aims at human fecal disposal only.**

**In Eosin latrine, Human excreta are considered to be a resource not wastes making and transforming it into an end product that can be used as a soil improver and fertilizer for agriculture. Whereas a standard Pit latrine is only for the disposal of human waste without any re-use.**

With the use of ecosin latrine, the use of artificial fertilizers used in the cultivation of fields is reduced hence saving money for the famers.

**Answers to question ten.**

There may be a foul odour from the pit and they can be a favorable place for the breeding of flies and mosquitoes.

With single pits, a new pit needs to be dug every time one gets full.

They can be susceptible to failure/overflowing during floods.

If the superstructure is not properly constructed, it may discourage use of the latrine by family members. Children may be discouraged from using the latrine if the slab is not designed with them in mind and is too big for them.

Use of excess water or less compostable materials for anal cleansing should be avoided because it may affect the decomposition rate of human excreta.

**Answers to question eleven.**

The following are the materials to be used for the used for making simple dives for washing hands.

* A pair of two meters forked sticks
* A pair of one meter straight sticks
* Digging tools like hoe and spade.
* String/Rope
* Soap/detergent
* Nails
* Gravel and water container.

**Answers to question twelve.**

Provide a screen or separate screened area outside the tent, so that the disabled person can have some privacy.

Commode chairs with wheels would be easier to man oeuvre (but would need locking mechanisms).

The chair and pan should have handles for easy use.

The pot should be sufficiently deep to prevent it over filling and preventing splash back. The commode chair should be strong and not too slippery, so that the user can sit on it easily.

Ask people who have disabilities and their careers, what facilities they need or would prefer.

Consider the provision of individual facilities such as bed pans, commode chairs, or individual latrine units, or consider designing in disabled units into blocks of latrines in camp settings.

The provision of easy access to water near to the latrine will also be helpful for a person who has difficulty with mobility.

Privacy and security are important for all people when using latrines or bathing. This is particularly important for women. Providing equipment and assistive

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