**BUZU ALEX ANDREA KUSSANI**

**Telephone:** +211925687841, +211916267082 **Email:** [**buzualex09@gmail.com**](mailto:buzualex09@gmail.com)

**AFRICA INSTITUTE FOR PROJECT MANAGEMENT STUDIES, Nairobi Kenya**

**Course:** Diploma in Public Health

**ASSIGNMENT 2**

1. Why is hand washing an essential aspect in WASH interventions?
2. What are the main standards in WASH interventions in emergencies?
3. Waste Management is becoming one problem in the emergencies. Why?
4. Discuss how environmental health and sanitation affect the nutritional status of the vulnerable groups.
5. Assuming you have been appointed to head an organization dealing with health development in your area, describe the critical factors that you will consider in planning

for health service in that area.

1. Why is hand washing an essential aspect in WASH interventions?

“**WASH**” stands for Water, Sanitation and hygiene while “intervention” is using data to demonstrate its effectiveness by grounding a health behavioral theory or ecological model of health. However, the following are reasons why WASH interventions are important as outlined and discussed below: -

Why Wash Your Hands?

Keeping hands clean is one of the most important steps we can take to avoid getting sick and spreading germs to others. Many diseases and conditions are spread by not washing hands with soap, ash and clean running water.

**How germs get onto hands and make people sick**

Feces (poop) from people or animals is an important source of germs like Salmonella, E. coli O157, and norovirus that cause diarrhea, and it can spread some respiratory infections like adenovirus and hand-foot-mouth disease. These kinds of germs can get onto hands after people use the toilet or change a diaper, but also in less obvious ways, like after handling raw meats that have invisible amounts of animal poop on them. A single gram of human feces—which is about the weight of a paper clip—can contain one trillion germs 1. Germs can also get onto hands if people touch any object that has germs on it because someone coughed or sneezed on it or was touched by some other contaminated object. When these germs get onto hands and are not washed off, they can be passed from person to person and make people sick.

Washing hands prevents illnesses and spread of infections to others

Handwashing with soap removes germs from hands. This helps prevent infections because:

People frequently touch their eyes, nose, and mouth without even realizing it. Germs can get into the body through the eyes, nose and mouth and make us sick.

Germs from unwashed hands can get into foods and drinks while people prepare or consume them. Germs can multiply in some types of foods or drinks, under certain conditions, and make people sick.

Germs from unwashed hands can be transferred to other objects, like handrails, table tops, or toys, and then transferred to another person’s hands.

Removing germs through handwashing therefore helps prevent diarrhea and respiratory infections and may even help prevent skin and eye infections.

Teaching people about handwashing helps them and their communities stay healthy. Handwashing education in the community:

Reduces the number of people who get sick with diarrhea by 23-40%.

Reduces diarrheal illness in people with weakened immune systems by 58%.

Reduces respiratory illnesses, like colds, in the general population by 16-21%

Reduces absenteeism due to gastrointestinal illness in schoolchildren by 29-57%

Not washing hands harms children around the world

About 1.8 million children under the age of 5 die each year from diarrheal diseases and pneumonia, the top two killers of young children around the world.

Handwashing with soap could protect about 1 out of every 3 young children who get sick with diarrhea 2, 3 and almost 1 out of 5 young children with respiratory infections like pneumonia.

Although people around the world clean their hands with water, very few use soaps to wash their hands. Washing hands with soap removes germs much more effectively.

Handwashing education and access to soap in schools can help improve attendance.

Good handwashing early in life may help improve child development in some settings.

Estimated global rates of handwashing after using the toilet are only 19%.

Handwashing helps battle the rise in antibiotic resistance

Preventing sickness reduces the amount of antibiotics people use and the likelihood that antibiotic resistance will develop. Handwashing can prevent about 30% of diarrhea-related sicknesses and about 20% of respiratory infections (e.g., colds). Antibiotics often are prescribed unnecessarily for these health issues.

Reducing the number of these infections by washing hands frequently helps prevent the overuse of antibiotics—the single most important factor leading to antibiotic resistance around the world. Handwashing can also prevent people from getting sick with germs that are already resistant to antibiotics and that can be difficult to treat.

Water and sanitation are critical determinants for survival in the initial stages of a disaster. People affected by disasters are generally much more susceptible to illness and death from disease, which are related to a large extent to inadequate sanitation, inadequate water supplies and poor hygiene. The most significant of these diseases are diarrheal diseases and infectious diseases transmitted by the faeco-oral route. Other water- and sanitation-related diseases include those carried by vectors associated with solid waste and water.

The importance of water supply and sanitation programme in disasters is to reduce the transmission of faeco-oral diseases and exposure to disease-bearing vectors through the promotion of good hygiene practices, the provision of safe drinking water and the reduction of environmental health risks and by establishing the conditions that allow people to live with good health, dignity, comfort and security. The term ‘sanitation’, throughout Sphere, refers **to excreta disposal, vector control, solid waste disposal and drainage.**

Simply providing sufficient water and sanitation facilities will not, on its own, ensure their optimal use or impact on public health. To achieve the maximum benefit from a response, it is imperative to ensure that disaster-affected people have the necessary information, knowledge and understanding to prevent water- and sanitation-related disease, and to mobilize their involvement in the design and maintenance of those facilities. In most disaster situations the responsibility for collecting water falls to women and children. When using communal water and sanitation facilities, for example in refugee or displaced situations, women and adolescent girls can be vulnerable to sexual violence or exploitation.

**Conclusion:**

To minimize these risks, and to ensure a better quality of response, it is important to encourage women’s participation in water supply and sanitation programmes wherever possible. An equitable participation of women and men in planning, decision-making and local management will help to ensure that the entire affected population has safe and easy access to water supply and sanitation services, and that services are equitable and appropriate.

1. **What are the main standards in WASH interventions in emergencies?**

The minimum standards are qualitative in nature and specify the minimum levels to be attained in the provision of water and sanitation responses. The Minimum Standards in Water, Sanitation and Hygiene Promotion are a practical expression of the principles and rights embodied in the Humanitarian Charter. The Humanitarian Charter is concerned with the most basic requirements for sustaining the lives and dignity of those affected by calamity or conflict, as reflected in the body of international human rights, humanitarian and refugee law. WASH interventions are categorized into ***hygiene promotion, water supply, excreta disposal, vector control, solid waste management and drainage*** as outlined with their different minimum standards below:

1. **Hygiene promotion** according to International Medical Corps, Hygiene is a systematic attempt to adequately promote personal, domestic, environmental and food hygiene practices that prevent or mitigate the transmission of diseases. However, the following are the minimum standards when offering health promotion in emergency intervention:

**Program design and implementation:**

All facilities and resources provided reflect the vulnerabilities, needs and preferences of the affected population. Users are involved in the management and maintenance of hygiene facilities where appropriate.

**Key indicators:**

* Key hygiene risks of public health importance are identified includes an effective mechanism for representative and participatory input from all users, including in the initial design facilities within the population to have equitable access to the resources or facilities needed to continue or achieve the hygiene promotion best practices.
* Hygiene promotion messages and activities address key behaviors and misconceptions and are targeted for all user groups. Representatives from these groups participate in planning, training, implementation, monitoring and evaluation for participation standards.
* Hygiene promoters take responsibility for the management and maintenance of facilities as appropriate, and different groups contribute equitably

**Guidance notes**

1. **Assessing needs**: an assessment is needed to identify the key hygiene behaviours to addressed and the likely success of promotional activity. The key risks are likely to centre on excreta disposal, the use and maintenance of toilets, the lack of hand washing with soap or an alternative, the unhygienic collection and storage of water, and unhygienic food storage and preparation. The assessment should look at resources available to the population as well as local behaviours, knowledge in water and sanitation.

Minimum Standards in Water Supply, Sanitation and Hygiene Promotion practices so that messages are relevant and practical. It should pay special attention to the needs of vulnerable groups. If consultation with any group is not possible, this should be clearly stated in the assessment report and addressed as quickly as possible as in the assessment checklist.

**2. Sharing responsibility**: The ultimate responsibility for hygiene practice lies with all members of the affected population. All actors responding to the disaster should work to enable hygienic practice by ensuring that both knowledge and facilities are accessible and should be able to demonstrate that this has been achieved. As a part of this process, vulnerable groups from the affected population should participate in identifying risky practices and conditions and take responsibility to measurably reduce these risks. This can be achieved through promotional activities, training and facilitation of behavioral change, based on activities that are culturally acceptable and do not overburden the beneficiaries.

3**. Reaching all sections of the population**: Hygiene promotion programmes need to be carried out with all groups of the population by facilitators who can access, and have the skills to work with, different groups (for example, in some cultures it is not acceptable for women to speak to unknown men). Materials should be designed so that messages reach members of the population who are illiterate. Participatory materials and methods that are culturally appropriate offer useful opportunities for groups to plan and monitor their own hygiene improvements. As a rough guide, in a camp scenario there should be two hygiene

promoters/community mobilisers per 1,000 members of the target population. For information on hygiene items.

4**. Targeting priority hygiene risks and behaviours**: The objectives of hygiene promotion and communication strategies should be clearly defined and prioritized. The understanding gained through assessing hygiene risks, tasks and responsibilities of different groups should be used to plan and prioritize assistance, so that misconceptions for example, on how HIV/AIDS is transmitted are addressed and information flow between humanitarian actors and the affected population is appropriate and targeted.

5. **Managing facilities:** Where possible, it is good practice to form water and/or sanitation committees, made up of representatives from the various user groups and half of whose members are women. The functions of these committees are to manage the communal facilities such as water points, public toilets and washing areas, be involved in hygiene promotion activities and also act as a mechanism for ensuring representation and promoting sustainability.

**6. Overburdening:** it is important to ensure that no one group is overburdened with the responsibility for hygiene promotional activities or management of facilities and that each group has equitable influence and benefits (such as training). Not all groups, women or men have the same needs and interests and it should be recognized that the participation of women should not lead to men, or other groups within the population, not taking responsibility.

**2. Water Supply:**

Water is essential for life, health and human dignity. In extreme situations, there may not be sufficient water available to meet basics needs, and in these cases supplying a survival level of safe drinking water is of critical importance. In most cases, the main health problems are caused by poor hygiene due to insufficient water. Water supply minimum standards are divided into three categories as seen in detail below: -

1. **Standard 1: Access and water quantity**

People have safe and equitable access to a sufficient quantity of water for drinking, cooking and personal and domestic hygiene. Public water points are sufficiently close to households to enable use of the minimum water requirement.

**Key indicators:**

* Average water uses for drinking, cooking and personal hygiene in any household is at least 15 litres per person per day.
* The maximum distance from any household to the nearest water point is 500 meters.
* Queuing time at a water source is no more than 15 minutes
* It takes no more than three minutes to fill a 20-litre container.
* Water sources and systems are maintained such that appropriate quantities of water are available consistently or on a regular basis**.at San**

**Guidance notes**

**a. *Needs:*** The quantities of water needed for domestic use may vary according to the climate, the sanitation facilities available, people’s normal habits, their religious and cultural practices, the food they cook, the clothes they wear, and so on. Water consumption generally increases the nearer the water source is to the dwelling.

**b. *Water source selection:*** The factors that need to be considered are the availability and sustainability of a sufficient quantity of water; whether water treatment is required and, if so, the feasibility of this; the availability of the time, technology or funding required to develop a source; the proximity

of the source to the affected population; and the existence of any social, political or legal factors concerning the source. Generally, groundwater sources are preferable as they require less treatment, especially gravity-flow supplies from springs, which require no pumping. Disasters often require a combination of approaches and sources in the initial phase. All sources need to be regularly monitored to avoid over-exploitation.

**c. *Measurement:*** Measuring solely the volume of water pumped into the reticulation system or the time a handpump is in operation will not give an accurate indication of individual consumption. Household surveys, Survival needs: water intake (drinking and food) basic hygiene practices, basic cooking needs total basic water needs, 2.5-3 litres per day, 2-6 litres per day, 3-6 litres per day, 7.5-15 litres per day, depends on the

climate and individual, physiology, depends on social and cultural norms depends on food type, social as well as cultural norms.

**Simplified table of basic survival water need:an**

Observation and community discussion groups are a more effective method of collecting data on water use and consumption.

**d. *Quality and quantity:*** in many emergency situations, water-related disease transmission is due as much to insufficient water for personal and domestic hygiene as to contaminated water supplies. Until minimum standards for both quantity and quality are met, the priority should be to provide equitable access to an adequate quantity of water even if it is of intermediate quality, rather than to provide an inadequate quantity of water that meets the minimum quality standard. It should be considered that people living with HIV/AIDS need extra water for drinking and personal hygiene. Attention should be paid to ensuring that the water requirements of livestock and crops are met, especially in drought situations where lives and livelihoods are dependent on these.

**e. *Coverage:*** In the initial phase of a response the priority is to meet the urgent survival needs of all the affected population. People affected by an emergency have a significantly increased vulnerability to disease and therefore the indicators should be reached even if they are higher than the norms of the affected or host population. In such situations it is recommended that agencies plan programmes to raise the levels of water and sanitation facilities of the host population also, to avoid provoking animosity.

**f. *Maximum numbers of people per water source:*** The number of people per source depends on the yield and availability of water at each source. For example, taps often function only at certain times of day and handpumps and wells may not give constant water if there is a low recharge rate. The guidelines are:

These guidelines assume that the water point is accessible for approximately eight hours a day only; if access is greater than this, people can collect more than the 15 litres per day minimum requirement.

* 250 people per tap based on a flow of 7.5 litres/minute
* 500 people per handpump based on a flow of 16.6 l/m
* 400 people per single-user
* open well based on a flow of 12.5 l/m.

**Water supply standard 2: water quality**

Water is palatable, and of sufficient quality to be drunk and used for personal and domestic hygiene without causing significant risk to health.

**Key indicators:**

* A sanitary survey indicates a low risk of faecal contamination.
* There are no faecal coliforms per 100ml at the point of delivery.
* People drink water from a protected or treated source in preference to other readily available water sources. targets must be used with caution, as reaching them does not necessarily guarantee a minimum quantity of water or equitable access.

**g. *Queuing time:*** Excessive queuing times are indicators of insufficient water availability (either due to an inadequate number of water points or inadequate yields of water points). The potential negative results of excessive queuing times are:

1) Reduced per capita water consumption;

2) Increased consumption from unprotected surface sources; and

3) Reduced time for water collectors to tend to other essential survival tasks.

**h. *Access and equity:*** Even if a sufficient quantity of water is available to meet minimum needs, additional measures may be needed to ensure that access is equitable for all groups. Water points should be in areas that are accessible to all regardless of sex or ethnicity. Some handpumps and water carrying containers may need to be designed or adapted for use by people living with HIV/AIDS, older and disabled people and children. In urban situations, it may be necessary to supply water into individual buildings to ensure that toilets continue to function. In situations where water is rationed or pumped at given times, this should be planned in consultation with the users. Times should be set which are convenient and safe for women and others who have responsibility for collecting water, and all users should be fully informed of when and where water is available. For piped water supplies, or for all water supplies at times of risk or presence of diarrhea epidemic, water is treated with a disinfectant so that there is a free chlorine residual at the tap of 0.5mg per litre and turbidity is below 5 NTU. No negative health effect is detected due to short-term use of water contaminated by chemical (including carry-over of treatment chemicals) or radiological sources, and assessment shows no significant probability of such an effect.

**Guidance notes**

**1. *A sanitary survey*** is an assessment of conditions and practices that may constitute a public health risk. The assessment should cover possible sources of contamination to water at the source, in transport and in the home, as well as defecation practices, drainage and solid waste management. Community mapping is a particularly effective way of identifying where the public health risks are and thereby involving the community in finding ways to reduce these risks. Note that while animal excreta are not as harmful as human excreta, it can contain cryptosporidium, giardia, salmonella, campylobacter, caliciviruses and some other common causes of human diarrhea and therefore does present a significant health risk.

**2. *Microbiological water quality:*** Faecal coliform bacteria (>99% of which are *E. coli*) are an indicator of the level of human/animal waste contamination in water and the possibility of the presence of harmful pathogens. If any faecal coliforms are present the water should be treated. However, in the initial phase of a disaster, quantity is more important than quality

**3. *Promotion of protected sources:*** Merely providing protected sources or treated water will have little impact unless people understand the health benefits of this water and therefore use it. People may prefer to use unprotected sources, e.g. rivers, lakes and unprotected wells, for reasons such as taste, proximity and social convenience. In such cases technicians, hygiene promoters and community mobilisers need to

understand the rationale for these preferences so that consideration of them can be included in promotional messages and discussions.

**4. *Post-delivery contamination:*** Water that is safe at the point of delivery can nevertheless present a significant health risk due to re-contamination during collection, storage and drawing. Steps that can be taken to minimize such risk include improved collection and storage practices, distributions of clean and appropriate collection and storage containers, treatment with a residual disinfectant, or treatment at the point of use. Water should be routinely sampled at the point of use to monitor the extent of any post-delivery contamination.

**5. *Water disinfection:*** Water should be treated with a residual disinfectant such as chlorine if there is a significant risk of water source or post-delivery contamination. This risk will be determined by conditions in the community, such as population density, excreta disposal arrangements, hygiene practices and the prevalence of diarrheal disease. The risk assessment should also include qualitative community data regarding factors such as community perceptions of taste and palatability. Piped water supply for any large or concentrated population should be treated with a residual disinfectant and, in the case of a threat or the

existence of a diarrhoea epidemic, all drinking water supplies should be treated, either before distribution or in the home. For water to be disinfected properly, turbidity must be below 5 NTU.

**6. *Chemical and radiological contamination:*** Where hydrogeological records or knowledge of industrial or military activity suggest that water supplies may carry chemical or radiological health risks, those risks should be assessed rapidly by carrying out chemical analysis. A decision that balances short-term public health risks and benefits should then be made. A decision about using possibly contaminated water for longer-term supplies should be made based on a more thorough professional assessment and analysis of the health implications.

**7. *Palatability:*** Although taste is not in itself a direct health problem (e.g. slightly saline water), if the safe water supply does not taste good, users may drink from unsafe sources and put their health at risk. This may also be a risk when chlorinated water is supplied, in which case promotional activities are needed to ensure that only safe supplies are used. **P/**

**8. *Water quality for health centres:*** All water for hospitals, health centres and feeding centres should be treated with chlorine or another residual disinfectant. In situations where water is likely to be rationed by an

interruption of supply, sufficient water storage should be available at the centre to ensure an uninterrupted supply at normal levels of utilization.

**Water supply standard 3: water use facilities and goods**

People have adequate facilities and supplies to collect, store and use sufficient quantities of water for drinking, cooking and personal hygiene, and to ensure that drinking water remains safe until it is consumed.

**Key indicators:**

* Each household has at least two clean water collecting containers of 10-20 litres, plus enough clean water storage containers to ensure there is always water in the household.

Water collection and storage containers have narrow necks and/or covers, or other safe means of storage, drawing and handling, and are demonstrably used.

* There is at least 250g of soap available for personal hygiene per person per month. Where communal bathing facilities are necessary there are sufficient bathing cubicles available with separate cubicles for males and females, and they are used appropriately and equitably
* Where communal laundry facilities are necessary, there is at least one washing basin per 100 people, and private laundering areas are available for women to wash and dry undergarments a sanitary cloth. The participation of all vulnerable groups is actively encouraged in the siting and construction of bathing facilities and/or the production and distribution of soap, and/or the use and promotion of suitable alternatives.

**Guidance notes**

**1. *Water collection and storage:*** People need vessels to collect water, to store it and to use it for washing, cooking and bathing. These vessels should be clean, hygienic and easy to carry and be appropriate to local

needs and habits, in terms of size, shape and design. Children, disabled people, older people and PLWH/A may need smaller or specially designed water carrying containers. The amount of storage capacity required depends on the size of the household and the consistency of water availability e.g. approximately 4 litres per person would be appropriate for situations where there is a constant daily supply. Promotion and monitoring of safe collection, storage and drawing provide an opportunity to discuss water contamination issues with vulnerable groups, especially women and children.

**2. *Communal washing and bathing facilities:*** People may need a space where they can bathe in privacy and dignity. If this is not possible at the household level, central facilities may be needed. Where soap is not available or commonly used, alternatives can be provided such as ash, clean sand, soda or various plants suitable for washing and/or scrubbing. Washing clothes is an essential hygiene activity, particularly for children, and cooking and eating utensils also need washing. The numbers, location, design, safety, appropriateness and convenience of facilities should be decided in consultation with the users, particularly women, adolescent girls and any disabled people. The location of facilities in central, accessible and well-lit areas can contribute to ensuring the safety of users.

**3.ECRETA DISPOSAL**

**Excreta disposal standard 1: access to, and numbers of, toilets**

People should have adequate numbers of toilets, sufficiently close to their dwellings, to allow them rapid, safe and acceptable access always of the day and night.

**Key indicators:**

* A maximum of 20 people uses each toilet.
* Use of toilets is arranged by household(s) and/or segregated by sex.
* Separate toilets for women and men are available in public places (markets, distribution centres, health centres).
* Shared or public toilets are cleaned and maintained in such a way that they are used by all intended users.
* Toilets are no more than 50 metres from dwellings.
* Toilets are used in the most hygienic way and children’s faeces are disposed of immediately and hygienically.

**Guidance notes**

**1. *Safe excreta disposal:*** the aim of a safe excreta disposal programme is to ensure that the environment is free from contamination by human faeces. The more all groups from the disaster-affected population are involved, the more likely the programme is to succeed. In situations where the population has not traditionally used toilets, it may be necessary to conduct a concerted education/promotion campaign to encourage their use and to create a demand for more toilets to be constructed. Disasters in urban areas where the sewerage system is damaged may require solutions such as isolating parts of the system that still work (and re-routing

pipes), installing portable toilets and using septic tanks and containment tanks that can be regularly dislodged.

**2. *Defecation areas:*** In the initial phase of a disaster, before any toilets can be constructed, it may be necessary to mark off an area to be used as a defecation field or for trench latrines. This will only work if the site is correctly managed and maintained.

**3. *Public toilets:*** In some initial disaster situations and in public places where it is necessary to construct toilets for general use, it is very important to establish systems for the proper regular cleaning and maintenance of these facilities. Disaggregated population data should be used to plan the ratio of women’s cubicles to men’s. Where possible, urinals should be provided for men.

**4. *Communal toilets:*** For a displaced population where there are no existing toilets, it is not always possible to provide one toilet per 20 people immediately. In such cases, a figure of 50 people per toilet can be used, decreasing to 20 as soon as possible, and changing the sharing arrangements accordingly. Any communal toilet must have a system in place, developed with the community, to ensure that it is maintained and kept clean. In some circumstances, space limitations make it impossible to meet this figure. In this case, while advocating strongly for extra space to be made available, it should be remembered that the primary aim is to provide and maintain an environment free from human faeces.

**5. *Shared facilities:*** Where one toilet is shared by four or five families it is generally better kept, cleaner and therefore regularly used when the families have been consulted about its siting and design and have theresponsibility and the means to clean and maintain it. It is important to organize access to shared facilities by working with the intended users to decide who will have access to the toilet and how it will be cleaned and maintained. Efforts should be made to provide people living with HIV/AIDS with easy access to a toilet as they frequently suffer from chronic diarrhoea and reduced mobility.

**6. *Children’s faeces:*** Attention should be given to the disposal of children’s faeces, which are commonly more dangerous than those of adults, as the level of excreta-related infection among children is frequently higher and children lack antibodies. Parents or care givers need to be involved, and facilities should be designed with children in mind. It may be necessary to provide parents or care givers with information about safe disposal of infant faeces and nappy (diaper) laundering practices.

**Excreta disposal standard 2: design, construction and use of toilets**

Toilets are sited, designed, constructed and maintained in such a way as to be comfortable, hygienic and safe to use.

**Key indicators:**

* Users (especially women) have been consulted and approve of the siting and design of the toilet.
* Toilets are designed, built and located to have the following features:
* They are designed in such a way that they can be used by all sections of the population, including children, older people, pregnant women and physically and mentally disabled
* They are sited in such a way as to minimize threats to users, especially women and girls, throughout the day and night.
* They are sufficiently easy to keep clean to invite use and do not present a health hazard.
* They provide a degree of privacy in line with the norms of the users;
* They allow for the disposal of women’s sanitary protection or provide women with the necessary privacy for washing and drying sanitary protection cloths.
* They minimize fly and mosquito breeding.
* All toilets constructed that use water for flushing and/or a hygienic seal have an adequate a regular supply of water.
* Pit latrines and soak ways (for most soils) are at least 30 metres from any groundwater source and the bottom of any latrine is at least 1.5 metres above the water table. Drainage or spillage from defecation systems must not run towards any surface water source or shallow groundwater source.
* People wash their hands after defecation and before eating and food preparation
* People are provided with tools and materials for constructing, maintaining and cleaning their own toilets if appropriate.

**Guidance notes**

**1. *Acceptable facilities:*** Successful excreta disposal programmes are based on an understanding of people’s varied needs as well as on the participation of the users. It may not be possible to make all toilets

acceptable to all groups and special toilets may need to be constructed for children, older people and disabled people e.g. potties, or toilets with lower seats or hand rails. The type of toilet constructed should depend on the preferences and cultural habits of the intended users, the existing infrastructure, the ready availability of water (for flushing and water seals), ground conditions and the availability of construction materials.**at San**

**2. *Safe facilities:*** Inappropriate siting of toilets may make women and girls more vulnerable to attack, especially during the night, and ways must be found to ensure that women feel, and are, safe using the toilets provided. Where possible, communal toilets should be provided with lighting or families provided with torches. The input of the community should be sought about ways of enhancing the safety of users.

**3. *Anal cleansing:*** Water should be provided for people who use it. For other people it may be necessary to provide toilet paper or other material for anal cleansing. Users should be consulted on the most culturally appropriate cleansing materials and on their safe disposal.

**4. *Menstruation:*** Women and girls who menstruate should have access to suitable materials for the absorption and disposal of menstrual blood. Women should be consulted on what is culturally appropriate

**5. *Distance of defecation systems from water sources:*** The distances given above may be increased for fissured rocks and limestone, or decreased for fine soils. In disasters, groundwater pollution may not be an immediate concern if the groundwater is not consumed. In flooded or high-water table environments, it may be necessary to build elevated toilets or septic tanks to contain excreta and prevent it contaminating the environment.

**6. *Hand washing:*** The importance of hand washing after defecation and before eating and preparing food, to prevent the spread of disease, cannot be over-estimated. Users should have the means to wash their hands after defecation with soap or an alternative (such as ash) and should be encouraged to do so. There should be a constant source of water near the toilet for this purpose.

**7. *Hygienic toilets:*** If toilets are not kept clean they may become a focus for disease transmission and people will prefer not to use them. They are more likely to be kept clean if users have a sense of ownership. This is encouraged by promotional activities, having toilets close to where people sleep and involving users in decisions about their design and construction, rules on proper operation, maintenance, monitoring and use. Flies and mosquitoes are discouraged by keeping the toilet clean, having a water seal, Ventilated Improved Pit (VIP) latrine design or simply by the correct use of a lid on a squat hole.

**VECTOR CONTROL**

Vector control standard 1: individual and family protection

All disaster-affected people have the knowledge and the means to protect themselves from disease and nuisance vectors that are likely to represent a significant risk to health or well-being.

**Key indicators:**

* All populations at risk from vector-borne disease understand the modes of transmission and possible methods of prevention.
* All populations have access to shelters that do not harbor or encourage the growth of vector populations and are protected by appropriate vector control measures.
* People avoid exposure to mosquitoes during peak biting times by using all non-harmful means available to them. Special attention is paid to protection of high-risk groups such as pregnant and feeding mothers, babies, infants, older people and the sick.
* People with treated mosquito nets use them effectively.
* Control of human body lice is carried out where louse-borne typhus or relapsing fever is a threat.
* Bedding and clothing are aired and washed regularly.
* Food is protected always from contamination by vectors such as flies, insects and rodents.

**Guidance notes**

1. **Defining vector-borne disease risk:** decisions about vector control interventions should be based on an assessment of potential disease risk,

Minimum Standards in Water Supply, Sanitation and Hygiene Promotion Humanitarian Charter and Minimum Standards as well as on clinical evidence of a vector-borne disease problem. Factors influencing this risk include:

* Immunity status of the population, including previous exposure, nutritional stress and other stresses. Movement of people (e.g. refugees, IDPs) from a non-endemic to an endemic area is a common cause of epidemics;
* Pathogen type and prevalence, in both vectors and humans; vector species, behaviors and ecology;
* Vector numbers (season, breeding sites, increased exposure to vectors: proximity, settlement pattern, shelter type, existing individual protection and avoidance measures.

**2. Indicators for vector control programmes**: commonly used indicators for measuring the impact of vector control activities are vector-borne disease incidence rates (from epidemiological data, community-based data and proxy indicators, depending on the response) and parasite counts (using rapid diagnostic kits or microscopy).

**3. Individual malaria protection measures**: if there is a significant risk of malaria, the systematic and timely provision of protection measures, such as insecticide-treated materials, i.e. tents, curtains and bed nets, is recommended. Impregnated bed nets have the added advantage of giving some protection against body and head lice, fleas, ticks, cockroaches and bedbugs. Long-sleeved clothing, household fumigants, coils, aerosol sprays and repellents are other protection methods that can be used against mosquitoes. It is vital to ensure that users understand the importance of protection and how to use the tools correctly so that the protection measures are effective. Where resources are scarce, they should be directed at individuals and groups most at risk, such as children under five years old, non-immunes and pregnant women.

**4. Individual protection measures for other vectors**: good personal hygiene and regular washing of clothes and bedding is the most effective protection against body lice. Infestations can be controlled by personal treatment (powdering), mass laundering or delousing campaigns and by treatment protocols as newly displaced people arrive in a settlement. A Minimum Standards in Water Supply, Sanitation and Hygiene Promotion of clean household environment, together with good waste disposal and good food storage, will deter rats and other rodents from entering houses or shelters.

**5. Water-borne diseases**: people should be informed of health risks and should avoid entering water bodies where there is a known risk of contracting diseases such as schistosomiasis, Guinea worm or

leptospirosis (transmitted by exposure to mammalian urine, especially that of rats). Agencies may need to work with the community to find alternative sources of water or ensure that water for all uses is appropriately treated.

**Vector control standard 2: physical,** environmental and chemical protectionmeasures**.** The numbers of disease vectors that pose a risk to people’s health andnuisance vectors that pose a risk to people’s well-being are kept to anacceptable level.

**Key indicators:**

* Displaced populations are settled in locations that minimize their exposure to mosquitoes
* Vector breeding and resting sites are modified where practicable.
* Intensive fly control is carried out in high-density settlements when there is a risk or the presence of a diarrhoea epidemic.
* The population density of mosquitoes is kept low enough to avoid the risk of excessive transmission levels and infection.
* People infected with malaria are diagnosed early and receive treatment.

**Guidance notes:**

1. Site selection is important in minimizing the exposure of the population to the risk of vector-borne disease; this should be one of the key factors when considering possible sites. With regard to malaria control, for example, camps should be located 1-2km upwind from large breeding sites, such as swamps or lakes, whenever an additional clean water source can be provided.

**2. Environmental and chemical vector control**: there are several basic environmental engineering measures that can be taken to reduce the opportunities for vector breeding. These include the proper disposal of human and animal excreta, proper disposal of refuse to control flies and rodents, drainage of standing water to control mosquitoes.

Such priority environmental health measures will have some impact on the population density of some vectors. It may not be possible to have sufficient impact on all the breeding, feeding and resting sites within a settlement or near it, even in the longer term, and localized chemical control measures or individual protection measures may be needed. For example, space spraying may reduce the numbers of adult flies and prevent a diarrhoea epidemic or may help to minimize the disease burden if employed during an epidemic.

**3. Designing a response:** vector control programmes may have no impact on disease if they target the wrong vector, use ineffective methods, or target the right vector in the wrong place or at the wrong time. Control programmes should initially aim to address the following three objectives:

1) to reduce the vector population density;

2) to reduce the human-vector contact; and

3) to reduce the vector breeding sites.

Poorly executed programmes can be counter-productive. Detailed study, and often expert advice, are needed and should be sought from national and international health organisations, while local advice should be sought on local disease patterns, breeding sites, seasonal variations in vector numbers and incidence of diseases, etc.

4. **Environmental mosquito control:** environmental control aims primarily at eliminating mosquito breeding sites. The three-main species of mosquitoes responsible for transmitting disease are Culex (filariasis),

***Minimum Standards in Water Supply, Sanitation and Hygiene Promotion.***

Anopheles (malaria and filariasis) and Aedes (yellow fever and dengue). Culex mosquitoes breed in stagnant water loaded with organic matter such as latrines, Anopheles in relatively unpolluted surface water such as puddles, slow-flowing streams and wells, and Aedes in water receptacles such as bottles, buckets, tyres, etc. Examples of environmental mosquito control include good drainage, properly functioning VIP latrines, keeping lids on the squatting hole of pit latrines and on water containers, a keeping well covered and/or treating them with a larvicide (e.g. for areas where dengue fever is endemic).

5. **Malaria treatment:** malaria control strategies that aim to reduce the mosquito population density by eliminating breeding sites, reducing the mosquito daily survival rate and restricting the human biting habit should be carried out simultaneously with early diagnosis and treatment with effective anti-malarials. Campaigns to encourage early diagnosis and treatment should be initiated and sustained. In the context of an integrated approach, active case finding by trained outreach workers and treatment with effective anti-malarials is more likely to reduce the malaria burden than passive case finding through centralized health services.

**Vector control standard 3: chemical control safety**

Chemical vector control measures are carried out in a manner that ensures that staff, the people affected by the disaster and the local environment are adequately protected, and avoids creating resistance

to the substances used.

**Key indicators**.

Personnel are protected by the provision of training, protective clothing, use of bathing facilities, supervision and a restriction on the number of hours spent handling chemicals.

* The choice, quality, transport and storage of chemicals used for vector control, the application equipment and the disposal of the substances follow international norms and can be accounted for always.
* Communities are informed about the potential risks of the substances used in chemical vector control and about the schedule for application. They are protected during and after the application of poisons or pesticides, according to internationally agreed procedures.

**Guidance note**

1. **National and international protocols**: there are clear international protocols and norms, published by WHO, for both the choice and the application of chemicals in vector control, which should be adhered to always. Vector control measures should address two principal concerns: efficacy and safety. If national norms regarding the choice of chemicals fall short of international standards, resulting in little or no impact or endangering health and safety, then the agency should consult and lobby the relevant national authority for permission to adhere to the international standards.

1. **Solid Waste Management**

* Refuse is removed from the settlement before it becomes a nuisance or a health risk.
* Medical wastes are separated and disposed of separately and there is a correctly designed, constructed and operated pit, or incinerator with a deep ash pit, within the boundaries of each health facility.
* There are no contaminated or dangerous medical wastes (needles, glass, dressings, drugs, etc.) at any time in living areas or public spaces.
* There are clearly marked and appropriately fenced refuse pits, bins or specified areas at public places, such as markets and slaughtering areas, with a regular collection system in place.
* Final disposal of solid waste is carried out in such a place and in such a way as to avoid creating health and environmental problems for the local and affected populations.

**Guidance notes**

**1. *Burial of waste:*** if waste is to be buried on-site in either household or communal pits, it should be covered at least weekly with a thin layer of soil to prevent it attracting vectors such as flies and rodents and becoming their breeding ground. If children’s faeces/nappies are being disposed of they should be covered with earth directly afterwards. Disposal sites should be fenced off to prevent accidents and access by children and animals; care should be taken to prevent any leachate contaminating the ground water.

**2. *Refuse type and quantity:*** refuse in settlements varies widely in composition and quantity, according to the amount and type of economic activity, the staple foods consumed and local practices of recycling and/or waste disposal. The extent to which solid waste has an impact on people’s health should be assessed and appropriate action taken if necessary. Recycling of solid waste within the community should be encouraged, provided it presents no significant health risk. Distribution of commodities that produce a large amount of solid waste from packaging or processing on-site should be avoided. **San**

**3. *Medical waste:*** poor management of health-care waste exposes the community, health-care workers and waste handlers to infections, toxic effects and injuries. In a disaster situation the most hazardous types of waste are likely to be infectious sharps and non-sharps (wound dressings, blood-stained cloth and organic matter such as placentas, etc.). The different types of waste should be separated at source. Non-infectious waste (paper, plastic wrappings, food waste, etc.) can be disposed of as solid waste. Contaminated sharps, especially used needles and syringes, hold be placed in a safety box directly after use. Safety boxes and other infectious waste can be disposed of on-site by burial, incineration or other

safe methods.

**4. *Market waste:*** most market waste can be treated in the same way as domestic refuse. Slaughterhouse waste may need special treatment and special facilities to deal with the liquid wastes produced, and to ensure that slaughtering is carried out in hygienic conditions and in compliance with local laws. Slaughter waste can often be disposed of in a large pit with a hole cover next to the abattoir. Blood, etc. can be run from the abattoir into the pit through a slab-covered channel (reducing fly access to the pit). Water should be made available for cleaning purposes.

**5. *Controlled tipping/sanitary landfill:*** large-scale disposal of waste should be carried out off-site through either controlled tipping or sanitary landfill. This method is dependent upon sufficient space and access to mechanical equipment. Ideally waste that is tipped should be covered with soil at the end of each day to prevent scavenging and vector breeding.

**6. *Staff welfare:*** all solid waste management staff who collect, transport or dispose of waste should be provided with protective clothing, at minimum gloves and ideally overalls, boots and protective masks. Water and soap should be available for hand and face washing. Staff who meet medical waste should be informed of the correct methods of storage, transport and disposal and the risks associated with improper management of the waste.

Surface water in or near emergency settlements may come from household and water point wastewater, leaking toilets and sewers, rainwater or rising flood water. The main health risks associated with surface water are contamination of water supplies and the living environment, damage to toilets and dwellings, vector breeding and drowning. Rainwater and rising floodwaters can worsen the drainage situation in a settlement and further increase the risk of contamination. A proper drainage plan, addressing storm water drainage through site planning and wastewater disposal using small-scale, on-site drainage, should be implemented to reduce potential health risks to the population. This section addresses small-scale drainage problems and activities. Large-scale drainage is generally determined by site selection and development

1. **DRAINAGE:**

***Drainage standard 1: drainage works***

People have an environment in which the health and other risks posed by water erosion and standing water, including storm water, floodwater, domestic wastewater and wastewater from medical facilities, are minimized.

**Key indicators**:

* Areas around dwellings and water points are kept free of standing wastewater, and storm water drains are kept clear.
* Shelters, paths and water and sanitation facilities are not flooded or eroded by water.**an**
* Water point drainage is well planned, built and maintained. This includes drainage from washing and bathing areas as well as water collection points.
* Drainage waters do not pollute existing surface or groundwater sources or cause erosion.
* Sufficient numbers of appropriate tools are provided for small drainage works and maintenance where necessary.

**Guidance notes**

**1. *Site selection and planning:*** the most effective way to control drainage problems is in the choice of site and the layout of the settlement.

**2. *Wastewater:*** sullage or domestic wastewater is classified as sewage when mixed with human excreta. Unless the settlement is sited where there is an existing sewerage system, domestic wastewater should not be allowed to mix with human waste. Sewage is difficult and more expensive to treat than domestic wastewater. At water points and washing and bathing areas, the creation of small gardens to utilize wastewater should be encouraged. Special attention needs to be paid to prevent wastewater from washing and bathing areas contaminating water sources.

**3. *Drainage and excreta disposal:*** special care is needed to protect toilets and sewers from flooding to avoid structural damage and leakage.

**4. *Promotion:*** it is essential to involve the affected population in providing small-scale drainage works as they often have good knowledge of the natural flow of drainage water and of where channels should be. Also, if they understand the health and physical risks involved and have assisted in the construction of the drainage system, they are more likely to maintain. Technical support and tools may then be needed.

**5. *On-site disposal:*** where possible, and if favorable soil conditions exist, drainage from water points and washing areas should be on-site rather than via open channels, which are difficult to maintain and often clog. Simple and cheap techniques such as soak pits can be used for on-site disposal of wastewater. Where off-site disposal is the only possibility, channels are preferable to pipes. Channels should be designed both to provide flow velocity for dry-weather sullage and to carry storm water. Where the slope is more than 5%, engineering techniques must be applied to prevent excessive erosion. Drainage of residuals from any water treatment processes should be carefully controlled so that people cannot use such water and it does not contaminate surface or groundwater sources.

3. Waste Management is becoming one problem in the emergencies. Why?

According to World Health Organization (WHO), solid waste management in emergencies refers to all non-liquid with examples of rubbish, garbage and faeces.

The following are reasons why solid waste management in emergencies are problems to public health: -

* **Lack of equipment:**

In managing waste in emergencies, lack of equipment like containers, incinerators have become a big challenge since this occurs in far to reach areas with limited resources most importantly bad roads.

* **Lack of awareness:**

Sometimes there are limited number of public health promoters in the affected areas who are competent to educate the communities on best practices.

* **Poor waste management system:**

In most developed countries, there are set standards to be followed, however emergencies come at a time when people are not aware, therefore allowing people to act in different ways.

* **Limited number of garbage collectors**

It is well known that in most developing countries especially during emergency that is either man made or natural disaster, there is still high rate of illiteracy and incompetent to do the work both technically and few professionals to offer soft assistance.

* **Insufficient funding:**

When we look at countries toned apart by war and natural calamities though rich with natural resources, there is still a big gap of insufficient funding to provide essentials during emergencies. In conclusion, all partners should join hands together during emergency to sensitize the communities on how wastes should be managed in a professional way.

1. Discuss how environmental health and sanitation affect the nutritional status of the vulnerable groups.

Key terms:

* Environmental is everything that is around us. It can be living or non-living things. It includes physical, chemical and other natural forces where living things live in their environment
* Health according to WHO in 1948, ‘is the state of complete physical, mental, spiritual, socially and economically sound not merely the absence of disease or infirmity.’
* Sanitation are conditions relating to public health, especially the provision of clean drinking water and adequate sewage disposal.
* Nutrition is the science that interprets the interaction of nutrients and other substances in food in relation to maintenance, growth, reproduction, health and disease of an organism.
* vulnerable groups are the degree to which a population, individual or organization is unable to anticipate, cope with, resist and recover from the impacts of disasters. Environmental health in emergencies and disasters: a practical guide. (WHO, 2002)

However, the following are reasons how environment health and sanitation as outlined as discuss below:

**Washing hands**: In general principle, it is advisable for everyone to wash hands before handling foods, after using pit latrines, wash fruits before consumption. However, vulnerable groups due their situations, forget this and just eat anyhow and sometimes there is no water supply and even far from residential areas.

**Bathing**: This is an essential part and parcel of personal health; vulnerable groups are sometimes careless to take care of themselves in the name of situation and hence leaving their clothes a breading place which attracts more lice and creates more diseases and infections.

**Laundering:** Washing of clothes is important to remove dust and sweat to prevent bad odour when moving among people. However, vulnerable groups always stay in slum areas with inaccessible to basic need thence making everything difficult.

**Community hygiene:** It is the responsibility of individuals within the community to keep their surrounding clean that promote safer cleaner areas, however, vulnerable groups do not care since most of them maybe inter displaced persons who are just temporary in the area and tomorrow move to the next place.

**Public places** such as markets, hospitals, schools etc needs to be kept clean all the time to prevent breeding places and outbreak of diseases such as cholera.

**Food hygiene** plays an important role in our daily life as the source of our survival, therefore food preparation should be done in a hygienic manner that does not compromise the life the life of consumers. However, due to lack of health promotion during emergencies in the affected areas, vulnerable groups tend to be the victims.

**Restaurants**: All people in the restaurants are supposed to be checked and before operations and all foods cooked and covered well not to attract flies. People serving food should dress decently and the environment should be kept clean to the minimum standard required by the local authorities. However, people in desperate situation are always unlikely to follow due to their ignorance.

**Road food vendors**: This is the most common businesses mostly in the busy urban suburb area where you see most vendors sell their food items along the main streets without covering the food items. However, not only vulnerable people buy but also busy professionals who have no time to go and search deeply in the markets to buy what they want.

LASTLY but important, this is really a big problem to public life that needs proper sensitization of the public to be aware and take relevant precautions to save life of the general population.

5. Assuming you have been appointed to head an organization dealing with health development in your area, describe the critical factors that you will consider in planning for health service in that area.

Key terms:

* Organization is an organized body of people with a purpose, especially a business, society, association
* Health according to WHO in 1948 is the state of complete physical, mental, spiritual, socially and economical sound not merely the absence of disease or infirmity.
* Development is process of economic and social transformation that is based on complex cultural and environmental factors and their interactions.

**Training** as an appointed health personnel to lead an organization, I will ensure to diversify a group of professionals with a common vision and mission that supports sustainability of a professional development infrastructure within organizations. Building a training cadre is an important way to sustain a professional development infrastructure and will help build an organization’s capacity to deliver knowledge and skills to staff. Leverage resources throughout the organization, sustain efforts by having the ability to inform and train others on specific content. Your initial tasks in building your cadre are to develop a structured process but to establish a purpose that will unify your team members. Ensure each person on your team understands his or her role and the overarching purpose of the team.

**Innovatio**n as an appointed health personnel to lead an organization, I will ensure all aspects of public health strategy and program development is critical to developing the evidence base needed to establish and refine the technical elements of successful program implementation. A new diagnostic technique, treatment, or vaccine can make a previously unattainable goal possible. New microbial genomic sequencing and bioinformatics technologies may enable us to identify outbreaks we cannot currently find and better prevent and stop the spread of infectious disease.

**Technical Knowledge and skills** as an appointed health personnel to lead an organization, I will ensure to that most effective public health programs are based on an evidence-based technical package: a selected group of related interventions that together will achieve and sustain substantial and sometimes synergistic improvements in a specific risk factor or disease outcome. A technical package of proven interventions sharpens and focuses what otherwise might be vague commitments to “action” by committing to implementation of specific interventions known to be effective. It also avoids a scattershot approach of using many interventions, many of which have only a small impact.

**Managing performance** as an appointed health personnel to lead an organization, I will ensure public health programs are implemented as per management approval. Engaging political commitment, resources, and a technical package are in place, effective management may not be. Management of public health activities is particularly difficult because, unlike in the private sector where metrics such as product sales provide prompt feedback on performance, there is often no automatic, accurate, and affordable way to track public health program performance in real time. In addition, the impact of public health programs may not be evident for months or years, further complicating measurement of performance.

Effective public health programs require accurate, timely information systems for disease or risk factor surveillance and program implementation. For this reason, every effective technical package includes surveillance and information systems that can be sustained and that provide accurate, simple, timely, and critical information on program implementation and impact over the long.

**Partnership**: As an appointed health personnel to lead an organization, I will ensure that key roles played by public- and private-sector partners are critical to sustaining and improving the population’s health. I think coalitions are often essential to progress. Getting many organizations to collaborate can be slow and frustrating but is often crucial to create the advocacy needed to support budgetary, legislative, or regulatory change and to implement new or improved programs. Government programs are more likely to succeed—and to be sustained—when organizations outside of government advocate for them. Partners can supplement available human or financial resources and can support and undertake critical activities. Helping disparate groups agree on and act to achieve a common agenda can build effective long-term coalitions that extend beyond a specific issue. Schools, businesses, law enforcement, transportation, agriculture, labor, and many other sectors in society can contribute greatly to, and benefit greatly from, public health programs, policies, and priorities.

**Communication** as an appointed health personnel tolead an organization, I will ensure to promote two ways effective communication to behavior change, but, more importantly, it can also lead to increased political commitment and program effectiveness by engaging a wide range of civil society sectors and by contributing to a change in the public perception of an issue. With the advent of the Internet, social media, and other communication technologies, more information is available from more sources than ever, although some is incorrect or potentially harmful. New communication tools and technologies facilitate interactive conversations, giving public health practitioners the ability to have dialogues with people from affected communities and other stakeholders. With the increase in communication channels and voices, public health communications can be drowned out unless communication strategies are timely, well defined, well executed, and sustained to meet specific objectives.

**Political commitment:** As an appointed health personnel to lead an organization, I will ensure to built on and supported by the components described thus far, all of which are critical to provide government with a strong foundation for action. Effectively engaged political commitment leads to the resources and support needed to coordinate, implement, and sustain public health interventions, including policy change where needed. Change is often controversial, and the entities that implement public health programs—usually led by public health departments or other government agencies—may have less ability to influence budget and policy decisions than other groups within government and civil society.

**Gender Equality:** As an appointed health personnel to lead an organization, I know very well that gender inequality damages the physical and mental health of millions of girls and women across the globe, and of boys and men despite the many tangible benefits it gives men through resources, power, authority and control. Because of the numbers of people involved and the magnitude of the problems, acting to improve gender equity in health and to address women’s rights to health is one of the most direct and potent ways to reduce health inequities that I will support and ensure effective use of health resources. Deepening and consistently implementing human rights instruments can be a powerful mechanism to motivate and mobilize governments, people and especially women themselves.

**Team work:** I will ensure that my staff are recruited from different backgrounds and from different region that promote diversity and bring cohesion to the work place. My staff will motivated to work independent but however must achieve what is expected of them within the time frame.

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**Transparency and accountability:** There shall be fully transparency and accountability when it comes to managing the scarce resources in our organization. My leadership will work base on integrity and respect for all despite their historical background.

**Employee empowerment**

To Daily and Huang (2001), motivated and engaged employees are more participative when involved in advanced green management practices. The employee empowerment can be realized in Hospital 1 since the interviewee -infrastructure and project manager - has proposed and led green management-related ideas, such as the feasibility study on the replacement of fluorescent bulbs with LED bulbs.

**CONCLUSIONS**

Those who work in and support public health improve the health of individuals and communities. The greatest strength of public health is its singular focus on maximizing health so that society can achieve its most cherished values: that children are born healthy and grow up healthy, that students are healthy and able to learn, that workers are healthy and productive, that parents are empowered to help their children reach their full potential, that health disparities are reduced, and that people are able to age with independence and dignity.

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