Training for Developing Public Hygiene Education Program

NJS

February 2008

Agenda:

1. Overview
2. Why hygiene is necessary?
3. Promotion of hygiene to school kids
4. Promotion of hygiene to adults
5. Role of water supply for hygiene
6. Development of training materials for promotion of hygiene in school
7. Development of training materials for adults

Objectives:

- People of target area will have sufficient knowledge about drinking water and hygiene
- People of target area will have willingness to connect to the water supply system and pay water tariff.
- People of target area will have sufficient knowledge for water resource and water quality protection

Target attendants:

- Staff of WUSC
- Staff of DWSSDO

Sample agenda and schedule of workshop

Date	Topics
Day 1	1. Overview
Day 2	2. Why hygiene is necessary?
Day 3	3. Promotion of hygiene to school kids
Day 4	4. Promotion of hygiene to adults
Day 5	5. Role of water supply for hygiene
Day 6-10	6. Development of training materials for promotion of hygiene in school
Day 11-15	7. Development of training materials for adults

Plan to do workshop for topics 2 to 7 in next year

Day 1: Topics-1 Overview
- Introduce facilitator and attendants
- Lecture: Overview

Day 2: Topics-2 Why hygiene is necessary?
- Lecture: why hygiene is necessary?
- Discussion: why hygiene is necessary for people of target area?
- Activity: health and hygiene situation in target area

Day 3: Topics-3 Promotion of hygiene to school kids
- Lecture: promotion of hygiene to school kids
- Discussion: resources and opportunity of hygiene education in school in target area
- Activity: making resources list

Day 4: Topics-4 Promotion of hygiene to adults
- Lecture: promotion of hygiene to adults
- Discussion: resources and opportunity of hygiene in target area
- Activity: making resources list

Day 5: Topics-5 Role of water supply for hygiene
- Lecture: Roles of water supply for hygiene
- Discussion: How WUSC and other organization can contribute to promoting hygiene
- Activity: making opportunity list

Day 6-10: Topics-6 Development of training materials for promotion of hygiene in school
- Lecture: Participatory hygiene and sanitation transformation
- Activity: making promotion material (story board, sample poster and essay contest)

Day 11-15: Topics-7 Development of training materials for adults
- Activity: making promotion material (story board for women's group, poster on conservation of water resources, hygiene general, etc.)
- Activity: development of hygiene promotion workshop plan

Several remarks on workshop topics and workshop materials

- Some charts may comes repeatedly, for explanation
- Some data may not have consistency because different data sources
- Explanation of methods and approach may looks different with topics and that may makes confuse. However, basic concept is same.
- It looks different, but basically same.
- When applied, you always need to modify for actual situation. In this workshop, we just introduce standard approach.

- In this workshop, use and introduce several manuals on promotion of hygiene published from UNICEF and WHO. Concept of both organizations are basically same.

1. Overview

Promotion of hygiene to public: why?

- Main reason is reduce diseases and hygiene can preventing
- In Lao and many other developing countries, one of ten children will die before age 10 by mostly diarrhea and other water born diseases
- Provide safe water could reduce these mortals (role of water supply system)
- But sewerage and sanitation are important for protect water resources from contamination (role of sewerage)
- Also, establishing custom of hygiene in daily life such as washing your hand before having meal, clear your teeth, take bath and washing your body are important (role of public hygiene promotion)

- Many countries have a custom for avoid to drink unboiled water but drink boiled water as tea, coffee or vegetable soup (juice). It is wisdom of traditional life. Also, in Japan, we do serve hot tea or cold tea to guests, and never serve unboiled water, as traditional custom.
- Many countries now have a custom for offer bottled table water to their guests (not only for foreigner but even local guests). I was surprised to know small bottle of table water is served commonly with lunch box at community meeting in Indonesia and other countries.
- Providing safe water, and dissemination of hygiene and sanitation success to reduce child mortality by diarrhea but still more than one million children die caused by water born diseases including diarrhea. Still need to forwarding hygiene improvement.

Though this is case of another country, however, do you saw similar scene in your country?

These Thai children, playing in a clogged sewer, are unaware of the health hazards of the dreadful environmental conditions in which they live. (*UNICEF*)

Again this is case of another country, however, how do you feel if you know similar scene in your country?

Many of the peri-urban poor live in at-risk conditions, as in this Brazilian community. Such areas often lack both water supply and sanitation. *(UNICEF/Hertzer)*

Over 10,000 inhabitants jostle for space and cope with the lack of sanitation in this shantytown only a stone's throw from Côte d'Ivoire's capastal Abidjan. *(UNICEF/Maggie Murray-Lee)*

A woman in a remote area of China spreads "night soil" on the fields as fertilizer. Use of untreated night soil can create a health hazard. *(UNICEF/Sean Sprague)*

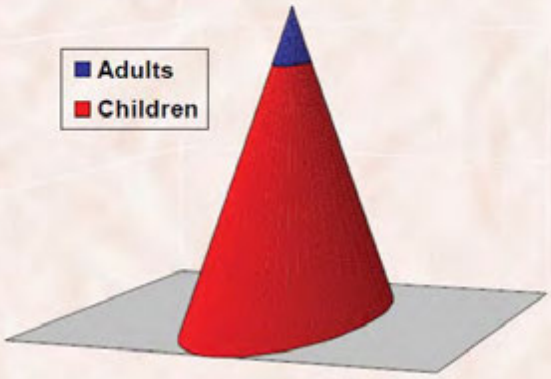
A woman washes her pots in the Euphrates River near the city of Babylon, south of Baghdad, Iraq. *(UNICEF/Jane Taylor)*

UNICEF/97-0282/Noorani

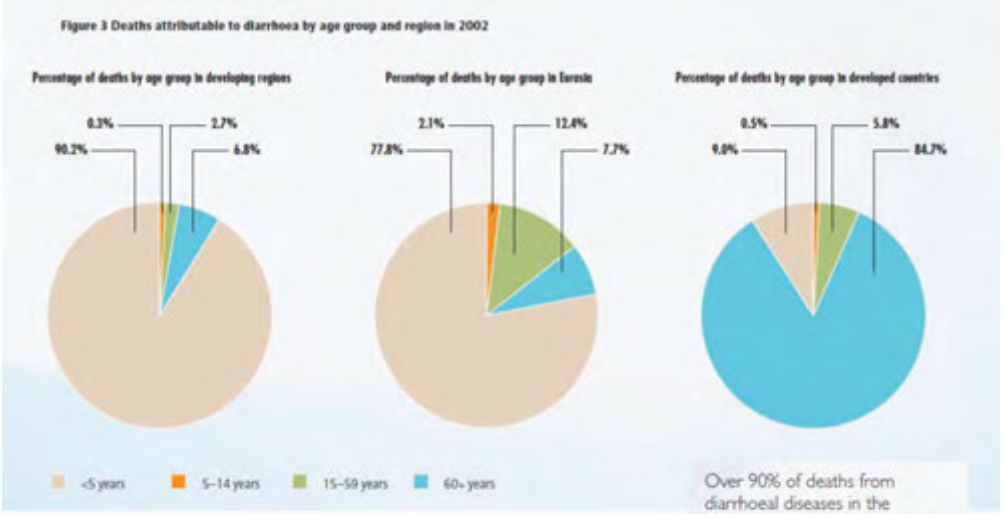
A Pakistani boy lies semi-conscious from diarrhoeal dehydration.

water environment sanitation

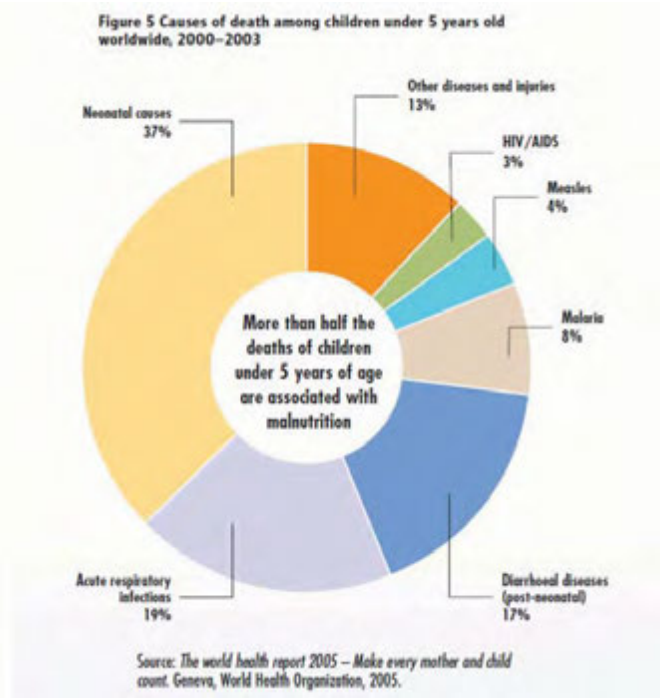
Diarrhoea kills children

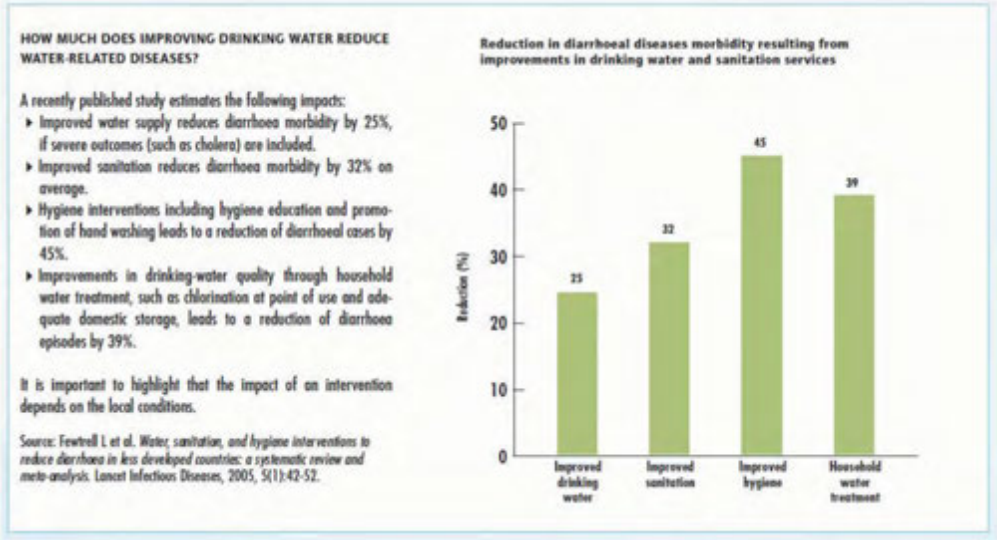


- 2.2 million deaths per year from diarrhoea
- 80% of diarrhoeal deaths are amongst children

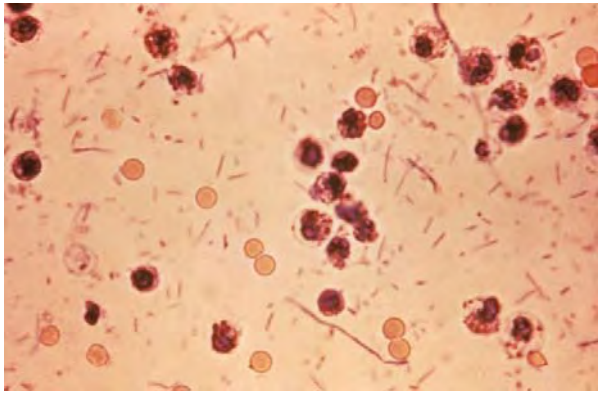


Over 90% of deaths from diarrhoeal diseases in the developing world today occur in children under 5 years old (see Figure 3). Improved drinking water and sanitation services and better hygiene behaviour especially by mothers are crucial in cutting child mortality.



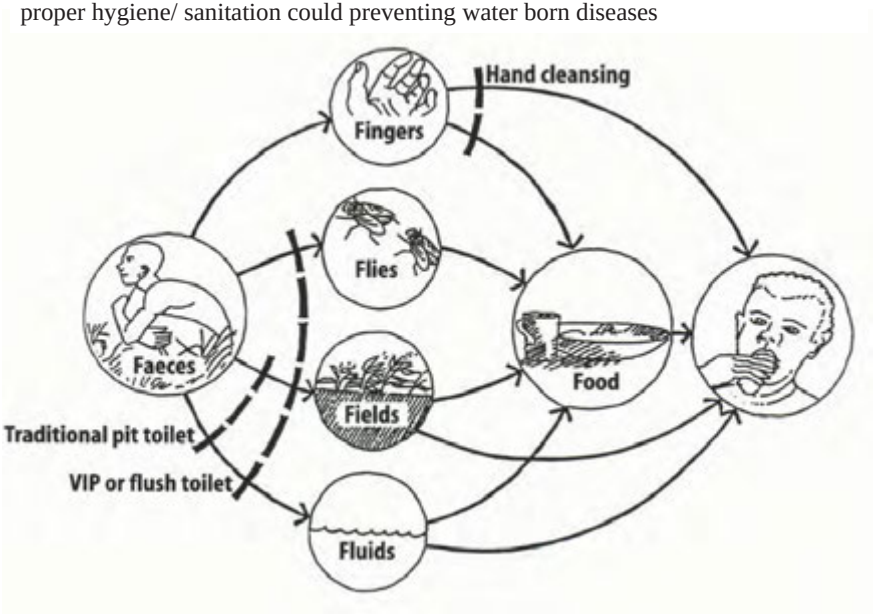


Diarrhea caused by germ Shigella



Shigella

Water born diseases transmit from faeces to human mouse and safe water and proper hygiene/ sanitation could preventing water born diseases



- 1.8 million people die every year from diarrhea diseases (including cholera)
- 90% are children under 5, mostly in developing countries
- 88% of diarrhea disease is attributed to unsafe water supply, inadequate sanitation and hygiene
- Improve water supply reduces diarrhea morbidity by between 6% to 22%m if severe outcomes are included
- Improving sanitation reduces diarrhea morbidity by 32%
- Hygiene interventions including hygiene education and promotion of hand washing can lead to a reduction of diarrhoeal cases by up to 45%
- Improvements in drinking water quality through household water treatment, such as chlorination at point of use, can lead to a reduction of diarrhea episodes by between 35% to 39%

Again, water born disease can preventing

But

Provide safe water is not enough

You need to consider;

- sewerage/sanitation

And

- promote hygiene to people

How to promote?

- Strategy of promoting to school kids first and disseminate to their parents from kids
- Provide special session in the social science class in school and teach water supply and water resources (in case of Japan and Mexico)
- Also promote in many chances such as community meeting, festival, meeting of women's association, and user's meeting
- Team of 3 people comes from the Ministry of Health, Department of Sewerage and Water Supply Authority make presentation in the meeting (in case of Indonesia)

How to promote hygiene in school: case in Japan

A. Water Supply System

- Provide sub textbook for social science
- Provide special session of social science in K-4 and K-7 (class room training)
- encourage self research of water resources, daily water uses and how to conserve water resources
- encourage to applying poster contest and writing contest
- invite kids and show water supply facilities for explain how water is produce and distributed

How to promote hygiene in school: case in Japan

B. Hygiene

- Have session in social science class
- Also have session in natural science class (physiology and environment science) and home science
- Japanese school has nursery teacher who care health and injury of kids in school
- Nursery teacher also provide special classroom training for nursery

How to promote hygiene in community meeting: case in Indonesia

- Story board
- Show story board to attendants and explain sanitation (toilet), how to keep safe water (use boiled water), and how to protect their child from water born diseases
- Deliver one page leaflet for explain roles of water supply system, water tariff and how to submit application
- Deliver one page leaflet with illustration and cartoon for specific issues (such as protect well from contamination or use public faucet)

Modern communication tools are often used in social marketing campaigns. Here a sanitation promotion video is being shown to a group of Malawi workers. *(UNICEF/Cindy Andrew)*

Issues:

- Provide knowledge is necessary but more necessary to change people's behavior on hygiene that is quite challenging theme
- People do not change behavior even they have sufficient knowledge

Techniques:

- Participatory approach is applied and success for promotion of hygiene

Activities on this workshop:

- Transfer basic knowledge for promoting hygiene
- Discuss what and how to cooperate with each organizations who related with promoting hygiene
- Develop material for promoting hygiene

as well as

- Transfer knowledge on how to conduct workshop for staff of WUSC

1. Overview

Thank you for attention

2. Why hygiene is necessary?

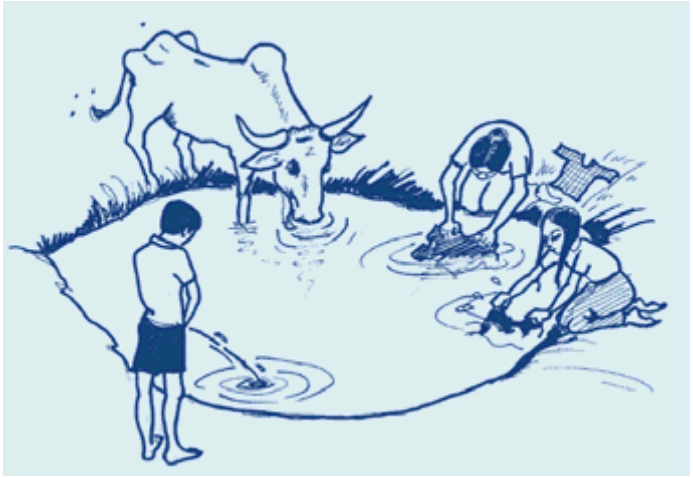
You can see commonly in such scene in Zanzibar that children enjoy bath in stream and housewives washing while animals and children littering excrete around.

2. Why hygiene is necessary?

Objectives of topic-2: why hygiene is necessary?

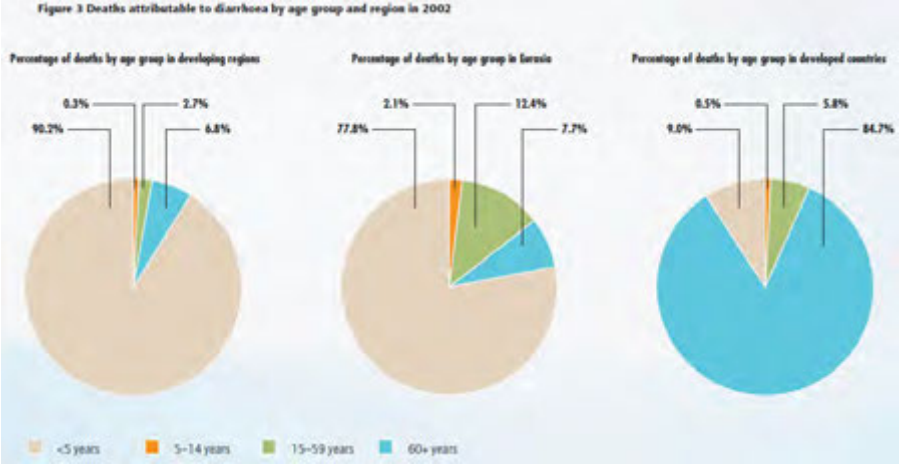
- Understand what cause water born diseases
- Understand water born diseases could be prevented
- Understand what are risk practices that may cause water born diseases

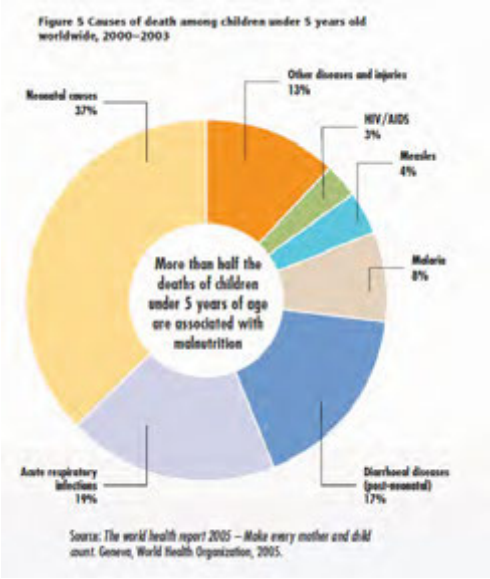
- Discuss situation of water born diseases in target area, if possible



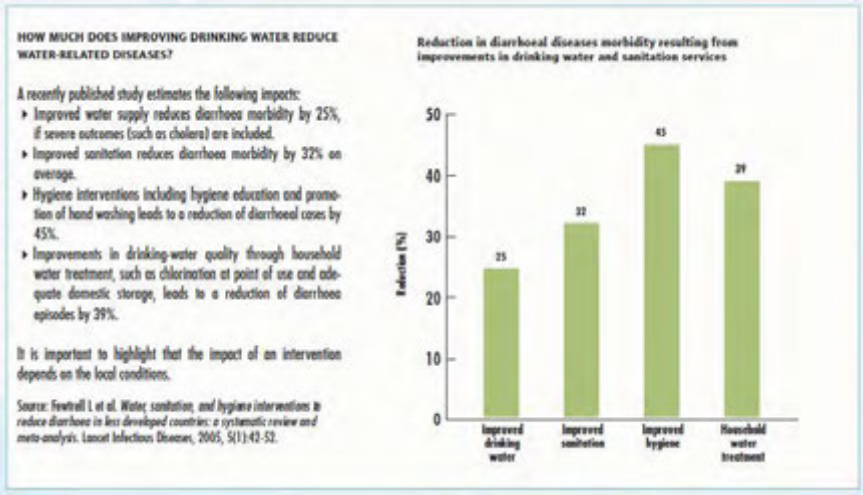
How do you think if you saw in such scene?
Peaceful typical rural area?
Yes, but also it is problematical scene for hygiene!

- Water Born Diseases specially diarrhea is one of top three killer diseases in developing countries
- 1.8 million people die every year from diarrhea disease





- Safe water is effective to reduce water born diseases but not enough
- Improving hygiene and sanitation are also necessary for reduce water born diseases



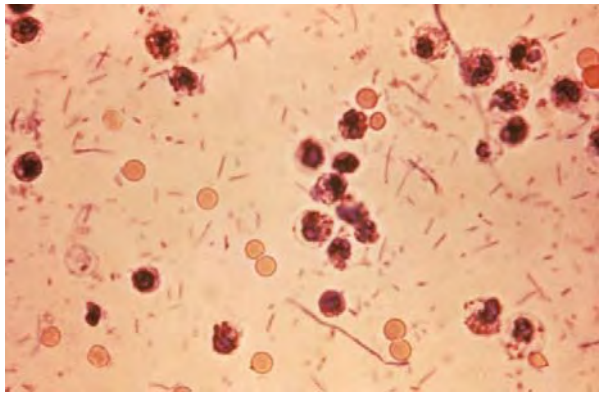
Water born diseases:

1) Diarrhea
2) Cholerae
3) Typhoid fever and Paratyphoid fever
4) Hepatitis A
5) Intestinal helminths caused by parasite warm (Ascariasis, Trichuriasis, Hookworm, Guinea worm, etc.)
6) Toxic poisoning in water (arsenicosis, fluolosis, lead poisoning, etc.)
7) Others (e.g. Trachoma, Schistosomiasis)

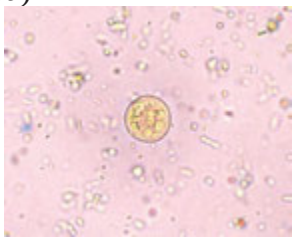
Remarks; sorry for drop off of vector born diseases in this workshop. Also some people may argue for include 5) and Trachoma into water born diseases.

- Water born diseases

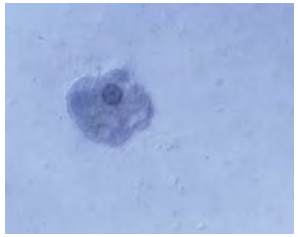
1) Diarrhea caused by germ including Shigella, Escherichia coli O157:H7 and Entamoeba histolytica (amoeba)



Shigella



E-Coli



Entamoeba histolytica

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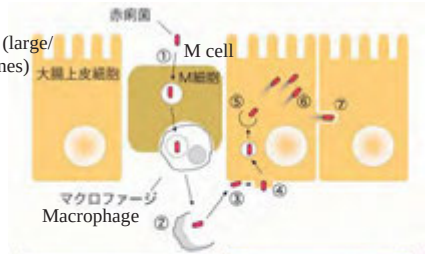
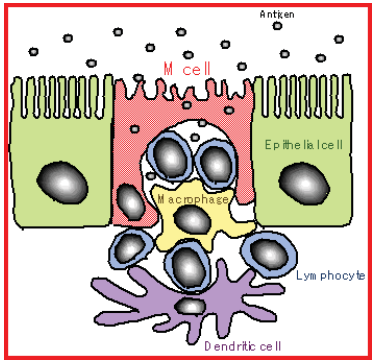
Shigella



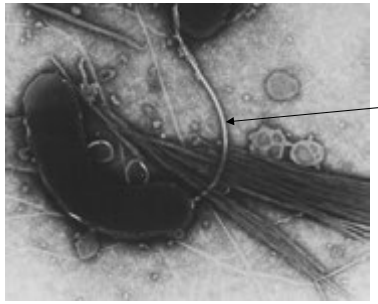
cell of colon (large/ lower intestines)



- Shigella reaches to colon (lower intestines)
- The germ was eaten by Macrophage but escape and moving cell of lower intestines, and broken cell.
- Colony of the germ work for dehydration and takes water of cell to lower intestines. Simultaneously, Shigella toxic cause dehydration.
- Liquid stool contains blood that looks like red water
- This rapid dehydration sometimes cause death.

- Water born diseases

2) Cholerae caused by Vibrio cholerae



Vibrio cholerae

- Water born diseases

2) Cholerae caused by Vibrio cholerae

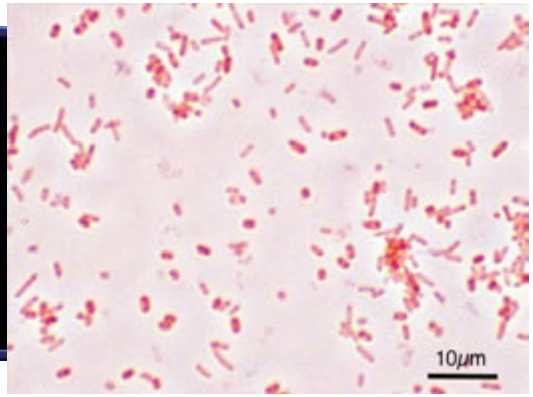
- When drink more than million to 100 million Vibrio cholerae
- And when stomach acid could not kill Vibrio cholerae
- And the germ reaches to small intestines
- The germ rapidly increasing within form of TCP cilia (toxin coregulated pili) and makes layer of colony for cover wall of small intestines.
- Colony of the germ work for dehydration and takes water of cell to small intestines. Almost 30% of water was lose from human body within few hours. Simultaniously, cholerae toxic cause dehydration.
- Liquid stool contains human cell of small intestines that looks like rice water
- This rapid dehydration reduce the volume of blood and increase the viscosity of blood. When lose the volume of blood, human body stop less useless organs, spleen, liver and close the vessel from foots and hands. However, still human has consciousness for feel death of hands and foots.
- Then heart could not keep normal blood pressure and kidney is stop. Blood contain waste matter and cause urea poison and cause the death.
- One milli-liter liquid stool contains more than 100 million Vibrio cholerae

According from “The Ghost Map, the story of London’s most terrible epidemic and how it changed science, city and the modern world” by Steven Johnson, 2006.

- Water born diseases

3) Typhoid fever caused by Salmonella enterica var enterica serovar Typhi and Paratyphoid fever caused by Salmonella enterica serovar Paratyphi A

Salmonella typhi



Salmonella Typhimurium Gram

- Water born diseases

4) Hepatitis A caused by Hepatitis virus

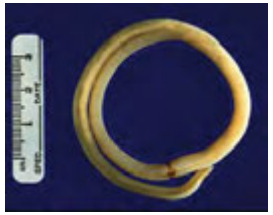
Hepatitis A virus

- There are 1.5 million cases of clinical hepatitis A every year

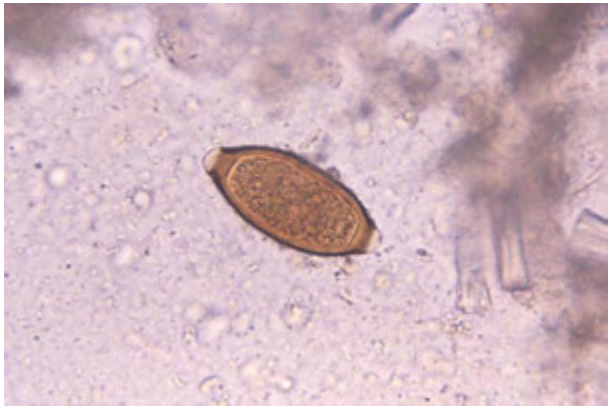
Hookworm

- Water born diseases

5) Intestinal helminths caused by parasite warm (Ascariasis, Trichuriasis, Hookworm, Guinea worm, etc.)



parasitic roundworm Ascaris lumbricoides



Egg of Trichuriasis

- 133 million people suffer from high intensity Intestinal helminths infections, which often leads to severe consequences such as cognitive impairment, massive dysentery, or anaemia
- These diseases cause around 9,400 deaths every year
- Access of safe water and sanitation facilities and better hygiene practice can reduce morbidity from ascariasis by 29% and hookworm by 4%

- Water born diseases

6) Toxic poisoning in water (arsenicosis, fluolosis, lead poisoning, etc.)

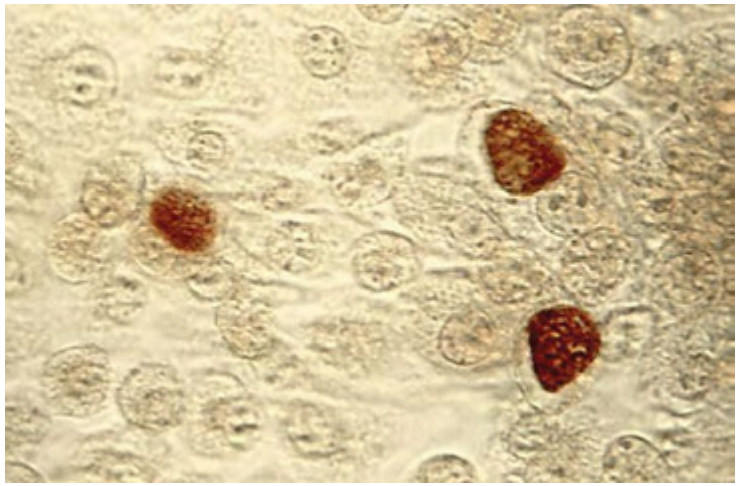
- Arsenic contamination of grand water has been found in many countries including Bangladesh, Argentina, Chile, China, India and USA
- Sometimes heavy metal poisoning including lead poisoning and mercury poisoning caused by industrial contamination (e.g. Mercury poisoning of Minamata, Japan)
- In China, over 26 million people suffer from dental fluolosis due to elevated fluoride in their drinking water

arsenicosis

- 500 million people are at risk from trachoma
- 146 million people are threatened by blindness
- 6 million people are visually impaired by trachoma
- The diseases is strongly related to lack of face washing, often due to absence of nearby sources of safe water
- Improving access to safe water sources and better hygiene practices can reduce trachoma morbidity by 27%

- Water born diseases

7) Others (e.g. Trachoma)

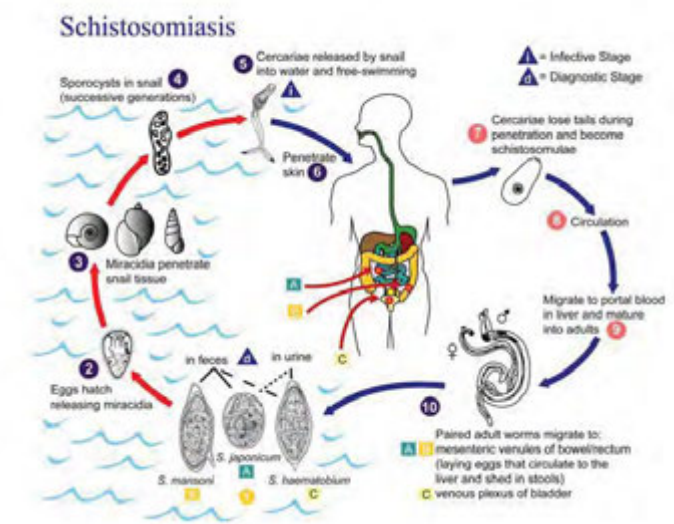


Chlamydia trachomatis

Trachoma is infected by hands, dirty towel and clothes encounter with eye

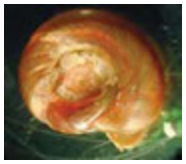
- Water born diseases

7) Others (e.g. Schistosomiasis)



Schistosomiasis is skin penetrate, but eggs contains excreta and move to water where lives snail

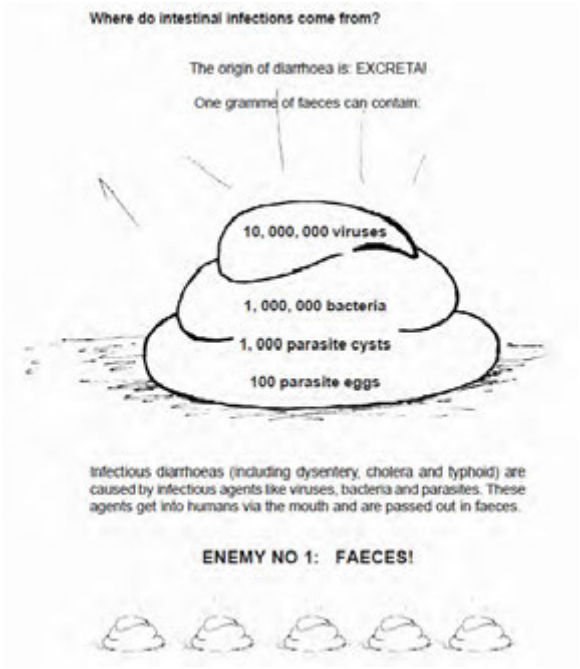
Schistosoma mansoni and egg, snail of Biomphalaria sp who carry celcarrya (young warm)



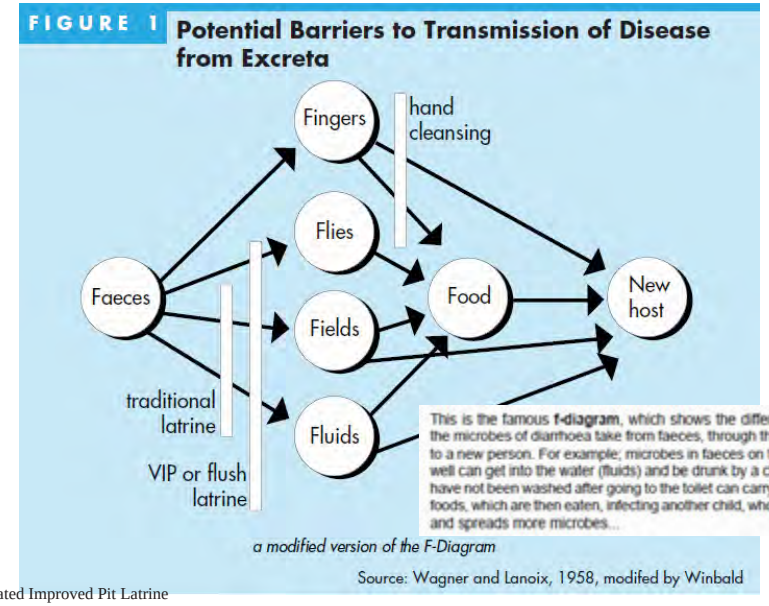
Schistosoma japonicum, from top, warm of Schistosoma, egg of Schistosoma japonicum, snail of the species Oncomelaria hupensis , patient

- Estimated 160 million people are infected with schistosomiasis
- The disease causes tens of thousands of deaths every year, mainly in sub-Saharan Africa
- It is strongly related to unsanitary excreta disposal and absence of nearby source of safe water
- Basic sanitation reduces the disease by up to 77%
- Man made reservoirs and poorly designed irrigation schemes are main drivers of schistosomiasis expansion and intensification

data source: number of patients, effects of safe water and sanitation data are according from “WHO Water, Sanitation and hygiene Links to Health, Facts and Figures, 2004”

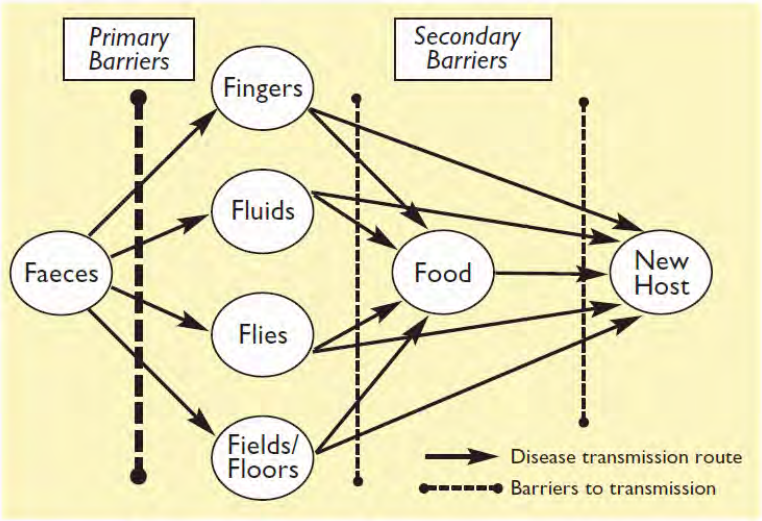


- Germs causes water born diseases come from human or/and animal excreta. Simply cut infection route for avoid contamination.

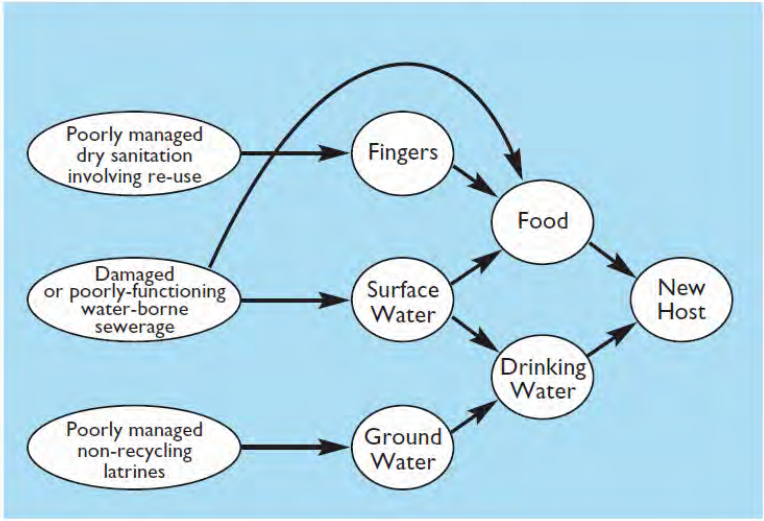


VIP: Ventilated Improved Pit Latrine

The F-diagram of disease transmission and control (after Wagner & Lanoix)

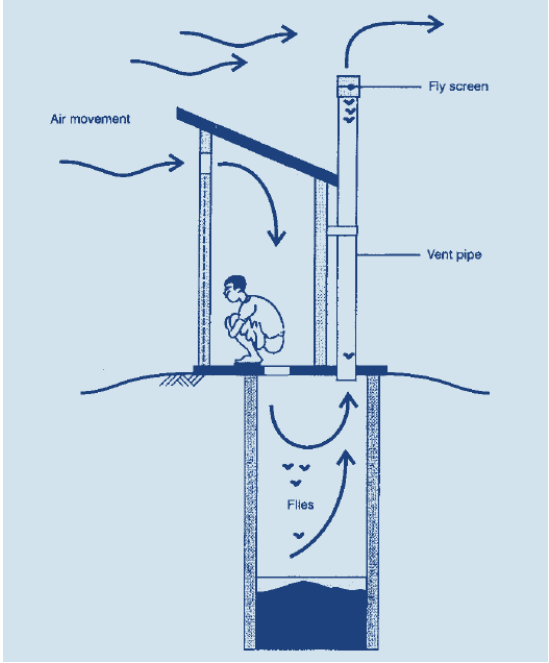


Additional transmission pathways due to poorly-managed sanitation (after Prüss et al.)

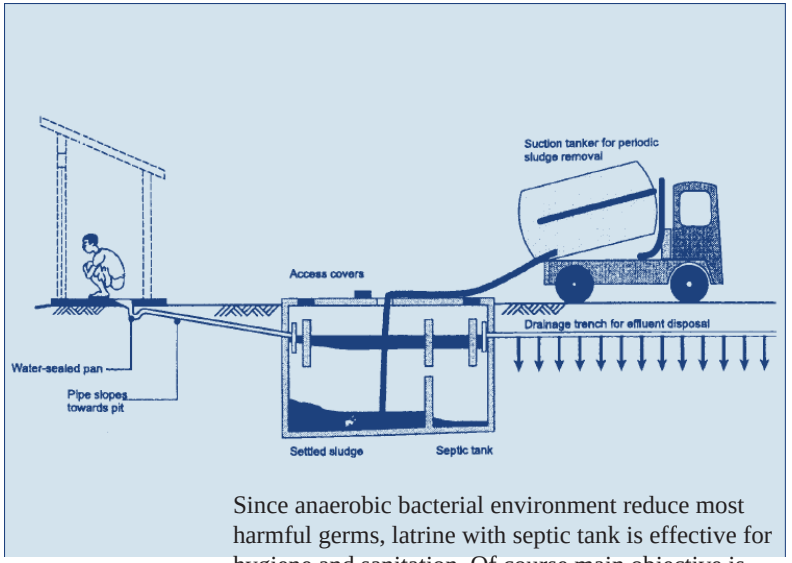


VIP: Ventilated Improved Pit Latrine

VIP is effective for avoid contamination by fly and also shout out bad smell of latrine



Pour flush latrine with septic tank



Since anaerobic bacterial environment reduce most harmful germs, latrine with septic tank is effective for hygiene and sanitation. Of course main objective is decomposes or mineralizes the waste discharged into the tank

Getting rid of faeces

Faeces in the public and domestic environment are the primary source of diarrhoeal pathogens. **Safe disposal of stools is the best way to prevent infection**. Ideally, adult and child stools should be disposed of in toilets or latrines. In places where this is not possible, stools should be buried. As a last resort, it is better to carry stools to a place far from play areas or water sources and cover with earth, than to leave them lying in the yard. In places where they are available, teaching toddlers to use potties can help to keep the home area free of faeces.

Faeces of animals like pigs, cows and chickens can also carry diarrhoea microbes and need to be kept out of the home and where children play.

Hand washing

Hands readily become contaminated with faecal material after anal cleansing or after cleaning children's bottoms and stools. Rinsing fingers with water is not enough to remove sticky particles which contain microbes. Hands need to be well washed after contact with faeces; either rubbed with an abrasive such as ash or mud, or with a detergent such as soap.

Handwashing before eating, before feeding children and before preparing food are all helpful. But we now know that following such advice systematically would require a woman to wash her hands with soap about 30 times a day, which may not be practical. **Most important is handwashing with soap (or ash) after stool contact.**

To sum up, unless your field work shows you otherwise, the evidence suggests that the most important way that microbes infect children is by getting into the environment from faeces in the first place. Therefore two of the most important practices for hygiene promotion programmes to target are likely to be:

SAFE STOOL DISPOSAL

HANDWASHING WITH SOAP AFTER CONTACT WITH STOOLS

- Water born diseases could preventable with right hygiene and sanitation
- Hygiene is simply activity to cut contamination route between water to mouth and waste including faeces
- But required behavior change such as:
- Clean latrine
- Right and safe manner of solid and liquid waste disposal for avoid contamination of water resources and environment

Keeping water clean

There is much debate about the importance of safe water. A plentiful and accessible water supply makes hand washing and cleaning easier, which helps to keep the environment free of pathogens. Ensuring that faecal material does not get into water supplies at the source is probably far more effective than boiling, filtering, and covering water jars. **Safe stool disposal is a priority.**

Fly control

Though flies can carry microbes from faeces to food, fly control is difficult and expensive to achieve. If stools are disposed of in toilets or latrines and these latrines have covers or fly traps, then fly-based disease transmission will be minimised. **Here also safe stool disposal is the priority.**

Food hygiene

Poor food handling practices contribute to diarrhoeal infection largely because they offer bacterial pathogens the opportunity to multiply. This way people can consume much greater doses of microbes. Diarrhoeas often peak in warm, humid seasons in the tropics, when conditions are favourable to the multiplication of bacteria on food.

Food stored in a warm place is an environment that microbes like, where they can multiply easily. Feeding bottles are especially dangerous because they are hard to sterilise and bacteria grow quickly in warm milk. Poor handling of bottles and child food are therefore major risk factors for diarrhoeal diseases in young children. Hence a cup and spon is preferable to a bottle, both for infant milk and semi-solid weaning food. But the microbes that cause diarrhoea come from stools. **Preventing stools from getting into the domestic environment in the first place is therefore a priority.**

२. स्वास्थ्य शिक्षा किन आवश्यक छ ?

(क) उद्देश्य

- झाडापखाला लगाएत पानीवाट लाग्ने अन्य रोगहरुवाट बच्न सकिन्छ ।
- स्वस्थ बानी जस्तै हात धुने, खाना छोपेर राख्ने, वातावरण सफा राख्नुले किटाणुको संक्रमणबाट बचाउँछ ।
- भौतिक सुधार जस्तै सुधारिएको हावादार शौचालयले पनि किटाणुको संक्रमणबाट बचाउँछ र शुद्ध खानेपानी वितरण सेवामा पनि मद्धत पुऱ्याउँछ ।

(२) समस्याहरु

(मानिसहरुको बानीमा परिर्वतन ल्याउन कहिलेकाहिं धेरै गाह्रो हुन्छ । थाहा पाए पनि कति मानिस

- Also sometimes financial problem for improve hardware (e.g. toilet, water supply system)

(C) Approach

- Shifting traditional hygiene education to participatory approach

छलफल र प्रस्तुति

- नेपालमा स्वास्थ्य शिक्षा प्रचारको अवस्था

१) पानीबाट लाग्ने रोगहरु (बिरामीको संख्या, मृत्यु हुने उमेर संख्या, वार्षिक ट्रेन्ड, आदि)

२) स्वास्थ्य शिक्षा प्रचारको हालको कार्यक्रम तथा योजना (सरसफाई समावेश गरेर)

३) स्वास्थ्य शिक्षा प्रचारको हालको प्रणाली तथा संगठन (सरसफाई समावेश गरेर)

४) नेपालमा स्वास्थ्य शिक्षाको वास्तविकता (सरसफाई समावेश गरेर)

५) नेपालमा स्वास्थ्य शिक्षाको प्रचारको वास्तविकता (सरसफाई समावेश गरेर)

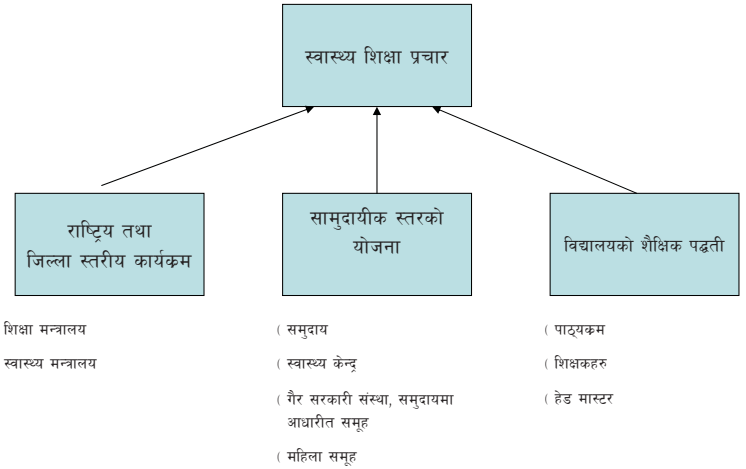
छलफल र प्रस्तुति

१) पानी बाट लाग्ने रोगहरु (बिरामीको संख्या, मृत्यु हुने उमेर संख्या, वार्षिक ट्रेन्ड, आदि)

year	2003	2004	2005	2006	2007
causes of death					
diarrhea					
malaria					
measles					
HIS/AIDS					
acute respiratory					
neonatural causes					
injury					
others					
sub total					
			Year:		
age group	0-5	6-18	19-60	61-	sub total
causes of death					
diarrhea					
malaria					
measles					
HIS/AIDS					
acute respiratory					
neonatural causes					
injury					
others					
sub total					

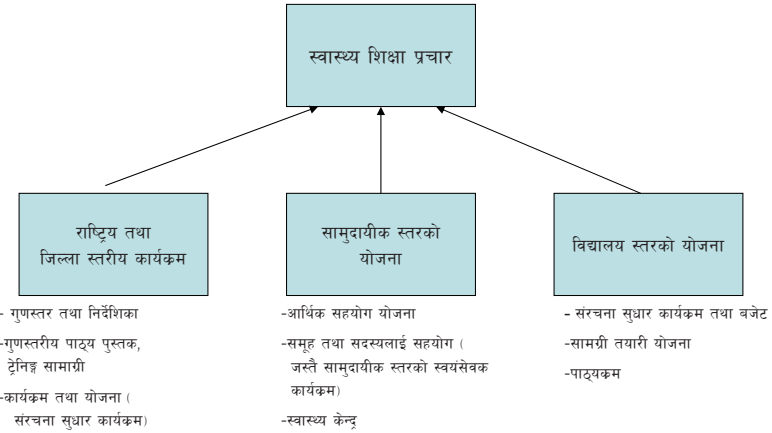
छलफल र प्रस्तुति

स्वास्थ्य शिक्षा प्रचारको हालको कार्यक्रम तथा योजना (सरसफाई समावेश गरेर)



छलफल र प्रस्तुति

स्वास्थ्य शिक्षा प्रचारको हालको प्रणाली तथा संगठन (सरसफाई समावेश गरेर)



२. स्वास्थ्य शिक्षा किन आवश्यक छ ?

छलफल / प्रस्तुति

४) नेपालमा स्वास्थ्य शिक्षाको वास्तविकता (सरसफाई समावेश गरेर)

- के पानीबाट लाग्ने रोगबाट मर्नेहरुको संख्या अझै धेरै छ ?
- के पानीबाट लाग्ने रोगको ट्रेन्ड अझै घटेको छैन ?
- मानिसहरुमा स्वास्थ्य शिक्षा सम्बन्धी पर्याप्त ज्ञान छ ?
- खानेपानी योजनामा स्वास्थ्य शिक्षा सम्बन्धी पर्याप्त ज्ञान छ ? (चर्पी , खानेपानी वितरण, फोहरमैला व्यवस्थापन)
- अन्य

५) नेपालमा स्वास्थ्य शिक्षाको प्रचारको वास्तविकता (सरसफाई समावेश गरेर)

- योजनाको वास्तविकता (चर्पी , खानेपानी वितरण)
- शैक्षिक स्तर र बारमबारताको वास्तविकता
- स्वास्थ्य शिक्षा सामाग्रीको वास्तविकता
- स्वास्थ्य शिक्षा सम्बन्धी शिक्षकको ज्ञान तथा अनुभवको वास्तविकता
- अन्य

3. Promotion of hygiene to school kids

3. Promotion of hygiene to school kids

Objectives of topic-3: Promotion of hygiene to school kids

- Understand standard process of promoting hygiene and hygiene education in school
- Understand what are different with promoting hygiene to adults
- Discuss situation of hygiene education in Nepal and possibility of WUSC's involvement/contribution in this field, if possible

3. Promotion of hygiene to school kids

(A) Objective or meaning of hygiene education in school

- Water born diseases including diarrhea causes serious condition are mostly infect to children
- Kids could be excellent change agent

(B) Issues of hygiene education in school

- Need to involving many stakeholders including head master, teachers, parents and community leaders in the school zone
- Software (hygiene and sanitation training/education program, training materials, and resources persons) and hardware (toilet, etc.) as well as maintenance cost

(C) Approach

- Shifting traditional hygiene education to participatory approach

(1) Strengths of promoting hygiene and sanitation to school kids

- It is rather easy to approach with school children and housewives for promoting hygiene and sanitation activities than adult male. Even male adults understand knowledge of hygiene and sanitation, they hardly change behavior. But children and mother are more challenge to apply what they learn.
- Childhood is the best time to learn hygiene behavior. Children are future parents and what they learn is likely to be applied in the rest of their lives.
- Children have important roles in the household for taking care of their younger brothers and sisters.

(2) Weakness

- If hygiene and sanitation facilities are poor, school kids lose the chance to learn through experience and keep risk behavior of hygiene
- If training material is not sufficient or not available, teacher could not teach hygiene and sanitation education
- If teachers and head master have no wiliness for hygiene and sanitation education, kids could not have chance to learn.

(3) Opportunity of promoting hygiene and sanitation to school kids

- If hygiene and sanitation facilities in school are available, children can act as a model and teachers can function as role model
- Children could be the change agent in household
- Thus school education can influence to community through outreach activities

(4) Threats

- Children spend most of time in school. If school hygiene and sanitation facilities are absent, or badly maintained and used, school become risky place where diseases are transmitted to school children.
- If school children infected diseases, they could infecting to other community members.

School hygiene and sanitation education requires both hardware and software

(5) Hardware

- Total package of sanitary conditions and facilities available in and around the school compound
- Water supply facility provide safe and clean water affordably
- VIP or flush latrine and other sanitation facilities
- Garbage and solid waste collection facility

(6) Software

- Activities aiming to promote conditions at school and practices of school staff and children that help to prevent water and sanitation related diseases
- Training material on hygiene and sanitation
- Lesson in class
- Guiding and couching by teachers and guest speakers

Even to school kids, teach knowledge of hygiene and sanitation are not enough, It is required to change their behavior.

(7) Three factors for change behavior on hygiene

1) Predisposing factors – knowledge, attitudes and belief

2) Enable facilities – availability of resources like latrine facilities and safe water supply, enabling students transform newly acquired knowledge, attitudes and beliefs into desirable behaviors

3) Reinforcing factors – factors affecting the students' ability to sustain a certain behaviors, like support and cooperation received from parents, guardians and peer groups.

- School hygiene education is a specific form of the wider school health education. It deals only with water and sanitation related health problems in and around the school.
- School health education should be concerns all activities that promote health and reduce health risks of school children

(8) Hygiene education in national and district level

- normally, state has national hygiene and sanitation education program. (e.g. Ministry of Education has such program)
- Also, normally districts also has hygiene and sanitation education program.
- How about Nepal, or each municipal government in Nepal?

(9) Hygiene education in rural or urban area

- Urban area may have more good facility and school will have access to the town's water supply system and their toilet's may be connected to the town's sewerage system, though urban area school may not
- Since environment are different, emphasis and materials of hygiene education will have to be different
- However, approach for assessing the situation, making plan for improvement, implementation of the plan and monitoring/evaluation would be basically same

(10) Planning of improvement

e.g. of school health committee in Ghana

The Ghana Education Service has a school health policy, which states that schools have to establish School Health Committee to ensure:

- Supervision of sanitation in school
- Supervision of the activities of school vendors
- Provision of good drinking water and sanitation facilities
- Proper refuse disposal sites
- Provision of hand washing facilities
- Development and implementation of health education program at school

- If gap exist between standards and reality, plan may how to catch with standard. Identify the problem and find solution that including arrangement of financial and other resources, then make implementing schedule that contains schedule of implementation, monitoring and evaluation.

(10) Planning of improvement

- If exist national and/or district standard, follow with standard. If not, formulate standard.

e.g. of standard

- Two teachers of each school trained to develop good hygiene education lesson plans;
- Separate latrine facilities for all girls at the upper primary level;
- School legislation adapted to including school sanitation and hygiene
- School health committees established in every school

e.g. of school legislation in Togo

In Togo school legislation contains sections on school sanitation and hygiene. The rules state that:

- The school is owned by the public, and they should therefore maintain it well
- The compound and classes should be cleaned by the pupils every morning
- The pupils should be clean, every morning this is to be inspected before the school starts
- Schools should have drinking water facilities and latrines

(11) Curriculum

- Argument on hygiene education should be independent subject or incorporate with health education, home economics, natural science or civil education.
- e.g. in Japan, health education is a part of syllabus in health education and sports, though teaching also in natural science (biology). Again, roles of water supply is a part of syllabus on social science.
- Important things is not above argument, but teaching key messages for preventing diarrhea diseases and worm infections in class as:

  * use latrine regularly and keep it clean
  * wash hands with soap before feeding brothers and sisters or eating and after defecation
  * cover your food for protect from fly

(12) Qualification for teacher

- School teachers who conduct hygiene education are required certain level of hygiene awareness and commitment as:

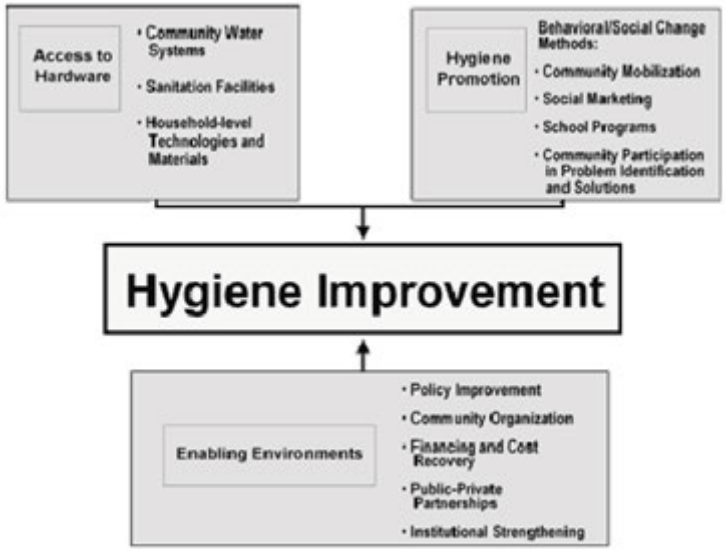
* a working knowledge of relation between water, sanitation, hygiene behavior and health;

* awareness about their importance as a role model, resulting in proper hygiene behavior

* skills to work with students in a participatory way:

* commitment to bring about improvement themselves, or to get third parties involved if necessary.

* make cooperation among teachers towards hygiene education (hygiene education requires teamwork of teachers, e.g. science teacher can discuss environmental pollution and groundwater quality, arts teacher can stimulate students to develop visual material for passing on hygiene messages.)



(13) School sanitation and hygiene education at school and community level

1) participatory problem analysis and assessment

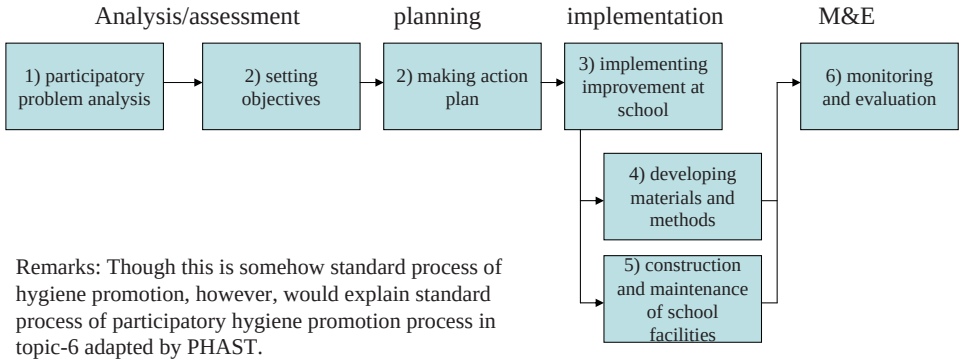
2) setting objectives and making an action plan

3) implementing improvement at school

4) developing materials and methods

5) construction and maintenance of school facilities

6) monitoring and evaluation



Remarks: Though this is somehow standard process of hygiene promotion, however, would explain standard process of participatory hygiene promotion process in topic-6 adapted by PHAST.

(13.1) step-1: participatory problem analysis and assessment (1/2)

- Participants: school teachers, students, community members, health center staff (who could be possible actively involved in design and execution)
- Understanding of headmaster is essential
- Involving school student is essential and it is already part of hygiene education and view point from children is also very important

1) Some useful participatory tools for problem analysis

- road journey
- maps
- calendar
- webset
- rich picture

(remarks: some of these participatory tools would be introduced in topics-4 and 6)

(13.1) step-1: participatory problem analysis and assessment (2/2)

2) Observation points for problem analysis

(a) Sanitation area

- Presence of latrines and ratio of latrines for boys and girls
- Cleanliness of the latrines and presence of cleaning materials
- Drainage of waste water
- Garbage disposal
- Accessibility of the latrines for the entire school population
- Appropriateness of the design

(13.1) step-1: participatory problem analysis and assessment (2/2)

2) Observation points for problem analysis

(b) Water supply

- Presence of tap, pump or tank
- The appropriateness of the design and accessibility for small children
- Condition of the source
- Availability of water for:
  * flushing latrines
  * anal cleaning
  * hand washing
  * drinking water
- Maintenance arrangements, including availability of spare parts

(13.1) step-1: participatory problem analysis and assessment (2/2)

2) Observation points for problem analysis

(c) Hygiene behavior of boys and girls

- Safe drinking
- Sage water handing and storage
- Washing hands after defecation and after handling food
- Children using latrines for defecation
- Children using latrines or urinals for urination
- Regular cleaning of facilities
- Covering food

(13.1) step-1: participatory problem analysis and assessment (2/2)

2) Observation points for problem analysis

(d) curriculum

- Hygiene education is part of the curriculum
- Hygiene education is an examinable topics
- Actual behavior, knowledge and attitudes from the basis of the hygiene education program
- Participatory methods are used
- Hygiene education is based on living condition and daily behavior

(13.1) step-1: participatory problem analysis and assessment (2/2)

2) Observation points for problem analysis

(e) assessment

- Discussion with teachers, students, parents and community members, direct observation
- Drawing maps of neighborhood, indicating water resources, latrines, solid waste collection points and possibility indicating areas which constitute a health risk
- Three pile sorting cards (good, bad and not relevant)
- Statistics of latrine at home or the ratio between the female students and existing latrines, etc.

(13.2) step-2: setting objectives and making an action plan

- Objectives need to be Specific, Measurable, Applicable, Realistic and Time-bound
- Collaboration with health center makes realistic objective and action plan

- After setting objectives, make action plan
- Action plan should be activities geared towards obtaining objectives including budget and man power arrangement plan
- PO: Plan of Operation
  * activity
  * implementation schedule
  * budget and human resources, necessary facilities and equipments
  * person in charge of the activity
  * link activities

(13.2) step-2: setting objectives and making an action plan

- Proper selection of facilities are important
- It is better community member can copy the sanitation facilities and water supply facilities which constructed for school to their own house or community facilities.
- Water facilities provide water for:
  * pour flush latrines
  * anal cleansing
  * hand washing
  * drinking
- Sanitation facilities for:
  * excreta disposal
  * drainage
  * garbage disposal

(13.2) step-2: setting objectives and making an action plan

(a)Water supply

- Water point for flushing or anal cleaning should be located close to the latrine. If the water point is located far from the latrines, the risk exists that latrines are not sufficiently flushed, the blockage occur and no longer used
- Hand washing facilities also should be placed closed to the latrines
- Hand washing facilities should allow for the placement of soap or other cleaning agents
- Well with hand pump or public tap
- If impossible to connect public tap, install drum of water tank as reservoir or rainwater catchments system
- If town’s water system has problem on low pressure, low quality or insufficiently supply, it may need to set drum of water tank as reservoir and/or purified system with bleaching powder

(13.2) step-2: setting objectives and making an action plan

(b) Sanitation

- Three types of excreta disposal systems
  * pit latrines
  * ventilated improved pit latrines (VIP)
  * pour flush latrines – if sufficient amount of water is available, most recommendable
- Number of latrines – standard is one latrines per 20 students
- It may be separate urinals for boys that help to reduce the number of latrines

(13.2) step-2: setting objectives and making an action plan

(c) Drainage

- Better distinguish between sullage and sewerage
- Sullage refers waste water from the kitchen, shower, etc that less contaminated by excreta
- Sewerage is water mixed with excreta or water contact with excreta
- School should better avoid environmental hazard by polluting the environment including contamination of surface water
- On site dry disposal system
- Wet systems such as a pour flush latrine with leaching pit
- Sufficient capacity of soak-away for filtrate all contaminated water with septic tank
- Or drain into small-bore sewer
- Water which is not contaminated such as rain water can directly drain into a receiving water body, a river, lake or pond.
- Better closed drains for avoid risk as children falls into, or play in

(13.2) step-2: setting objectives and making an action plan

(e) Garbage disposal

- In urban and pre-urban area, compost heap, burn garbage for avid health hazard such as respiratory diseases
- Separate garbage system such as separate glass, plastic, metal, paper and other flammable. Glass, plastic, metal and paper are handed to recycling

(13.3) step-3: implementing improvement at school

- Often school committee are established in school that plan and implement school sanitation and hygiene program
- Committees usually consist of students and teachers
- Get support from community with through parent-teacher associations
- Mobilize heath workers
- Involvement and understanding of other teachers and headmaster
- In some counties, support from NGO, CBO and religious groups are effective

(13.4) step-4: developing materials and methods

- Development of teaching aids and training materials should be:
  * should be practical and make the link between knowledge, attitudes and behavior
  * better action oriented
  * relevant in the local context
  * simple and understandable in the local context
  * better locally acceptable
  * better use local communication methods

Remarks: development of training material for school kids would be discuss in topic-6.

(13.5) step-5: construction and maintenance of school facilities

- For saving cost or financial constrain, parents and local community provide labor for construction, sometimes in many countries

- Option of facility maintenance (cleaning latrines)
  * through cleaning committee
  * by class on a rotation bases, with or without a rewarding mechanism
  * by external cleaning personnel
  * by individual students

- Maintenance cost
  * normally from committee add on government budget

(13.6) step-6: monitoring and evaluation

- National/district level monitoring and community/school based monitoring
- Participatory monitoring and evaluation is recommendable
- self monitoring and evaluation is important for motivating to change behavior. It could not make anybody's sake. Also could avoid waiting of someone's voice syndrome.
- Evaluation results should be link to change behavior:
  * Evaluation should not merely only focus on prevention of diseases, but also promote well-being
  * activities need to be designed to also develop long-term decision making competency related to health and hygiene behavior
  * they should offer opportunities for students to apply their hygiene related knowledge, attitudes and practices in real-life situation
- Evaluation should be based on point view of school kids. How latrines could be easy to use and continued to use for small kid is more important than number of latrines constructed.

3. Promotion of hygiene to school kids

Discussion/presentation

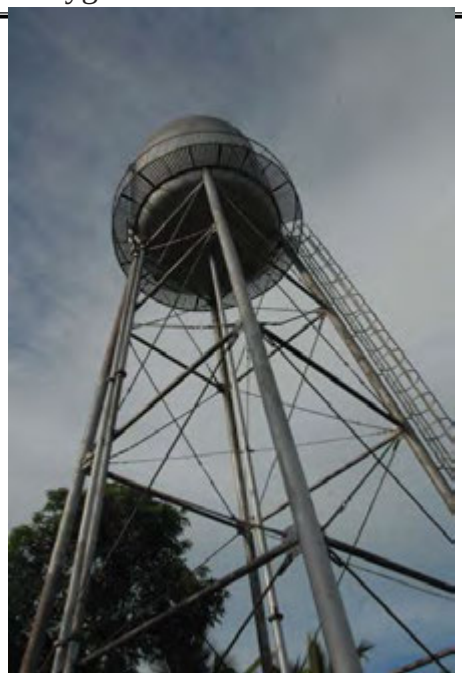
- resources and opportunity of hygiene education in school in Nepal

1) Existing hygiene education program
2) Existing system on hygiene education in school
3) Existing training material, curriculum and syllabus
4) Problem of hardware and software, budget
5) Opportunity of hygiene education for kids (specially provide training material)
6) Resource

3. Promotion of hygiene to school kids

items	Present situation	problems	opportunities	resource person
1) hygiene education program				
2) system of hygiene education in school				
3) training material, curriculum and syllabus				
4) Hardware				
5) Software				
6) Budget				
7) others				

4. Promotion of hygiene to adults



4. Promotion of hygiene to adults

Objectives of topic-4: Promotion of hygiene to adults

- Understand standard process of promoting hygiene and hygiene education for adults and community
- Understand behavior change mechanism
- Discuss situation of hygiene education to adults and community in Nepal and possibility of WUSC's involvement/contribution in this field, if possible

4. Promotion of hygiene to adults

(A) Objective of promoting hygiene to adults and community

- Water born diseases including diarrhea are preventable
- Hygiene practices including washing hands and covering food, keep clean environment could reduce contamination and infection by germ
- Hardware improvement including latrines could reduce contamination and infection by germ as well as water supply system that could provide safe water could reduce water born diseases

(B) Issues of promoting hygiene to adults and community

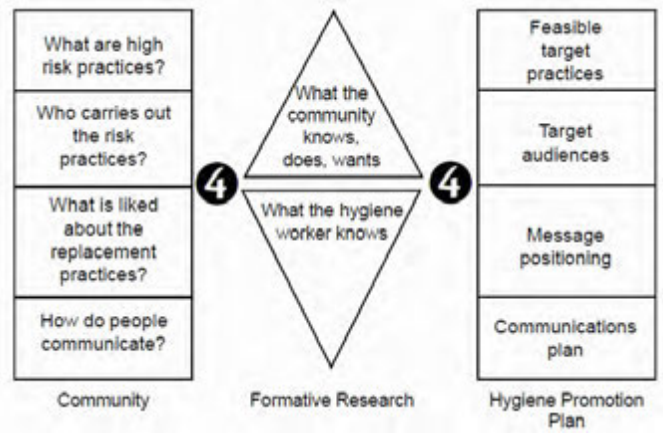
- Change people's behavior is sometimes so difficult. Even they know, some people never try to change their hygiene behavior
- Also sometimes financial problem for improve hardware (e.g. toilet, water supply system)

(C) Approach

- Shifting traditional hygiene education to participatory approach

(1) what is hygiene promotion?

Planed approach to preventing diarrheal diseases though the widespread adopting of safe hygiene practices



Also answer to 4 questions with communicational approach with 4 methods

(2) Six myths of hygiene education

1) People are empty vessels into which new ideas can simply be poured

- Hygiene education should starts with what people already know. New idea sometimes makes confuses and refused to accept

2) People will listen to me because I'm medical trained

- People do not believe even medical experts as he/she is outsider

3) People learn germ theory in a few health center sessions

- Even in the best of circumstances, replacing old ideas about disease with new ones is a long, slow process

4) Health education can reach large population

- Capacity and budget is always limited. Step by step and one by one approach.

5) New ideas replace old ideas

- Most people hold variety of ideas about the origins of diseases in their head at the same time. Hygiene education often just adds one more ideas about diseases without erasing the old ones.

6) Knowing means doing

- Though knowing about diseases may help, but sometimes new practices may be too difficult, too expensive, take too much time, or be opposed by other people. Also fear of diseases is not a constant preoccupation and is often not a good motivator of behavior changes.

(3) Six steps to hygiene promotion

Step-1: Initiate action

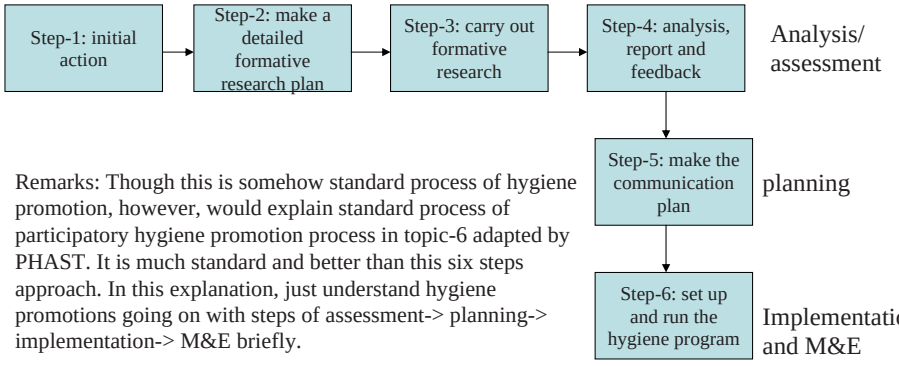
Step-2: Make a detailed formative research plan

Step-3: Carry out formative research

Step-4: Analysis, report and feedback

Step-5: Make the communication plan

Step-6: Set up and run the hygiene promotion program



Remarks: Though this is somehow standard process of hygiene promotion, however, would explain standard process of participatory hygiene promotion process in topic-6 adapted by PHAST. It is much standard and better than this six steps approach. In this explanation, just understand hygiene promotions going on with steps of assessment-> planning-> implementation-> M&E briefly.

1) Step-1: Initiate action

- Define the target area: find out what you can do about it (location, population, administration, heath services etc.)
- Make an outline plan:
- Set up the team: it may recommendable to including people live in or comes from the target area
- Planning workshop: have workshop and share information/idea, what already knows and what not yet know. Do not jump into conclusion. Main objective in this stage is listen and understand.
- Contact communities: meet with leaders, administrators, women's groups, user local media to let people know what is happening.
- Build a network: inform any other organizations working in the areas, invite them to join/cooperate program.

2) Step-2: Make a detailed formative research plan

- Make a list of questions you want to get answer: make a question, list up and select focus to only those that are really important for the hygiene promotion. Question should including 4 key questions:
  - What are high risk practices?
  - Who carries out the risk practices?
  - What is liked about replacement practices?
  - How do people communicate?
- Choose methods to answer each question: choose suitable methods for answering each question. Questionnaires, interview, etc.

e.g. is next slid

- Make a detail research plan: make detail research plan and assign responsibility to team members to carry out

2) Step-2: Make a detailed formative research plan

Objective	Questions	Methods
Identify risk practices	Which specific practices are allowing diarrheal pathogens to be transmitted to children?	- Epidemiological knowledge, - Environmental walk - Checklist observation
Select practices for intervention	Which risk practices are most widespread? Which risk practices ca be altered?	- Structure observation - Behavior trials - Focus group discussion
Determine message positioning	What motivates those who currently use ‘safe’ practices? What are the perceived advantages of the ‘safe’ practices?	- Focus group discussion - Interview with ‘safe’ practices - Behavior trials
Define the target audiences	Who and how many employ the risk practices? Who influences the primary audience?	- Structured observation - Focus group discussion
Select communication channels	What channels are currently used for communication? What channels are trusted for such messages?	- Interview representative sample of target audience - Focus group discussion

3) Step-3: Carry out formative research

- Identify risk practices, select practices for intervention: find most diarrhea pathogens comes from stools. Risk practices that occur most frequently are a priority for intervention. Behavior trial techniques makes work with target communities to choose suitable replacement practices.

- Define message positing: Interviewing people who already use the safe practice, and focus group for find out suitable primary target audience. Then finding out primary target audience about target practice.

- Define the target audiences: Select the groups want to contact. Primary target audiences are those who carry out risk practices such as school children and mother, second target audience are the immediate society of the primary audience who influence them such as father. There is third audience target gives impact to primary and secondary target audience or partner of the program such as traditional leader, elder and local politician.

- Identify communication channels: Find out most influenced communication channel and use that such as mouth to mouth communication by housewives.

4) Step-4: Analysis, report and feedback

- Summarize the analysis results based on the questions you want to get answer as:
  * objective
  * methods used
  * results
  * interpretation/understanding/learned from the results
  * recommendations for hygiene promotion

- Deliver the reports and feed back/improve the reports by comments from reader

5) Step-5: Make the communication plan

- Make full scale plan for hygiene promotion program
- Plan should be including:
  * Behavior change objective
  * target practices
  * target audience
  * Positioning: motivation for behavior change (why do target audiences want the new practices?)
  * Channels of communication: e.g. street theatre using story board, house visits, etc.
  * Communication materials: e.g. theatre scenario, flash cards
  * Monitoring: methods for following program activities, indicators, program outputs
  * Project management and budget

6) Step-6: Set up and run the hygiene promotion program

- Pilot test and revise: recommend to do pilot test of hygiene promotion program and revise based on the review and evaluation of pilot test

- Carry out a baseline survey of target behaviors:

- Full scale implementation:

- Set up supervising and monitoring:

- Evaluation:

hygiene promotion program: example of baseline survey results

FORMATIVE RESEARCH TO DESIGN A HYGIENE PROMOTION PROGRAMME IN LUCKNOW, INDIA

Research questions	Methods used	Key findings	Key findings
What are the risk practices?	Environmental walk, Checklist observation, Structured observation	Defaecation of most small children was on the ground. Mothers did not wash hands with soap after cleaning up the child. Few people returning from toilet washed hands with soap.	**Risk practices:** unsafe disposal of child stools. Infrequent hand-washing with soap after stool contact.
What are the target practices?	Behaviour trials, Structured interviews	The ordinary soap cannot be used after defaecation as it becomes polluted. Using community latrine not acceptable, no use for children. Potties liked by mothers.	**Target practices:** A special piece of soap is kept for hand-washing after defaecation. Local latrine building programme contacted. Potties bought for children.
Who are the target groups?	Observation, Focus group discussions	Mothers deal with child stools. Mothers and fathers do not use soap after stool contact. Mother-in-law and husbands influence mothers	**Target groups:** Primary target: mothers. Secondary target: fathers, and mothers-in-law.
What motivates behaviour change?	Focus groups, Structured interview	Desire to be clean, pure and auspicious. Desire to save time cleaning up children. Desire to please family and God.	**Motivation:** Hand-washing with soap after stool contact makes you clean and pure. Potties save time and effort.
How do people communicate?	Interviews, Focus groups	No one channel with good reach. Some mothers had little contact with outside world.	**Variety of channels:** street theatre, house-to-house visits, religious gatherings.

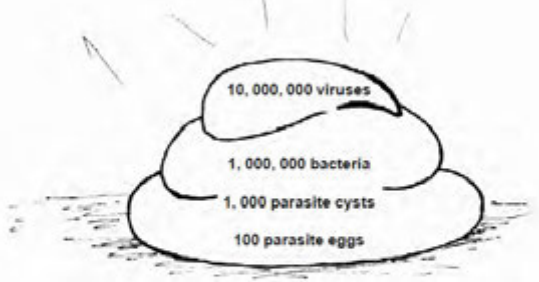
(4) Risk practices

1) Faeces access to the environment
2) Hand contact stool contact without washing
3) Touching food with stool contact hand
4) Faecal contamination with drinking water
5) No protect food from fly and insects
6) etc.

Where do intestinal infections come from?

The origin of diarrhoea is: EXCRETA!

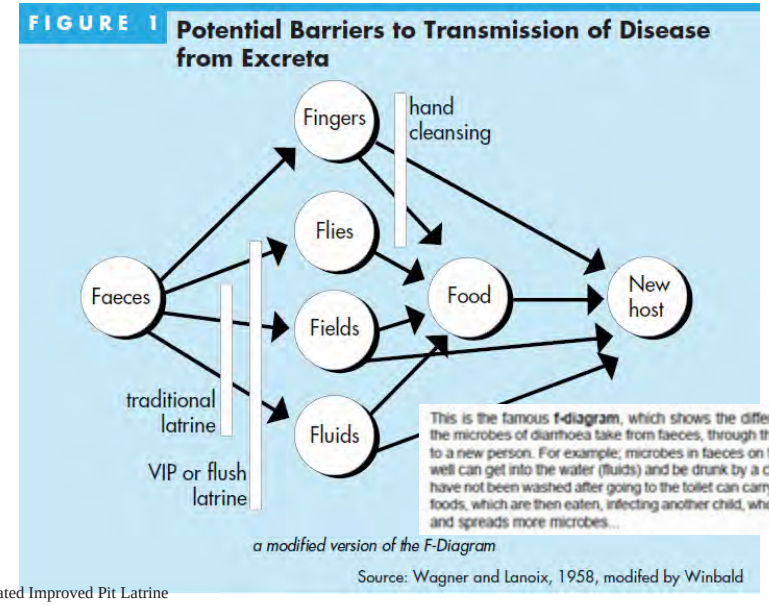
One gramme of faeces can contain:



Infectious diarrhoeas (including dysentery, cholera and typhoid) are caused by infectious agents like viruses, bacteria and parasites. These agents get into humans via the mouth and are passed out in faeces.

ENEMY NO 1: FAECES!

- Germs causes water born diseases come from human or/and animal excreta. Simply cut infection route for avoid contamination.



VIP: Ventilated Improved Pit Latrine

Getting rid of faeces

Faeces in the public and domestic environment are the primary source of diarrhoeal pathogens. **Safe disposal of stools is the best way to prevent infection**. Ideally, adult and child stools should be disposed of in toilets or latrines. In places where this is not possible, stools should be buried. As a last resort, it is better to carry stools to a place far from play areas or water sources and cover with earth, than to leave them lying in the yard. In places where they are available, teaching toddlers to use potties can help to keep the home area free of faeces.

Faeces of animals like pigs, cows and chickens can also carry diarrhoea microbes and need to be kept out of the home and where children play.

Hand washing

Hands readily become contaminated with faecal material after anal cleansing or after cleaning children's bottoms and stools. Rinsing fingers with water is not enough to remove sticky particles which contain microbes. Hands need to be well washed after contact with faeces; either rubbed with an abrasive such as ash or mud, or with a detergent such as soap.

Handwashing before eating, before feeding children and before preparing food are all helpful. But we now know that following such advice systematically would require a woman to wash her hands with soap about 30 times a day, which may not be practical. **Most important is handwashing with soap (or ash) after stool contact.**

Keeping water clean

There is much debate about the importance of safe water. A plentiful and accessible water supply makes hand washing and cleaning easier, which helps to keep the environment free of pathogens. Ensuring that faecal material does not get into water supplies at the source is probably far more effective than boiling, filtering, and covering water jars. **Safe stool disposal is a priority.**

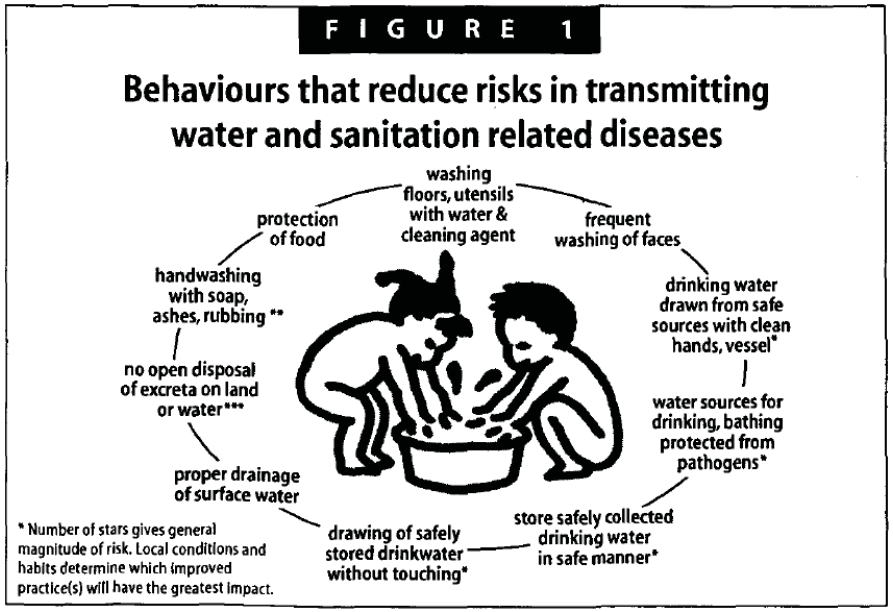
Fly control

Though flies can carry microbes from faeces to food, fly control is difficult and expensive to achieve. If stools are disposed of in toilets or latrines and these latrines have covers or fly traps, then fly-based disease transmission will be minimised. **Here also safe stool disposal is the priority.**

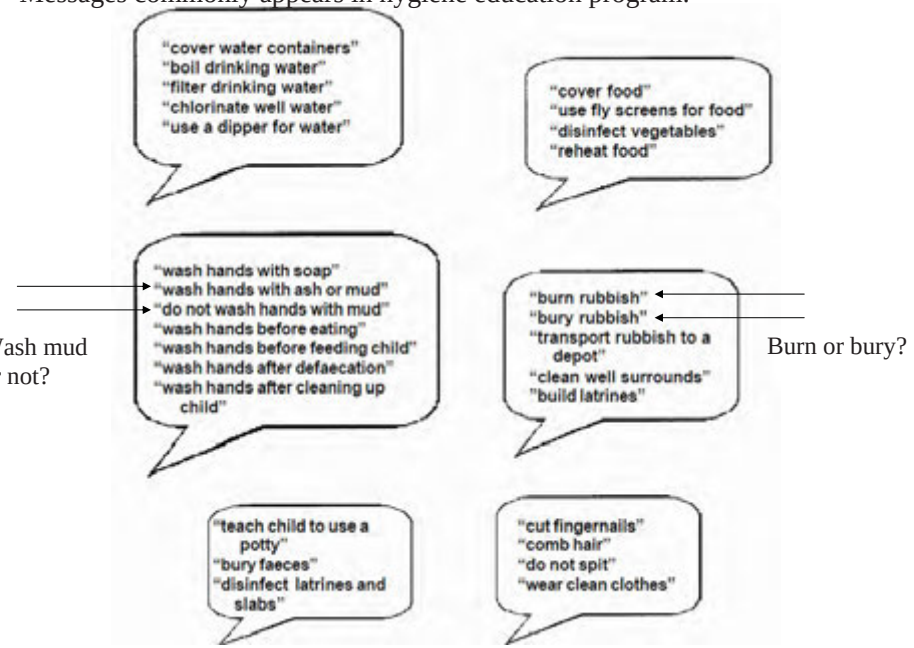
Food hygiene

Poor food handling practices contribute to diarrhoeal infection largely because they offer bacterial pathogens the opportunity to multiply. This way people can consume much greater doses of microbes. Diarrhoeas often peak in warm, humid seasons in the tropics, when conditions are favourable to the multiplication of bacteria on food.

Food stored in a warm place is an environment that microbes like, where they can multiply easily. Feeding bottles are especially dangerous because they are hard to sterilise and bacteria grow quickly in warm milk. Poor handling of bottles and child food are therefore major risk factors for diarrhoeal diseases in young children. Hence a cup and spon is preferable to a bottle, both for infant milk and semi-solid weaning food. But the microbes that cause diarrhoea come from stools. **Preventing stools from getting into the domestic environment in the first place is therefore a priority.**



Messages commonly appears in hygiene education program.



Wash mud or not?

Burn or bury?

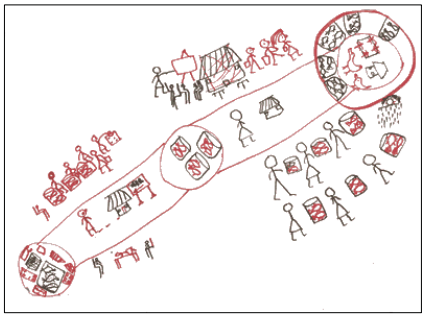
(4) Risk practices

- Too many massage makes confuse to audiences, even all message is right
- Necessary to focus on case and situation

(5) Find risk practice techniques

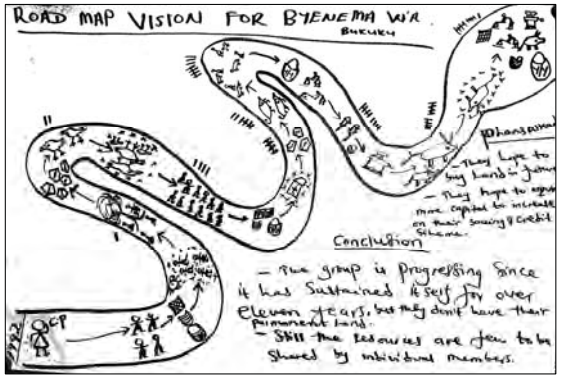
- Environmental walk or transect walk: a local team of women and men systematically walks through a cross section their settlement, review good and bad situations and notes/maps these cross –section diagram.
- Checklist observation: make structured check list and check with observation in site.
- Lists and table (matrices): make list of households such as have and have not certain improved water supply, sanitation or hygiene facilities. And analysis who haves and who do not haves and why?

Remarks: Participatory tools would be introduce in topic-6



Sample of road map after transect walk

Walking through./around and find risk practices, then draw on map where you find and what kinds of risk practices



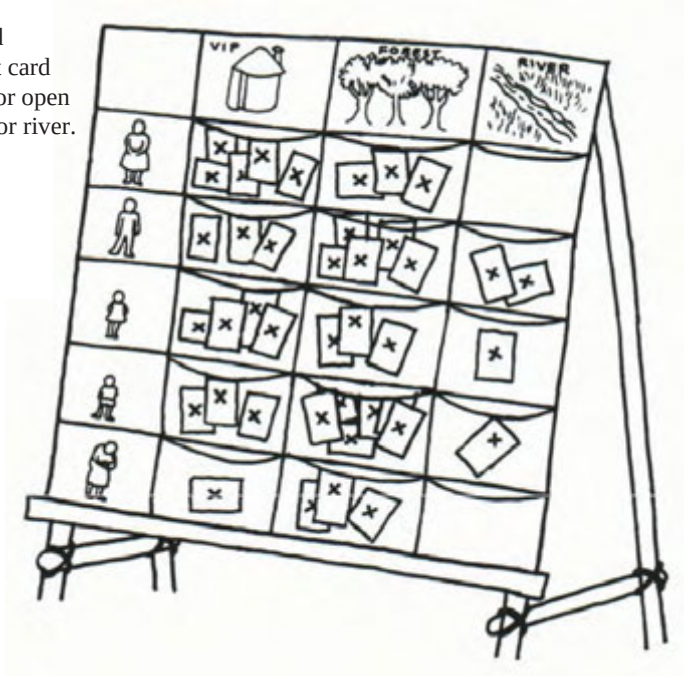
Sample Checklist

Note: who, how, where, when, with what?

-child/infant defaecation
-adult defaecation
-other defaecation
-anal cleansing
-child bottom cleaning
-child stool removal
-handwashing after anal cleansing
-handwashing after cleaning child's bottom
-water collection
-water handling
-handwashing before preparing food/ feeding child/ eating
-animals in the compound

General Observations:
-stools on the ground
-latrine
-living space
-other possible risk practices

Sample of matrix called pocket chart voting, put card on mark who use VIP, or open air defecation in forest or river.



(6) Change behavior techniques

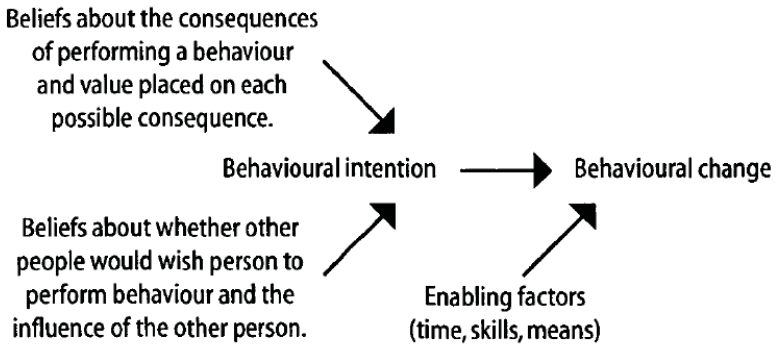
- Focus group discussion: select target group or assembled representatives from community and creates an atmosphere where individuals feel free to express opinions openly on topics such as the environmental problems caused by excreta and how they can be mitigated. Within the discussion, attendants understand necessity of behavior change. Through many focus group discussion, they try and find the results. Thus way, behavior change spread among the group and gradually infect with other members of the community.
- Self survey: leave self survey and self assessment after workshop and focus group discussion. Attendants of the self survey view their own understanding and help to increasing the motivation of change behavior.

- Change behavior is not force to, but based on understanding

FIGURE 2

BASNEF model:
How individuals change hygiene behaviour

(after Hubley 1993)



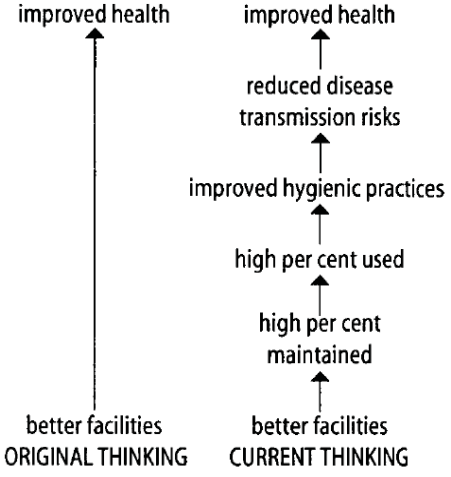
BASNEF = Beliefs, Attitudes, Subjective Norms and Enabling Factors

- Concept of traditional hygiene improvement program is provide better facility immediately improves hygiene but found it is wrong.
- There needs so many things to lead to change people's behaviors. High percent used makes change the behaviors or people follows majority. New practice needs to turns to majority.

FIGURE 3

Change of conceptual thinking on how technical projects contribute to improved hygiene and health

(after Melchior, 1989)



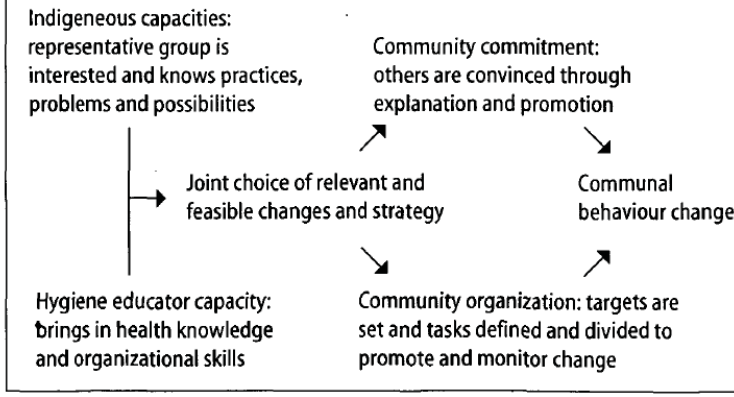
(6) Change behavior techniques

- BASNEF Model explain theory of behavior change
- Individual will take up a new practice when he or she believe that practice has net benefits for health or other reasons and considers these benefits important
- He or she will then develop a positive attitudes to the change
- Positive or negative views from others in is or her environment will also influence the person's decision to try the new practice
- Enable factors such as skills, time and means then determine if the practice is indeed taken up
- Then he or she found to be beneficial, that practice is continued

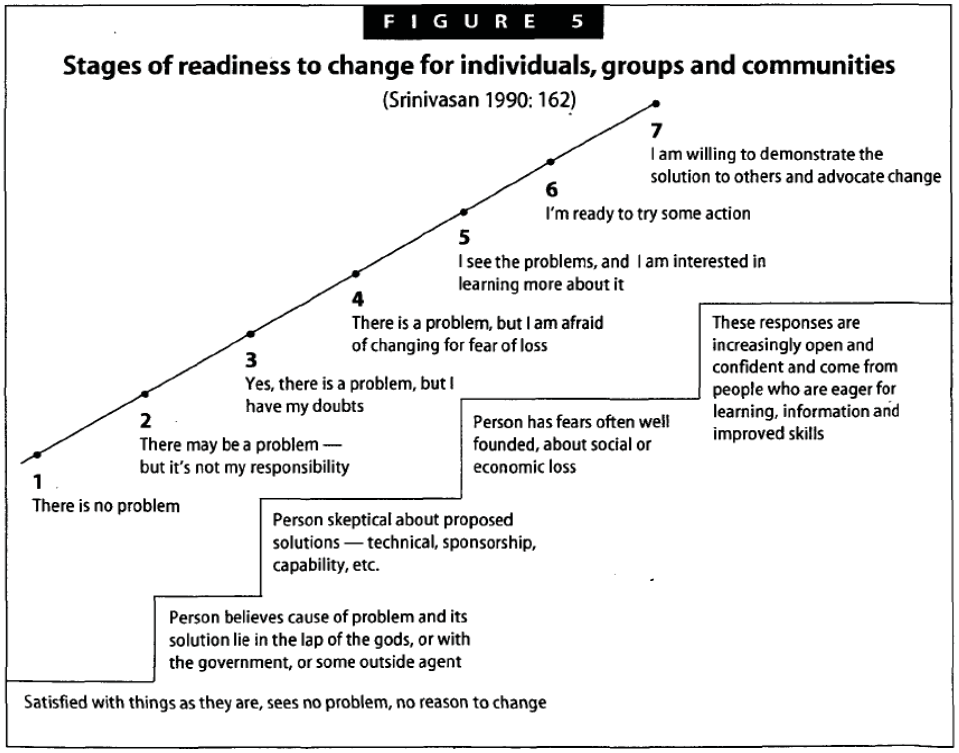
FIGURE 4

Community action model:
How communities change hygiene

(after White, 1981:103-106)



- Community action approach to hygiene behavior change
- Combines local knowledge of community members about condition, beliefs and resources with more scientific knowledge of the hygiene educator
- This combination results in a more complete insight for all concerned and leads a better definition of changes and choice of strategies than when either party acts by itself
- Making joint choices, assigning responsibilities and monitoring action, commitment of member to achieve the agreed to change
- The representatives of the group for various sections in the community ensure that practices, views and capabilities of each section plat a role when the program of change is planned.
- Also facilitates getting commitment for the change from wide cross section in the community through explanation and promotion by the group's members, and ultimately a wider adoption of the change by the community.
- It may better starts to focus group first, as pilot and then widen gradually.



Change behavior

- If people feel they have no problem on their hygiene behaviors, it is not useful to try to tell them so with a lots of information. Those information does not fit into their own way of thinking.
- It may need different strategy for make notice the problem they ignore such as using game or role play.
- Three educational strategies are useful

- Focus to selected group for change and gradually wipes out

- 3 change behavior strategies

1) Didactic teaching: equips people as quickly as possible with the knowledge and coping skills the are believe to lack. In didactic teaching, attendants learns the same things. Of course select target or social marketing techniques should better applied for conducting didactic teaching.

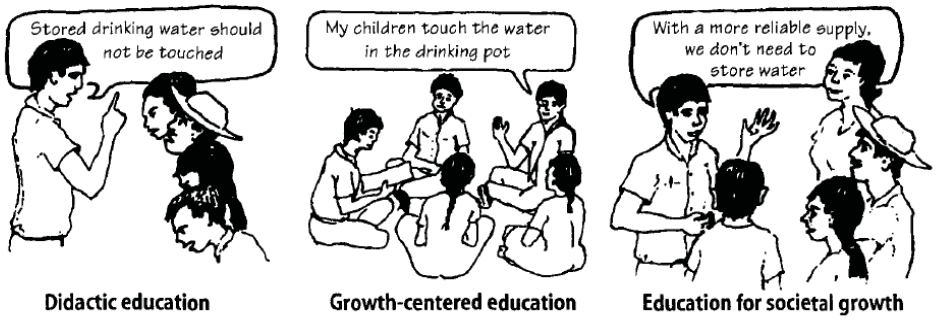
2) Growth centered education: concerned with the development of human capabilities and an increased sense of human dignity. The groups makes their own decisions and the facilitator keeps a low profile for the group establish their identity on their priority issues and discover and exercise powers and talents available in the group.

3) Education for societal growth: Facilitator first discovers themes that are meaningful to the group and helps the group to analyze their situation. This help the group to gain critical insights into structures of power and develop their capacity to organize. The process culminates in action to restructure and control the environment.

FIGURE 6

Three educational strategies

(adapted from Werner & Bower, 1982)



(7) Monitoring and follow up

Behaviour trials: sample follow-up form

Day No/date D..... : ..../...../.... Family ID No |_____|	Carer	Child			Problems Solutions Advantages of new practices
		1	2	3	
Where did they last defaecate? 1= latrine in the yard 2= neighbour's latrine 3= in a potty 4=on the ground 5=other (note)					
How were hands washed after stool contact? 1= not washed 2= plain water 3= with soap 4= other (note)					

(7) Monitoring and follow up

- Organize the water users committee/union

In Indonesia and Philippines, we recommend to organize the water users committee that members are household surrounding public taps and commonly use the water from that public taps.

In Indonesia, this water users committee has three choices, 1) join to Public Water Supply Authority and pay water bill issued from the Authority. In this case, maintenance of facilities are responsibility by the Authority. 2) request repair to the Authority and the water users committee pay the necessary cost when repair is necessary. 3) Not request maintenance and repair to the Authority but manage by the committee.

In case-2, the committee collect small amount of money monthly for prepare broken or maintenance. We also strongly recommend to collect small money monthly for prepare maintenance and repair in case-3.

As technical support, we provide guideline and manual on management and accounting on the committee and facilities, and training on how to record money collected from users as well as how to manage the committee, including how to record and file the minutes of meeting, facility maintenance and repair.

(7) Monitoring and follow up

- Health and sanitation worker

In Philippines, they have health workers and sanitation workers based on committee. They cooperate to work for improving health, hygiene and sanitation issues in the committee, including anti water born diseases and anti vector born diseases for improving sanitation facility, water supply and behavior changes on hygiene.

They work basically volunteer and cooperate sometimes with state health program such as anti schistsomiasis. Most health worker also has qualification of mid wives, health helper or nurse.

On the other hand, sanitary worker mainly works for improvement of sanitary facilities including toilet, drainage and solid waste damping system.

Health workers of Philippines come to health center for cooperation with anti schistosimiasis program assisted by JBIC: Japan Bank of International Cooperation

5. Role of water supply for hygiene

Objectives of topic-5: Role of water supply for hygiene

- Understand roles of water supply
- Understand issues of water supply
- Introduce material for hygiene and environment conservation education
- Discuss possibility of WUSC's involvement/contribution and other parties involvement/contribution for promoting hygiene in Nepal, if possible

5. Role of water supply for hygiene

- Improve water supply reduces diarrhea morbidity by between 6% to 22%m if severe outcomes are included
- Access of safe water and sanitation facilities and better hygiene practice can reduce morbidity from ascariasis by 29% and hookworm by 4%
- Improving access to safe water sources and better hygiene practices can reduce trachoma morbidity by 27%
- Water supply system contribute to reduce diarrhea and water born disease, still provide safe water is not enough.

5. Role of water supply for hygiene

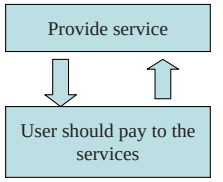
.A) Mission of water supply

- Provide clean and safe water affordably to maximum people with reasonable cost is mission of water authority
- Decrease water born diseases with providing safe water (potable)

(B) Issues

- To meet water demand (for improve life standard)
- Improvement of water supply coverage
- Limited water resources (efficient water usage)
- Necessity of water resources conservation (protect from contamination)
- Certain mass user who can share cost is necessary for support water supply system (wiliness to pay water bill)

Promotion of hygiene improvement



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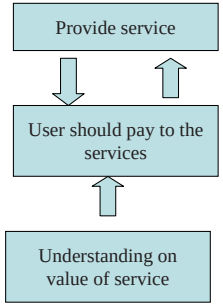
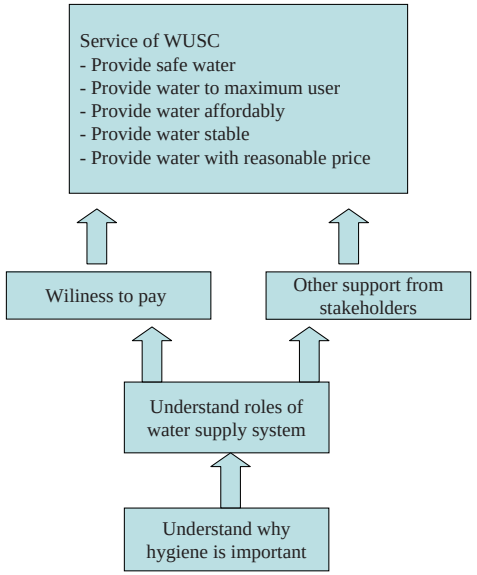


5. Role of water supply for hygiene

(C) Issues regarding wiliness to pay of water bill

- Certain mass user who can share cost is necessary for support water supply system
- It is very important to make user understand roles of water supply for hygiene
- If user can understand roles of water supply, they could have “wiliness to pay”. If not, they wonder why need to pay for water.
- People are forgetful. But we had better make them understand history. What was happen in the past and how it was improved, and how water supply system makes change.

Promotion of hygiene improvement



Case in Japan:

- provide two classes in primary school and junior high school and teach roles of water supply and importance of hygiene
- joint local festival and have poster session to make people understand roles of water supply
- Invite school kids and parents to facility and give them some short filed trip on how to intake water and how to distribute
- Have some special promotion week
- Deliver newspaper (quarterly, 4 pages small sized news pamphlet in Tokyo Metropolitan Water Works Bureau, announced budget, financial status, project plan, useful information, events, etc.)

Case of the Bureau of Waterworks, Tokyo Metropolitan Government

Sub reader textbook for grade 4

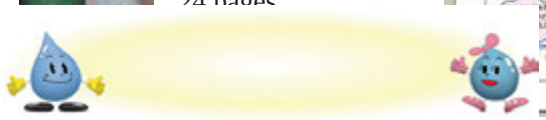
Use in social science class

26 pages

Sub reader textbook for grade 7

Use in environment science class

24 pages

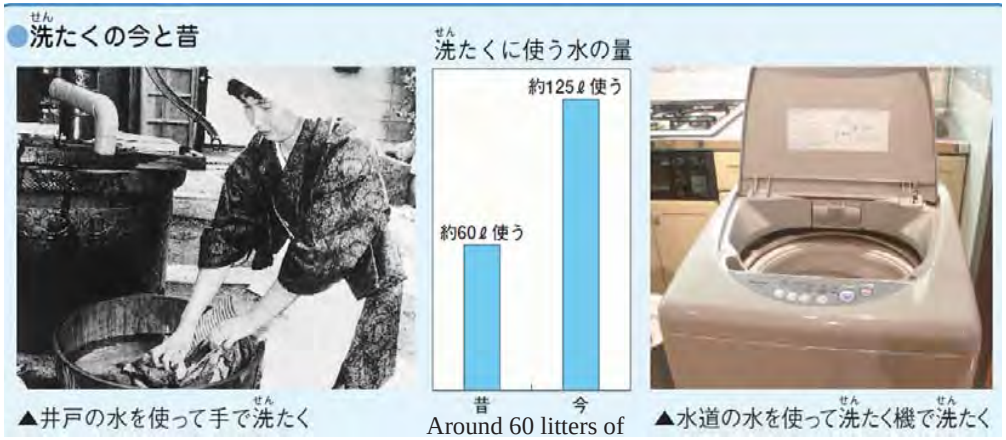


Teaching how water supply system change the life style of people in this page for the sub reader textbook for grade 4 students.

“Previously, people use river water and wells. People must washing by hand. Many people die with diarrhea and other oral diseases. Now, people can use tap water, and washing machine washes clothes. Also people can drink tap water”.

5. Role of water supply for hygiene

Life style and life standard was changed by Water Supply System. For example washing.



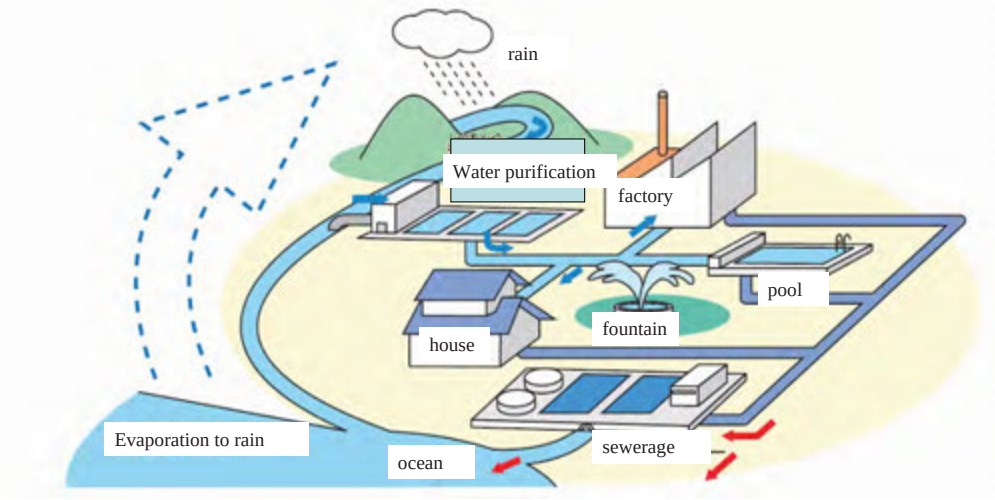
Washing was by hand using water from shallow well

Around 60 litters of water was consumed for washing previously, but now use around 125 litters

Washing is using with washing machine and water of water supply system

Sample of chart for explain water supply system as promotion of hygiene improvement and roles of water supply system

(from sub reading text for children Grade 4, Tokyo Metropolitan Waterworks)



Sample of chart for explain water supply system as promotion of hygiene improvement and roles of water supply system

(from sub reading text for children Grade 4, Tokyo Metropolitan Waterworks)

Sample of chart for explain water supply system as promotion of hygiene improvement and roles of water supply system

(from sub reading text for children Grade 4, Tokyo Metropolitan Waterworks)

(1) In take

(2) Pond

(3) Filtration

(4) Chlorination

Kid's poster after class using sub reader textbook. The Bureau of Waterworks has in such ceremonial poster exhibition for kids and parents.

5. Role of water supply for hygiene

5. Role of water supply for hygiene

Case in Indonesia:

- provide classes in primary school, women's meetings and village meetings to teach roles of water supply and importance of hygiene
- Conduct with joint team of Health Center (sometimes Department of Health), Public Work Department of Municipal Government. *
- Make deliverable pamphlet of 2 pages for several topics, and water charges are one of them. (sanitation, etc.)
- Also make storyboard

*) Remark: In Indonesian rural area, Public Work Department of the municipal government construct water supply facility, and water supply public company(?) operate and manage the water supply system including small expansion and service connection. If large rehabilitation and huge investment are required, and public water supply company could not do by their own financial resources, municipal government is constructed and subsidizes in case of Nusa Tongara Timor and Nusa Tongara West Sates.

5. Role of water supply for hygiene

Case in Mexico:

- provide classes in primary school to teach roles of water supply and importance of hygiene.
- Join local festival and have poster session to display system, roles of water supply and future project plan
- Make deliverable small materials and pamphlet (storybooks for kids, gazette copy of new water charges, small gifts such as pencil and paper ruler)

*) Remark: this is the case of two state water supply corporations in North Mexico, Typhana and Mexicali.

5. Role of water supply for hygiene

Case in Philippines:

5. Role of water supply for hygiene

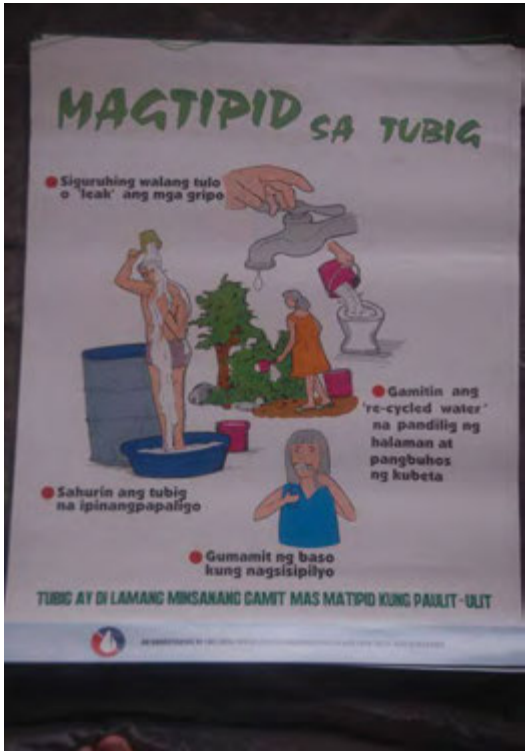
Case in Philippines:

5. Role of water supply for hygiene

Case in Philippines:

5. Role of water supply for hygiene

Case in Philippines:



Poster for water conservation

Water conservation: not flushing water while:

- Close the tap faucet when not use water

- Use recycle water for plant or washing toilet

- Use tanked water for washing (not flashing water while washing body)

-Use glassed water for clean your mouth and teeth for proper hygiene (again not flashing water while brushing tooth)

Water is valuable resources and need to use efficiently

Poster for water conservation

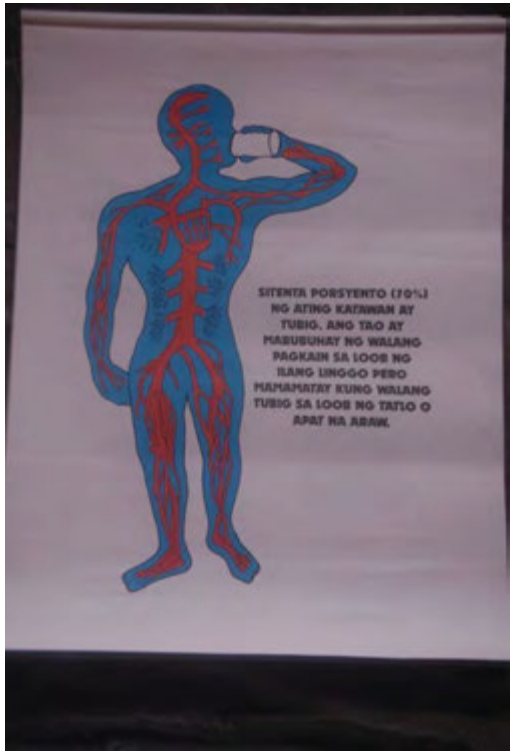
Wash your hand well for proper hygiene

Wash your kitchen well for proper hygiene

Use shampoo for cleaning your hand and protect from contamination by micro virus

Wall hang training material for “A Health, Hygiene and Water Conservation Education Program” made by Water Authority of Philippines.

Hallow Kids!



Hyman body contained 70% of water. Water in the body flows like arrows and sustain life.

Water is very important. Without water human could not survived even couple of days.

Death or sickness by oral disease come from water dehydrate and change the balance of water in the body.

Water distributed by the authority is purified for safe to drink.

However, boils water 5 minutes for drinking.

Just put water to pot, heating and boiling for 5 minutes.

Safe water protect from oral diseases such as Cholera and Diarrhea.

Dehydrate by diarrhea

Ambulance by Cholera

Wash your hand well for remove micro bacteria before eating protect from oral diseases.

Wash food well with clean and safe water from the authority.

Cover dishes for protect from contamination by insect.

Remove and keep away insects including fry while cooking. Insects contaminating food and cause oral diseases.

Cooperate to community hygiene ands clean community environment including clean dust and garbage.

Brush and clean your teeth and mouth.

Watering for plant to conserve green.

Repair quickly for broken water supply facility including water pipe.

Wash your body and keep clean.

Wash your car.

Wash your shoes

Wash your clothes

Wash your hand

Wash dishes and pots

Tanked water

Volume of water and water level is different with dry season and rainy season.

River is dry up in dry season

Water level of well is high in rainy season but low in dry season

Spring water is also dry up in dry season

For conserve green forest with afforesting, conserve water resources.

Water is recycling in nature, hyporation, drop as rain and flow to river.

Keep clean your house with all member of your family.

Keep clean your environment and keep social rules for good and comfortable society. Dump disposal to garbage trash.

Sample of poster using in Bangladesh

- Water tariff
- conservation of water

Water tariff."Those who have paid water tariff may use water; others may not"

Zero Waste:"Let us turn off the taps that are needlessly left running

Also have such kinds of posters:

- wash your hands
- clean environment (burn or dig disposal into grand)
- use latrine

5. Role of water supply for hygiene

Typical subject for promotion of hygiene improvement

1) Roles of water supply system

- How water supply system and hygiene works for health
- How water supply system change the life style and improve life standard

2) Conservation

- Conservation of water usage
- Conservation of water resources (protect contamination)

3) System and facility

- System of water supply
- Water rate and how water rate use efficiently and effectively

5. Role of water supply for hygiene

Typical material for promotion of hygiene improvement

1) For school kids

- Poster training material (for explain hygiene and health)
- Pamphlet (reading material for explain system and importance of hygiene and health)
- Small give away (prizes for poster contest)

2) For adults (in community meeting)

- Poster training material (conservation of water resources, conservation of water usage)
- Pamphlet (water rate, small knowledge of heath and hygiene, etc.)

5. Role of water supply for hygiene

Discussion/presentation

- How WUSC and other organization can contributing to promoting hygiene

1) What WUSC can do for promotion of hygiene?

- Conduct special class for school kids
- Develop/provide sub reader
- Poster and essay contest for water supply, water resources conservation, etc.
- Conduct seminar/workshop for community based groups (e.g. women's group) for hygiene, water supply, community based water supply management and maintenance, etc.

2) What other parties can do for promotion of hygiene?

-

-

5. Role of water supply for hygiene

items	Cooperation (Y/N)	problems	opportunities	resource person
1) What WUSC can do for promotion of hygiene?				
- Conduct special class for school kids				
- Develop/provide sub reader				
- Poster and essay contest for water supply, water resources conservation, etc.				
- Conduct seminar/workshop for community based groups (e.g. women's group) for hygiene, water supply, community based water supply management and maintenance, etc.				
2) What other parties can do for promotion of hygiene?				
-				
-				

6. Development of training materials for promotion of hygiene in school

6. Development of training materials for promotion of hygiene in school

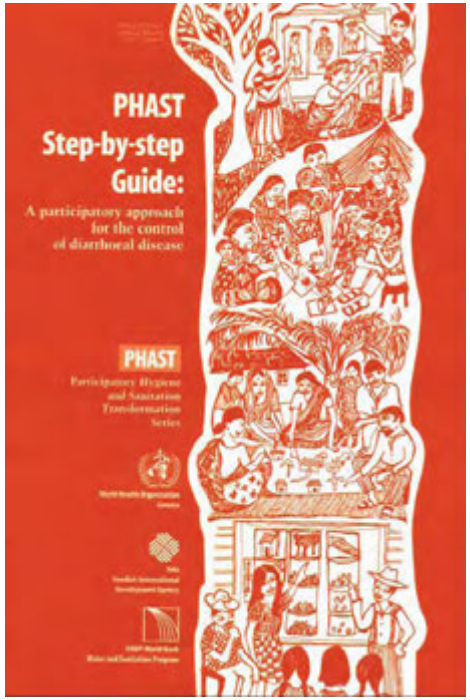
Objectives of topic-6: Development of training materials for promotion of hygiene in school

- Understand PHAST as standard participatory hygiene promotion methodology
- Introduce sample training material of hygiene promotion material for school student
- Discuss what kind of training material could be possible to develop for promotion activity to school student and school education, mainly target to primary school student
- Develop one or two training material for promotion of hygiene to primary school students

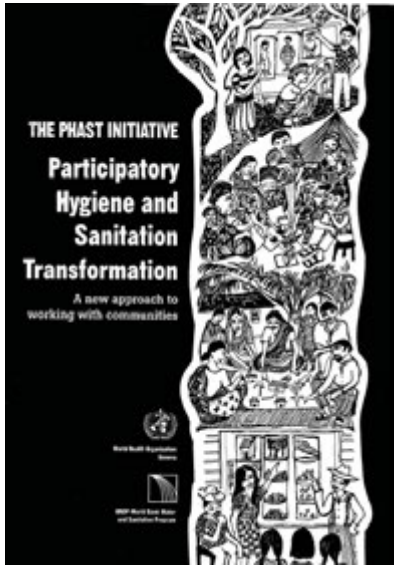
6. Development of training materials for promotion of hygiene in school

Agenda of topic-6: Development of training materials for promotion of hygiene in school

1. PHAST
2. Training material sample
3. Discussion
4. Development of training material for primary school student



1. PHAST



(1) Belief history

- Participatory Hygiene And Sanitation Transformation
- One of best known and standard participatory methodology for promoting hygiene and sanitation developed by WB, WHO, UNICEF and UNDP corroboration team in 1990s based on SARAR: Self-esteem, Associative strengthening, Resourcefulness, Action-planning and responsibility.
- The SARAR methodology was first conceived by Lyra Srinivasan in the 1970s.
- In the early 1980s, the United Nations Development Programme (UNDP) further developed and adapted the SARAR methodology to the special needs of the water supply and sanitation sector.
- In 1992 the UNDP/World Bank Water and Sanitation Program and WHO joined forces to produce better methods for hygiene education by adapting the SARAR methodology more specifically for sanitation and hygiene behavior change, thus was born the PHAST.
- In 1990s to now, SIDE and UNICEF has been supporting national diarrhea control program using this methodology.

1. PHAST

(1) Belief history

(2) Objectives of PHAST

(3) PHAST Principles

(4) Steps, activities and tools for support analysis, planning, implementation and M&E.

1) Problem identification

2) Problem analysis

3) Planning for solutions

4) Select options

5) Planning for new facilities and behavior change

6) Planning for monitoring and evaluation

7) Participatory evaluation

(2) Objectives of PHAST

1) Objectives

- To promote participatory hygiene and sanitation concept
- To enable people to overcome constrains to behavioral change

2) Means/style to achieve these objectives

- By assessing people’s knowledge
- By investigating people’s environmental situation
- By visualizing future scenario/incident
- Analyzing constraints to change
- Planning for change
- Implementing change

(3) PHAST Principles

- To solve the problem in a participatory group process
- To give information to address problems
- To create sense of ownership
- To empower people with decision making skills
- To prioritize disease prevention strategies
- To accommodate different categories in the community in understanding the spread and control of diseases

(4) steps

1) Problem identification
2) Problem analysis
3) Planning for solutions
4) Select options
5) Planning for new facilities and behavior change
6) Planning for monitoring and evaluation
7) Participatory evaluation

STEP	ACTIVITY	TOOL
1 Problem identification	1. Community stories 2. Health problems in our community	1. Unserialized posters 2. Nurse Tanaka
2 Problem analysis	1. Mapping water and sanitation in our community 2. Good and bad hygiene behaviours 3. Investigating community practices 4. How diseases spread	1. Community mapping 2. Three-pile sorting 3. Pocket chart 4. Transmission routes
3 Planning for solutions	1. Blocking the spread of disease 2. Selecting the barriers 3. Tasks of men and women in the community	1. Blocking the routes 2. Barriers chart 3. Gender role analysis
4 Selecting options	1. Choosing sanitation improvements 2. Choosing improved hygiene behaviours 3. Taking time for questions	1. Sanitation options 2. Three-pile sorting 3. Question box
5 Planning for new facilities and behaviour change	1. Planning for change 2. Planning who does what 3. Identifying what might go wrong	1. Planning posters 2. Planning posters 3. Problem box
6 Planning for monitoring and evaluation	1. Preparing to check our progress	1. Monitoring (checking) chart
7 Participatory evaluation	1. Checking our progress	1. Various tool options

(4) steps

1) Problem identification

The community discuss their existing health problem in the community

Problem identification

STEP	ACTIVITY	TOOL
1 Problem identification	1. Community stories 2. Health problems in our community	1. Unserialized posters 2. Nurse Tanaka

This step has two activities:

1. ***Community stories*** is designed to help the group express important concerns and issues facing its community.

2. ***Health problems in our community*** aims to focus discussion on health-related issues.

By the end of these two activities, the group should have identified the main issues facing its community and have decided if diarrhoea is a priority problem. It should also be interested in and willing to follow the process through to the next step.

1-1. Community stories

Purpose

· to enable group members to identify important issues and problems facing their community

· to help build a feeling of team spirit and mutual understanding

· to generate group self-esteem and creativity

Time

· 1-2 hours

Materials

· tool: unserialized posters

· sticky tape

What to do

1. Ask the participants to form groups of 5-8 persons. Give each group a set of materials.

2. Give the groups the task using these words:
"Each group will choose 4 drawings from the set Working together, develop a story about your community using the 4 drawings you have selected. Give names to the people and to the place where the story is taking place. Your story should have a beginning, a middle and an ending."

3. Give the groups about 15-20 minutes to make up their story.

4. When all the groups are ready, ask each group to tell its story to the other participants using the drawings it chose. Let the groups decide how they will tell their story to the other participants. Possible options include:
- a single person selected by the group
- a number of persons selected by the group
- participants act out their stories.

5. Invite the other participants to ask questions about the story and let the group answer them.

6. Once all the stories have been told, invite the group to discuss the main points of each story.

7. The following questions can be used to help stimulate the discussion, if the group is very quiet or silent:
- Are these stories about events happening now in this community?
- What issues were raised that could be considered to be problems in the community?
- How could these problems be resolved?
- What other (or similar) problems does your community face?

8. If the group did not come up with any problems related to water and sanitation, try the activity again using a set of drawings which are less general. Use instead a set of drawings which are more directly related to health and sanitation issues. Facilitate the activity in the same way as before.

9. Facilitate a discussion with the group on what it has learned during this activity, what it liked and what it did not like about this activity.

Notes

1. Let the small groups make up their stories by themselves. Do not offer guidance or assistance on what the subject of the groups' stories might be.

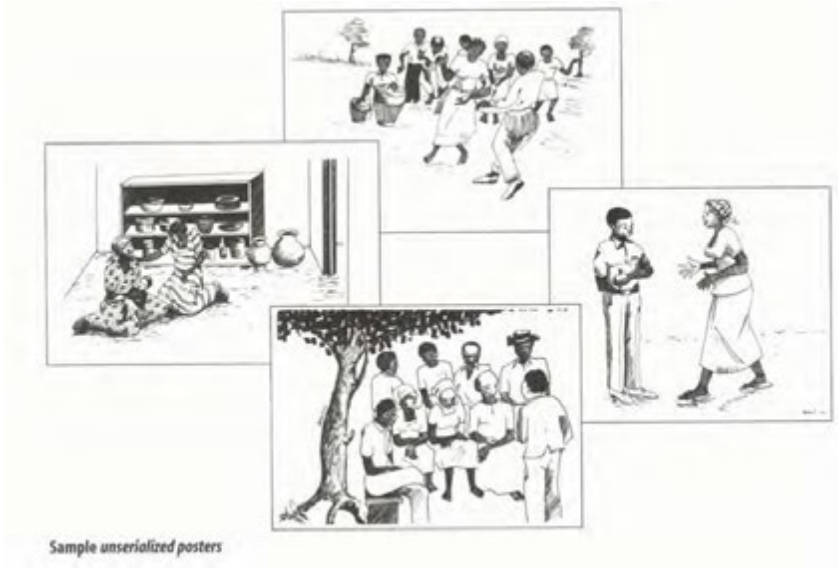
2. The purpose of this activity is to help the group express issues that are of concern to it. Don't worry if health issues are not directly identified. (The next activity will help the group to do this.)

3. If it appears that the group would like to work on issues which are not related to environmental sanitation, try to put it in touch with appropriate institutions, government departments, development agencies or nongovernmental organizations.

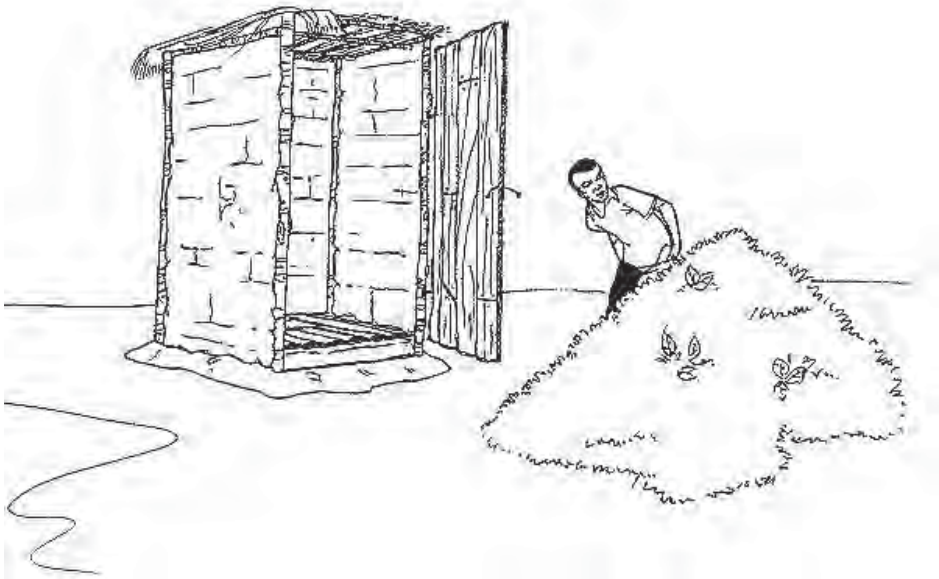
4. Groups will frequently find this activity stimulating and enjoyable, and may come up with two stories or ask for a second chance. If time permits, carry out the activity again since it may help you to discover important information about the community.

1-1-1. Unserialized poster

- There are 15 open ended ambiguous posters depicting various communities situations
- The community is divided into smaller groups and each group is given a full set of unserialized poster
- Group then share their stories



Sample *unserialized posters*



Information:

serialized poster

Serialised pictures

The purpose of this exercise is to draw or the participants' knowledge and experien and apply it to problem solving. Local awareness of disease transmission can be explored in this way. By the end of the session participants should be able to describe ways in which hygiene practices are related to the spread of water and sanitation related diseases and identify w of preventing them.

•Participants divide into small groups and each group is given a set of randomly ordered sequential pictures showing some the hygiene practices that transmit diseas

•Ask them to put the pictures into an orde sequence.

•Ask them to say why they have made th particular choices and encourage discussi around the issues depicted in the pictures

•What action could be taken to improve t situation and by whom?

•Ask each group to discuss their findings with the whole group.

1-2 Health problem in our community

Purpose

· to help identify important health problems in the community and to discover which of them can be prevented through community action

Time

· 1-1½ hours

Materials

· tool: Nurse Tanaka

· pins, tacks or sticky tape

· pens and paper

· coloured stickers (optional)

What to do

1. If there has been a break between this activity and the previous one, start with a group discussion to review what was learned or decided at the previous meeting.

2. This activity can be carried out in a single group if does not contain more than 30 people. If the group is larger than this, you will need to split it into small groups. It is best to have enough drawings so that each person can participate.

3. Put up a drawing showing a health centre and a health worker such as a doctor or nurse. Give the drawing of the health centre the name of the nearest local health centre with which the group is familiar.
In many societies people go to traditional healers in addition to, or instead of, a health centre. If this applies to the group you are working with, include a drawing of a local traditional healer along with or instead of the health worker. Participants can then choose either the health worker, or the traditional healer, depending on who they would normally see when they suffer from particular symptoms or illnesses.

4. Show the drawings of the different people to the group. Give the group the task using these words:
"These people are coming to visit Nurse/Doctor [say local name] at the [say local name] health centre. Choose one drawing each and come and stick your person next to the health centre and explain why the person is visiting the health centre."

5. Once all the drawings of people have been used, ask the group the following question:
"Are there any problems that we have forgotten?"
Record any additional problems that participants mention.

6. If the group is literate, ask a participant to write down on small strips of paper the reason why each person is visiting the health centre, and stick these next to the person. The writing should be large enough for all the group to see.

7. Now ask the group the following question for each problem identified:
"Do you have any ideas about why people might have [state the problem]?"
The group should be able to remember its answers but they can also be written down next to the problem if the group wishes.
If participants have questions about the causes of diseases, redirect them to the group to find out what other participants think. If the group cannot come up with certain answers, ask it to identify a way of obtaining the necessary information.

8. Continue the group discussion but this time ask the group to think about what it could do to deal with the causes of the problems. Go through the causes one at a time. Ask the group the following question:
"Does anyone have any ideas about how this problem could be prevented?"
Again, the group should be able to remember this information, but it could also be written up next to the causes.

9. Ask the group to sort the problems into those which could be prevented by community action and those which will continue to require treatment at the health centre.

10. Ask the group to identify and highlight those problems which could be prevented and which it thinks are related to water, sanitation and hygiene practices.
Underline words or use colored stickers on the figures to show which problems the group thinks are related to these factors. Use local descriptions for the technical terms, for sicknesses, and for specific sanitation and hygiene practices.

11. Facilitate a discussion with the group on what it has learned during this activity, what it liked and what it did not like about this activity.

Notes

1. If the group describes symptoms (stomachache, fever, etc.) rather than naming specific diseases or conditions, this is OK.

2. Don't worry if the group "misses out" what you think are important diseases. This is a discovery in itself. It means that you will need to consider how to help the group discover this information by itself. Do not suggest diseases you know of and think the group has missed. Let the group make suggestions based on its knowledge and experience.

3. If participants hesitate to choose between the nurse/doctor and the traditional healer, you can help by reminding them that the type of health problem, not the choice of healer, is what is important.

4. This activity may have shown you that the group lacks health knowledge. If this is so, the next step will be to help the group find out for itself how disease can be spread by: the way people handle water; the way human waste is disposed of and personal hygiene behaviours.
This new knowledge may make the group change its opinion of how disease can spread through its community through its hygiene and sanitation practices.

1-2-1. Nurse Tanaka

- There are cards which have community people and local health care providers, e.g. nurse/traditional healer
- This tool helps to identify what local diseases are common in the community and where people with these diseases can get treatment

Sample drawings for *Nurse Tanaka*

(4) steps

2) Problem analysis

When analyzing the problem we do not only look at water and sanitation status in the community but we let the community be the one that tell us the good and the bad hygiene behaviors. It also looks at investigating community practices and see how diseases are spread.

Problem analysis

STEP 2	ACTIVITY	TOOL
2 Problem analysis	1. Mapping water and sanitation in our community 2. Good and bad hygiene behaviours 3. Investigating community practices 4. How diseases spread	1. Community mapping 2. Three-pile sorting 3. Pocket chart 4. Transmission routes

This step has four activities:

1. ***Mapping water and sanitation in our community*** helps participants to map those water and sanitation problems which could lead to diarrhoeal disease.
2. ***Good and bad hygiene behaviours*** helps the group to look more closely at common hygiene and sanitation practices and to identify how these may be good or bad for health.
3. ***Investigating community practices*** is optional. Participants use a pocket chart to collect and analyse data on actual practices in the community. What people are actually doing can then be compared with what the group has discovered to be good for health or bad for health in the ***Good and bad hygiene behaviours*** activity.
4. ***How diseases spread*** gets participants to look at how faeces can contaminate the environment and lead to diarrhoeal disease.

At the end of this step the group should understand how some of its common everyday hygiene and sanitation practices may be causing diarrhoeal disease. It will then be able to start considering what can be done to improve these practices in order to prevent diarrhoeal disease.

Important note

Let participants use the activities in this step to find out for themselves what causes diarrhoeal disease in their community.

Do not direct the group by telling it what you think it needs to know.

Have faith in the group's judgement. Communities in most parts of the world have been receiving modern, scientific health messages for many years. What has often been missing is the opportunity for communities to consider and discuss this information and to compare it with traditional health beliefs.

2-1. Mapping water and sanitation in our community

Purpose

· to map the community's water and sanitation conditions and show how they are linked

· to develop a common vision and understanding of the community

Time

· 1-3 hours, depending on the complexity of the map required

Materials

· tool: community mapping

· whatever is available: newsprint, marker pens, and spare bits and pieces such as cotton, buttons, small stones, beads and small scraps of material

· coloured stickers, if available

What to do

1. If there has been a break between this activity and the previous one, start with a group discussion to review what was learned or decided at the previous meeting.

2. Give the group the task using these words:
"Make a map of your community. You can do this in any way you like. Here are some materials to start with and you can add to these anything else you want to use.
"You need to include on your map the following:
- important physical features and boundaries
-roads, paths
- housing
- other buildings such as schools, churches, health facilities, businesses
- farms, fields, forests, plantations, parks
- water sources
- sanitation facilities
- waste disposal sites."

3. When the map is completed, give the group the second task:
"Divide yourselves into two groups. The group on my left is to try to imagine that it is visiting the community for the first time. The people on my right are tour guides. Their task is to take the group of visitors around the community. It is the first time the visitors have been here and they want to find out everything they can. The tour guides will use the community map to take the visitors on a guided tour. Show the visitors as much as possible, including the water, sanitation and hygiene arrangements, and help them to understand what life is like here by describing the people and their lives. The visitors should ask questions about what they are being shown, to make sure the tour guides have shown them every aspect of life, both good and bad."

The purpose of this "tour" is to enable the group to look at its community from a different point of view. The "tour guides" will probably only show the good things in the community while the "visitors" will try to point out that everything is not perfect.

4. Use the points raised during the "tour" to facilitate a discussion on water and sanitation. Ask the group to describe:
- the water and sanitation arrangements they are proud of (record, if possible)
- any common problems or difficulties that they have with these (record, if possible)
- the most important problems they have (these could be marked on the map with coloured stickers).

5. Explain to the group that in future meetings it will have the chance to discuss how to overcome these problems. Ideas should be recorded so that they can be reviewed later in the programme.

6. Ask the group to display its map where it can be seen by the whole community.

7. Explain that the map needs to be kept safely because it will be used again.

8. Facilitate a discussion with the group on what it has learned during this activity, what it liked and what it did not like about this activity.

Notes

1. Let the participants work without any suggestions and input from you.

2. This activity is very worthwhile but it can be time-consuming. Make allowances for this.

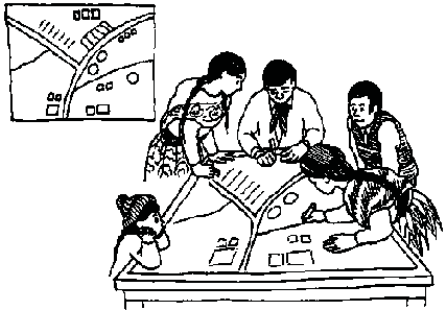
3. The community map will be a useful reference point during future steps. It will be referred to again when the group is:
- considering different ways to overcome problems (Step 4)
- setting goals (Step 4)
- developing the plan to introduce changes into the community (Step 5)
- monitoring and evaluating its progress (Steps 6 and 7).

4. After drawing the map, a community walk can be organized so that other (additional) points can be added.

5. Specific health-related questions raised by participants can be recorded for examination at a later stage.

2-1-1. Community Mapping

- This tool use different types of colors of beans or stones, bowls or tin cans and pictures
- This tool is best utilized when it comes to conducting a community census
- When using this tool its with the aim of investigating demographics and other aspects of particular area



2-2 God and bad hygiene behaviors

Purpose

· to exchange information and discuss common hygiene practices according to their good and bad impacts on health

Time

· 1-1½ hours

Materials

· tools: three pile sorting

· 3 or 4 complete sets of about 30 three-pile sorting drawings

· 3 or 4 sets of heading cards, one with the word “Good”, another with the word “Bad” and the third with the words “In-between”; symbols to represent these qualities could be used instead of the words

What to do

1. If there has been a break between this activity and the previous one, start with a group discussion to review what was learned or decided at the previous meeting.

2. Ask participants to form groups of 5-8 people.

3. Give the groups the materials and the task using these words:
“Sort the drawings into three piles:
- “Good”: those which you think show activities that are good for health
- “Bad”: those which you think show activities that are bad for health
- “In-between”: those which you think show activities that are neither good nor bad for human health, or which you are not sure about.”

4. Give each group a set of about 30 drawings showing different activities and the 3 heading cards. Each small group should work with an identical set of drawings.

5. After 20-30 minutes, ask each group to explain to the other participants its selection and why it made these choices. Let the group answer any questions that the other participants raise.

6. Facilitate a group discussion on the way the different small groups have sorted the drawings. The discussion should cover:
- the differences in selections made
- the reasons for these.

This discussion will provide another chance for participants to share what they know with the rest of the group. The group as a whole may also realise that it has gaps in its knowledge and look for ways to fill these.

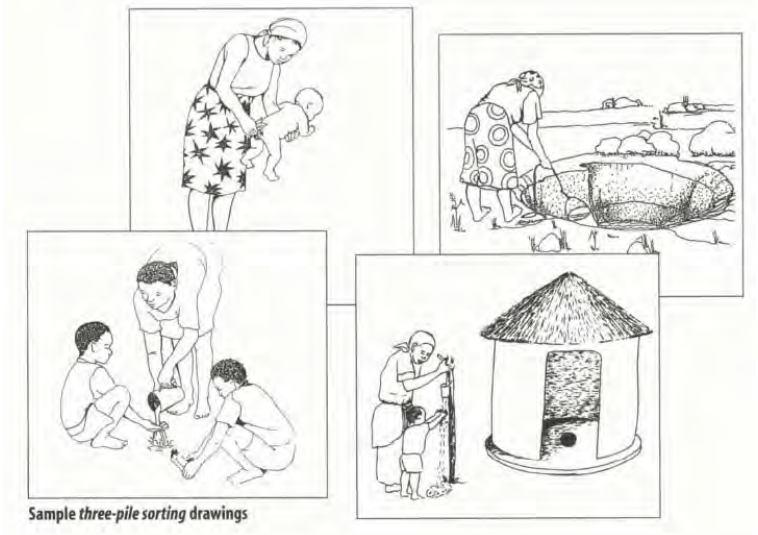
7. Ask the group to consider and discuss the common behaviours in its own community. Ask the group to consider whether these behaviours are similar to any of the “good” and “bad” practices it has identified.

8. Ask the group to keep a record of the activity by displaying the three-pile sorting drawings.

9. Facilitate a discussion with the group on what it has learned during this activity, what it liked and what it did not like about this activity.

Notes

1. It is best to include some drawings which can be interpreted in a number of different ways. This helps make the activity more challenging and stimulates increased discussion. The aim of using the drawings is not to test people's knowledge or to investigate or correct their personal habits, but rather to provide a starting point for a discussion of local hygiene and sanitation beliefs and practices.
2. Don't prompt or direct the choices of the group by giving it information. If people ask you specific questions, redirect the question back to the group for a reply. If it is unable to interpret any one drawing, suggest that it is set aside.
3. If the group wants to know how many people practise good and bad behaviours, the pocket chart can be a useful tool to help it find this information. (See next activity and Part III for other ideas about how to use a pocket chart).
4. At this stage, the group may start to discuss ways of overcoming the bad practices it has identified in its community. Encourage this discussion and have the group keep a record of suggestions made. These can be discussed again in Step 3: Planning for solutions.



Sample *three-pile sorting* drawings

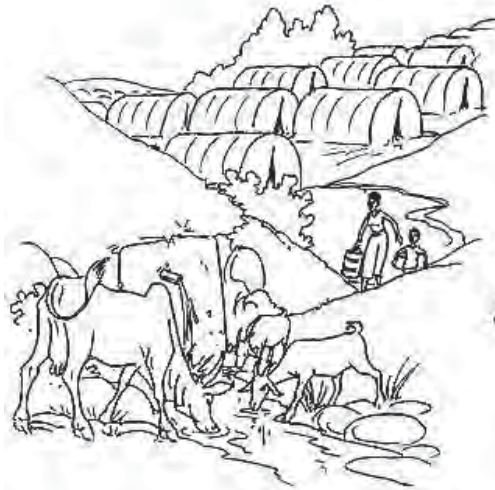
2-2-1. Three pile sort

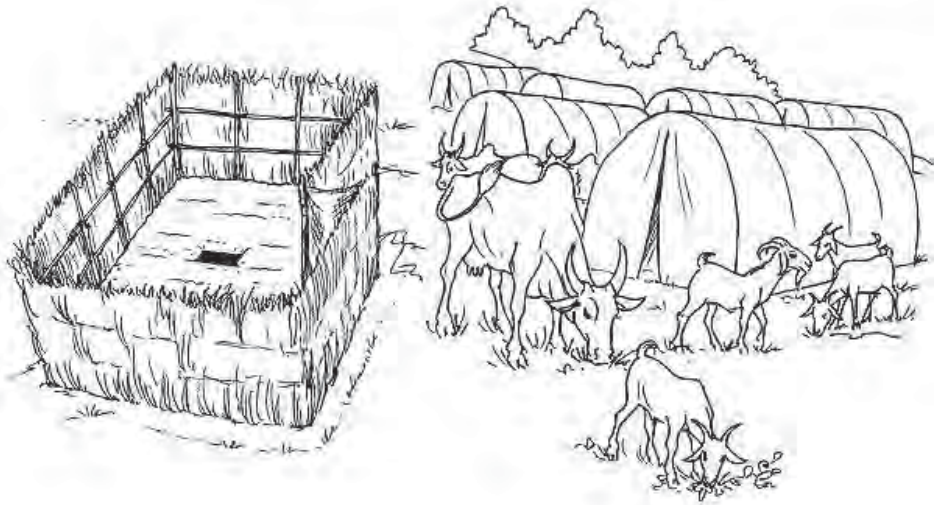
- 20 – 30 pictures reflecting common health/hygiene related activities which could be interpreted as “GOOD”, “BAD”, “IN-BETWEEN”
- This tool helps to create health awareness. It also helps to know the positive and negative implications of a variety of situation in the community
- Community is divided in to groups and each group given pictures to look and agree on what they see. The community sort the pictures into three’s “GOOD”, “BAD” and “IN-BETWEEN”

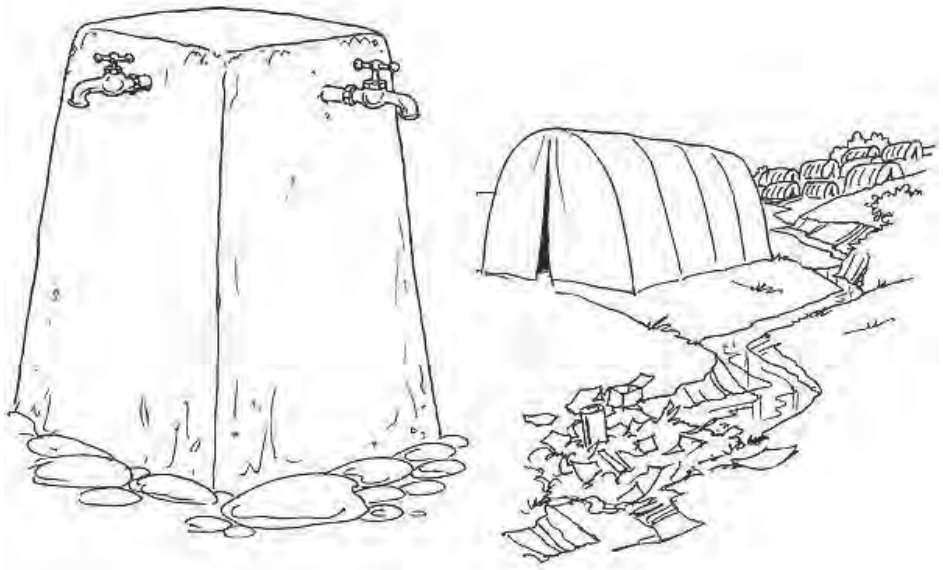
  * “GOOD” – health/hygiene practices which are good:

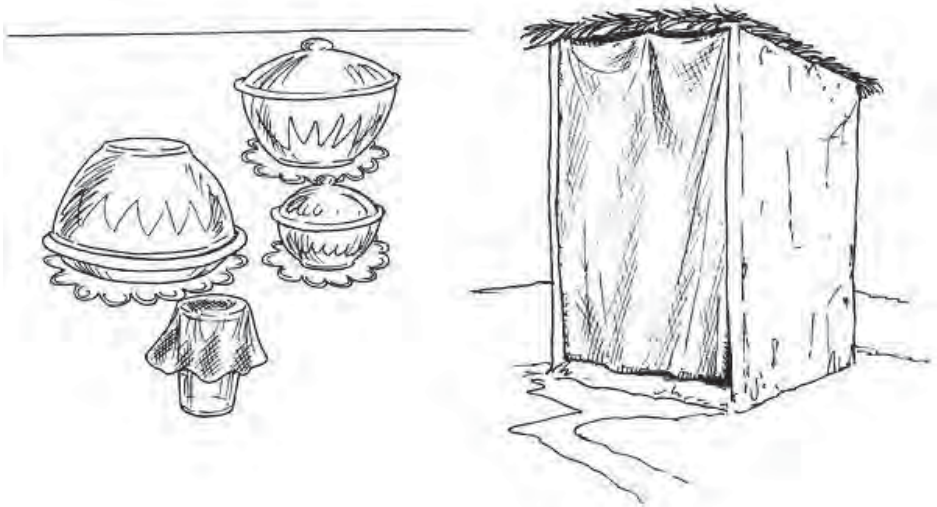
  * “BAD” – health/hygiene practices which are bad:

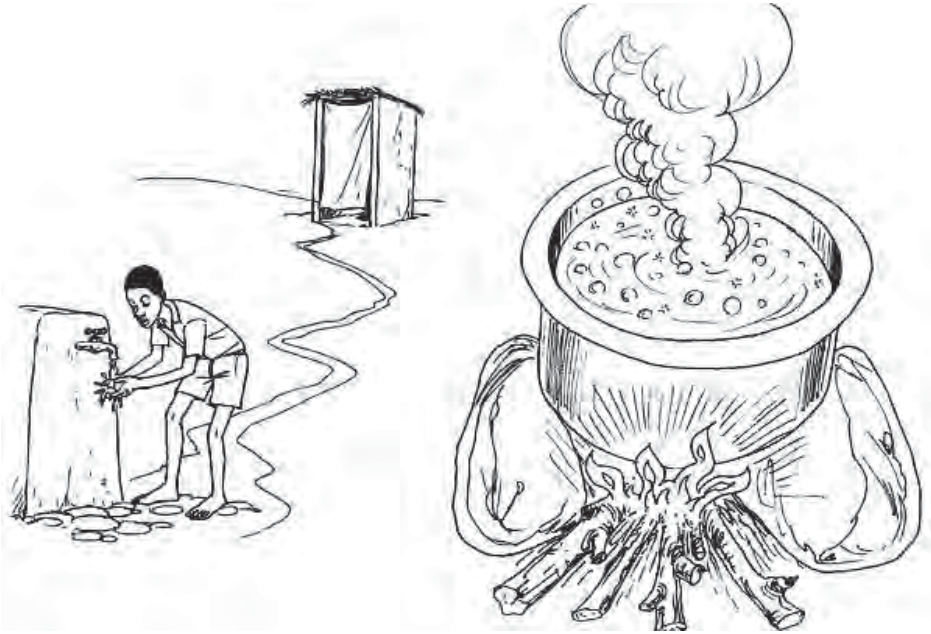
  * “IN-BETWEEN” – if they are uncertain, it’s neither “good” nor “bad”











2-3. Pocket chart

- This tool consists of rows of pocket that can number 5 - 7 horizontally and up to 10 vertically. In situations where the chart is unavailable containers such as pots, cups or bowls or bags ca be used
- This tool is good because it gives the community the abolity to assess, analyze and evaluate any given situation

Purpose

· to help the group collect, organize and analyse information on individual sanitation practices in the community

Time

· 1-2 hours, depending on the number of behaviours/practices identified and the number of people offering information

Materials

· tool: pocket chart
· a pocket chart (or locally-constructed alternative, e.g. jars, tin cans)
· drawings to put on the pocket chart; (three-pile sorting drawings can often be used)
· voting materials, e.g. slips of paper, seeds, pebbles
· blank paper and drawing materials for additional options that may be thought up by the group during discussion

What to do

1. If there has been a break between this activity and the previous one, start with a group discussion to review what was learned or decided at the previous meeting.

2. Show the group the sample pocket chart. Explain to the group:
- what a pocket chart is
- how it can be used to collect information confidentially on what people are actually doing in the community.

3. Ask the group to identify which behaviours or practices it would like to know more about. When these are clear, set up the pocket chart.

4. Once the chart has been set up, show how the information is collected by identifying your own position in the column on the left-hand side and then your option in the row along the top, and then placing a token to indicate the option you use. (The left-hand side column consists of pictures of different types of individuals, such as a woman, a man, a boy, a girl, an old woman. In other words, in placing your token, you identify what type of individual you are, as well as the option you use). Remove your token after the demonstration, emphasizing that this was just an example. You may have to check that participants identify the space in the column which they must start from, and then identify the option they use. In other words, there are two steps to this process: first, who/where am I?; second, which do I do/use?

5. The pocket chart must be set up in such a way that participants can place their tokens without being seen by others. Ask the participants to place their tokens.

6. Once all participants have placed their tokens, ask a volunteer to count the tokens and display the totals.
   Participants should discuss the meaning of the totals. For example:
- Which options are the most (least) commonly used? Why?
- What environmental factors influence people's choices?
- What other options do people favour? Why?
- How do/would these choices affect the health or well-being of the community members?
- If the rest of the community voted, would its pocket chart look like the group's?
- How do actual practices compare with what the group identified as either good or bad for health during the Good and bad hygiene behaviours activity?
- What could be changed?
- What changes in behaviour would the group consider desirable or beneficial, and how could these be achieved?

7. You will need to discuss with the group how representative it wants to make the information collection:
- Does it want everyone in the community to be represented?
- Could a smaller group be chosen from among the community which would be representative of the total population?
- How could the group choose such representatives?

8. Facilitate a discussion with the group on what it has learned during this activity, what it liked and what it did not like about this activity.

6. The tokens should be counted in front of the group so that everyone can see that the counting is done accurately. The tokens should be taped onto sheets of paper or directly onto the pocket chart in order to give immediate visual feedback of the results, and then counted so that none are lost or tampered with. If transparent plastic pockets are used, the tokens can be assessed visually by removing the card covering them.

7. The pocket chart is a good evaluation tool. Information collected at this early stage can be compared with information collected in the same way, later in the programme. By comparing the two sets of information, the group can see whether changes in behaviour are taking place. Remember that the pocket chart can be used over and over for different investigations, for each question or point the group wants to examine.

Notes

1. When this tool is being used for the first time, confusion can be avoided if one drawing only at a time is placed in the left-hand side column. Participants then place their tokens to identify their options. After this, the next drawing can be placed below the first one in the left-hand side column. Continue in this way until all the drawings in the left-hand side column are in place. This process will inevitably be slower than setting all the drawings up at once at the beginning.

2. Stress the need for people to be honest when placing their tokens, that this is a learning exercise and that, as such, it is important that the information collected be true to life.

3. This activity can also be used to collect more information by asking more than one question and using more than one type, colour or shape of token. If the group, for example, wanted to know which options were used occasionally as well as which were used frequently, each participant could use one type of token (say green) to answer the first question, and a different type of token (say red) to answer the second question.

4. Make sure the set of drawings reflects all the options present in the community. Be prepared to include or make additional drawings to represent additional options mentioned or suggested by the group during the activity.

5. Be prepared with ways to keep the rest of the group busy while members are taking turns to place their tokens, since this process can be quite long. Or else, do the pocket chart activity during a break.

2-4. How diseases spread

Purpose

· to help participants discover and analyse how diarrhoeal disease can be spread through the environment

Time

· 1-1½ hours

Materials

· tool: transmission routes

· large sheets of newsprint (paper)

· colored pens or marker pens

· sticky tape

What to do

1. If there has been a break between this activity and the previous one, start with a group discussion to review what was learned or decided at the previous meeting.

2. Ask the participants to form groups of 5-8 people.

3. Give each group a set of materials and the task using these words:
"One drawing shows a person defecating openly [use local term]/an inadequate latrine [choose whichever is appropriate for the community]. Another shows a person's mouth. [Show the drawings.]
"Please use the rest of the drawings to try and create a diagram showing the different ways in which faecal matter [use an appropriate local description] might come in contact with the person. You can draw arrows between the different drawings to show the ways that this might happen."

4. When the groups have made their diagrams, ask each group to show and explain its diagram to the other groups. Let it respond to any questions raised by the other groups.

5. Discuss the similarities and differences between the various diagrams.

6. Now facilitate a discussion to help the group use this new knowledge to examine its own situation.
Discuss and identify:
- the transmission routes in the community
- the problem areas and hygiene behaviours that are putting people at risk of infection.
If possible, ask a participant to record the problem areas in the group's community as they are discussed.

7. Facilitate a discussion with the group on what it has learned during this activity, what it liked and what it did not like about this activity.

Notes

1. Some participants may at first be shocked at the content of this activity. There may be some disbelief that faeces can be transmitted to the mouth. The best way to deal with this situation is to get the group working together as quickly as possible. Those participants who are more receptive than others will help the disbelievers to become more involved.

2. Do not be concerned if each group does not identify all the faecal-oral routes or if its diagrams do not look like the "F-diagram". It is enough if it has identified some of the routes. The routes must nevertheless be clearly defined in order to be useful in future activities. Other group members may identify additional, different routes. These can be discussed and a more complete drawing formed.

3. Do not prompt or direct the groups when they are trying to create their diagrams.

4. If the group as whole does not manage to clearly identify the transmission routes, try to find out why. It may be useful to hold a group discussion to evaluate the activity, which can then be tried a second time.

5. This activity can be adapted for use when investigating other diseases such as intestinal worms, schistosomiasis, guinea-worm disease and dengue fever.

2-4-1. Transmission route/ Contamination route

- This tool uses a set of pre-prepared card showing possible routes for identified transmission routes to be explored
- The tool helps community to understand how diseases is transmitted from one to host to another

Sample *transmission routes* drawings

(4) steps

3) Planning for solutions

Once the community had identified their problem areas, the onus is on them to develop strategies that will prevent the spread of the disease

Planning for solutions

STEP 3	ACTIVITY	TOOL
3 Planning for solutions	1. Blocking the spread of disease 2. Selecting the barriers 3. Tasks of men and women in the community	1. Blocking the routes 2. Barriers chart 3. Gender role analysis

This step has three activities.

1. ***Blocking the spread of disease*** helps group members discover ways to prevent or "block" diarrhoeal disease from being spread via the transmission routes identified in the previous activity.
2. ***Selecting the barriers*** helps the group to analyse the effectiveness and ease of actions to block transmission routes and choose which they want to carry out themselves.
3. ***Tasks of men and women in the community*** helps the group identify who would be able to undertake additional tasks to introduce the changes necessary to prevent diarrhoeal disease.

After completing these activities, the group members should have identified various ways to prevent diarrhoea in the community.

3-1. Blocking the spread of diseases

Purpose

· to identify the actions that can be taken to block the disease transmission routes

Time

· 30 minutes to 1 hour

Materials

· tool: blocking the routes
· blocking the routes drawings (1 set for each small group)
· transmission routes diagrams made during the previous activity
· paper
· coloured pens or marker pens
· sticky tape

What to do

1. If there has been a break between this activity and the previous one, start with a group discussion to review what was learned or decided at the previous meeting.

2. Ask participants to continue working in the same small groups as in the previous activity.

3. Give the groups the task using these words:
"Now that we know the ways in which faeces [use appropriate local word] can spread, we need to think about what can be done to stop this from happening. Each group should take a set of drawings and agree as a group where to put them on its transmission routes diagram to stop or block the different routes. The drawings should be stuck on lightly since we will need to remove them to use in the next activity."
4. After 30 minutes ask each small group to present its diagrams which now includes the blocks or barriers. Let each group respond to any questions asked by other participants.

5. Facilitate a discussion with the group on what it has learned during this activity, what it liked and what it did not like about this activity.

Notes

1. Stress that this activity is a continuation of and builds on the transmission routes diagrams produced in the previous activity. The groups may want to change or add to some of the routes that they drew before, since they may have discussed these routes among themselves and gained additional knowledge in the meantime. These changes are productive. Ensure they are discussed.

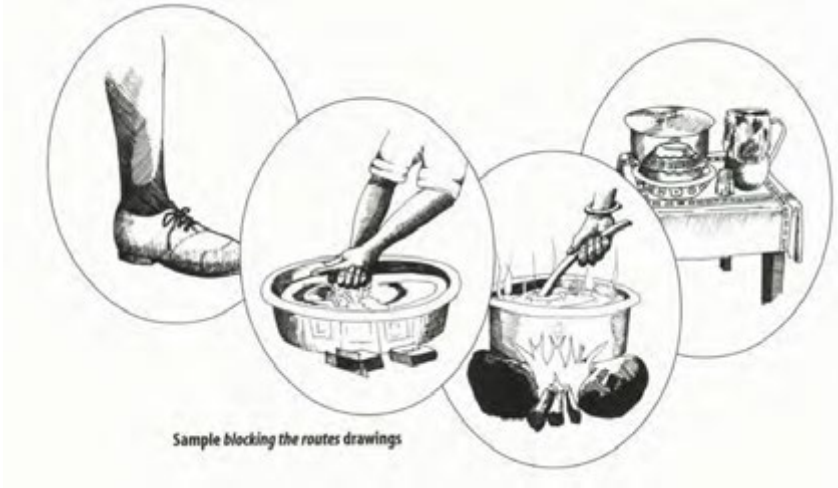
2. Again, there is no one right answer as to which barrier should be put on which transmission route. The minimum requirement is that the group has tried to block all the routes it has identified.

3. It is useful to have blank paper and pens or marker pens so that the group can create its own blocks if the existing drawings do not cover all situations.

4. It would be a good idea to put the diagrams up on the wall of the community centre (or other meeting place), along with the community map and other materials.

3-1-1. Blocking the routes

- This tool uses a set of pre-prepared card showing possible barriers for identified transmission routes to be explored
- The tool helps community to understand what barriers can stop disease transmission



Sample *blocking the routes* drawings

3-2. Selecting the barriers

Purpose

· to analyse how effective the blocks are and how easy or difficult they would be to put in place

Time

· 30 minutes to 1 hour

Materials

· tool: barriers chart

· group's transmission routes diagrams with blocks

· sticky tape, pins, tacks, etc.

· pens and paper

What to do

1. If there has been a break between this activity and the previous one, start with a group discussion to review what was learned or decided at the previous meeting.

2. Keeping the same small groups from the previous activity, give them the task using these words:

"Remove the blocks from the transmission routes diagram and place them where they belong on this chart. [Show the chart and explain how it works if necessary.]

You might use words such as the following to explain the chart and how it works:

"This column [point to column on the left-hand side of the chart] has these choices: "Very effective", "In-between" and "Not very effective" Would you say this barrier [show drawing] is very effective, in-between, or not very effective? [Place drawing temporarily.]

"This row [point to the row across the top of the chart] has these choices: "Easy to do", "In-between" and "Hard to do". Would you say this barrier [point to the same drawing] is easy to do, in-between, or hard to do? [Point to choice.]

"Then we say that this barrier is this effective and this easy. [Point out the position that was created by selecting an option in the column and an option in the row.] This barrier, therefore, goes here. [Place drawing temporarily.] Now you do yours."

3. When the groups have completed the task, invite them to share their charts and discuss:
- which barriers the group would like to use in its community
- the practicalities that would be involved in putting the barriers in place.

4. Facilitate a discussion with the group on what it has learned during this activity, what it liked and what it did not like about this activity.

Notes

1. This type of chart may be a new concept for the group so it might be a good idea to explain its elements or components step by step. Make it clear that this is only an explanation. Participants should make their own placements.

2. If a group is unclear about the effectiveness of certain barriers, do not correct it. Instead, think of questions which might help it to come to a decision.

3. Do not be concerned at this stage if the group does not know enough to be able to judge how effective the barriers might be. There will be opportunities later in the process to introduce additional information to increase the quality of decision-making.

4. If the activity seems confusing, it may be done as follows. Divide the group in two and give each a complete set of barriers. Ask one to do a three-pile sorting for "effectiveness" (very effective, in-between, not very effective), and the other to do a three-pile sorting for "how easy the barriers are to put in place" (easy to do, in-between, hard to do). Then compare the two sets.

Another way of carrying out the activity is to do a three-pile sorting of the barriers aimed at "effectiveness". Then take the "most effective" barriers and do another three-pile sorting, this time aimed at "easy to do". Repeat with a three-pile sorting for "in-between effective" barriers.

3-2-1. Barriers chart

- This tool uses written labels or pictures representing "easy to implement", "in between to implement", "hard to implement", "hard impact", "medium impact" or "low impact" scenarios
- This tool helps the community to decide/ discuss which barriers are more viable/ visible to be implemented

3-3. Tasks of man and woman in the community.

Purpose

· to raise awareness and understanding of which household and community tasks are done by women and which are done by men

· to identify whether any change in task allocation would be desirable and possible

Time

· 1 hour

Materials

· tool: gender role analysis

· 3 separate large drawings of: a man, a woman, and a man and a woman together

· 12 or more task drawings

· pens and paper

What to do

1. If there has been a break between this activity and the previous one, start with a group discussion to review what was learned or decided at the previous meeting.

2. Ask the participants to form groups of 5-8 people.

3. Using the following words, ask the group to carry out the activity:
"Each group will be given a drawing of a man, a woman and a man and woman (a couple) together, and a set of drawings showing different tasks. Discuss in your group who would normally do this task. When you agree, put the task drawing underneath the drawing of the man, woman or couple based on what you decide. The drawing of the man and woman together means that both sexes perform the task."

4. Let the groups work on their own and discuss their findings. They can draw and add other tasks. You should provide them with blank paper for this purpose.

5. Once the activity has been completed, ask each group to present its selection to the rest of the participants, explain its choice and answer any questions.

6. Facilitate a group discussion on:

- who does what tasks
- the workloads of men and women
- how differences in workloads might affect task allocation for overcoming diarrhoeal disease
- the advantages and disadvantages of changing tasks done by men and women
- the potential for changing the tasks done by men or women.

7. Ask the group to identify roles which could be changed or modified in order to improve sanitation and hygiene, and record these conclusions for use in monitoring (checking) later on.

8. Facilitate a discussion with the group on what it has learned during this activity, what it liked and what it did not like about this activity.

Notes

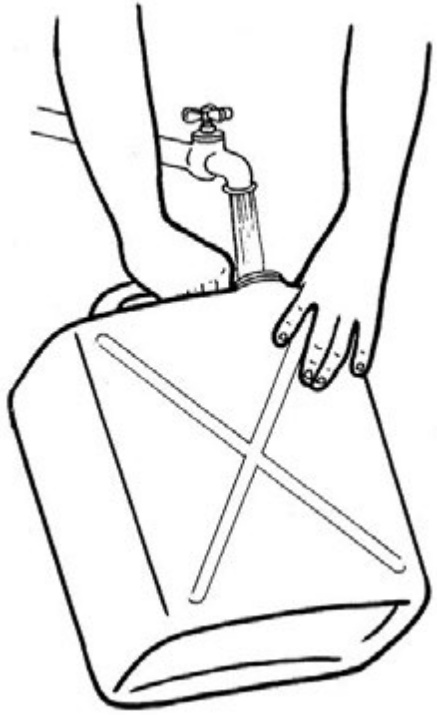
1. During this activity men sometimes complain that drawings of their usual tasks have not been included in the set. This is because the set focuses mostly on tasks related to domestic and community hygiene and sanitation, and in most societies these tasks fall to women. If this happens, ask the men to make drawings of tasks they perform, to add to the activity.

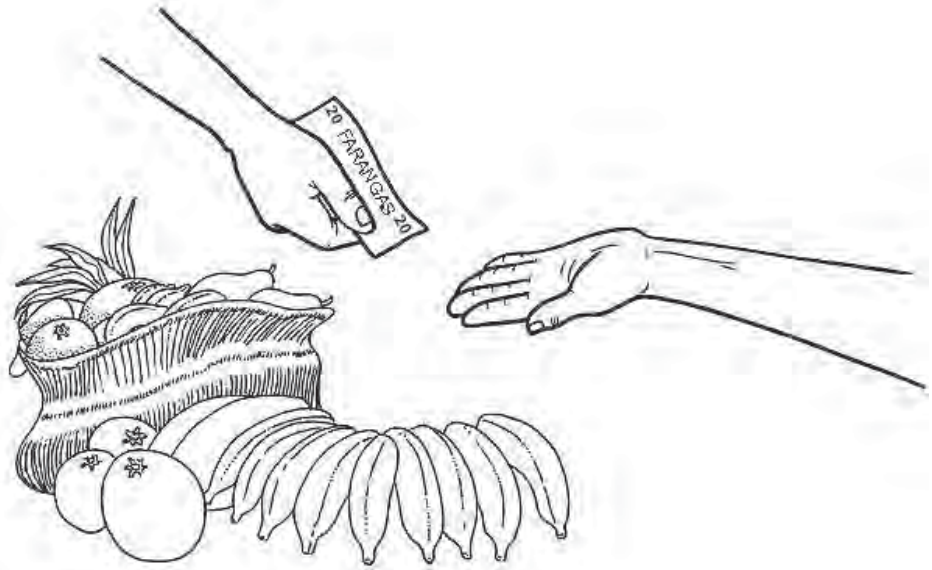
2. The group may decide that three drawings (man, woman, and both together) are not enough and choose to add drawings of boys and girls. This is fine, but the analysis should focus on gender and not age.

3-3-1. Gender role analysis

- This tool uses three A4 pictures of a woman, a man and then a woman and a man. A5 picture of woman involved in various tasks/jobs. Also required are beans for counting.
- This tools aims at sensitizing people on gender issues in the context of their communities. To discover what problems the community face in their daily lives and highlights how such problems may affect participation within projects.


Sample task drawings

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(4) steps

4) Select options

Here, the community raises various options of improving sanitation. As they have identified the problem areas with hygiene, they then select the most appropriate solution with guidance from the Ministry of Health

Selecting options

STEP 4	ACTIVITY	TOOL
4 Selecting options	1. Choosing sanitation improvements 2. Choosing improved hygiene behaviours 3. Taking time for questions	1. Sanitation options 2. Three-pile sorting 3. Question box

This step has three activities.

1. ***Choosing sanitation improvements*** helps the group to assess the community's sanitation situation and decide on the changes it wants to make.
2. ***Choosing improved hygiene behaviours*** helps the group to decide which hygiene behaviours it wants to work on with the community.
3. ***Taking time for questions*** gives group members a chance to ask questions and obtain feedback from fellow participants, thus increasing the confidence and self-reliance of the group.

By the end of this step, the group will have made an informed choice about the changes to facilities and hygiene behaviours it wants to make.

4-1. Choosing sanitation improvement

Purpose

To help participants: · describe the community's sanitation situation

· identify an option or options for improving sanitation

· discover that improvements can be made step-by-step

Time

· 1-2 hours

Materials

· tool: sanitation options

· pens

· large-sized paper to which drawings can be attached (optional)

· sticky tape

What to do

1. If there has been a break between this activity and the previous one, start with a group discussion to review what was learned or decided at the previous meeting.

2. Ask the participants to form groups of 5-8 people.

3. Give the group the task, using these words:
"Each group will receive a set of sanitation options. Look at the options and arrange them as a "ladder" starting with the one you consider worst at the bottom and ending with the one you consider best at the top."
4. Give each group an identical set of drawings.

5. It may be useful to have some paper and pens so that participants can draw any methods which they want to include but which are not in the set of drawings.

6. Give the groups about 20 minutes to make their ladders. Then visit each group and give it the next task.
"Now decide where the community is at the present time and where you would like it to be one year from now. Discuss the advantages and difficulties that you might meet in trying to move to different steps on the ladder."
7. When the groups have completed this task, ask each one to explain its sanitation ladder to the other participants.

8. After the presentations, encourage a group discussion covering:
- the similarities and differences in the way the options have been arranged as steps
- the similarities and differences in terms of where the groups have placed the community now and in the future
- the options that have been identified as best for the community
- the advantages of each option
- the difficulties or obstacles that would make moving up the ladder difficult
- how these decisions were reached
- what information the group thinks it might need to be able to compare options more effectively.

9. Encourage the group to agree on one sanitation ladder.

10. Explain to the group that the next activity will help it to develop a plan to get from where it is now to the situation or situations it would like to move to in the future.

11. Facilitate a discussion with the group on what it has learned during this activity, what it liked and what it did not like about this activity.

Collecting information

It is a good idea at this time for the group to quantify the community's current sanitation situation. This is so that realistic goals can be set. The tools that can be used for this include:
- community map to locate and specify the types and number of sanitation facilities
- pocket chart so that the group can give information about individual or family use of different types of facilities

- a community census.

All the conclusions should be recorded for use in future activities which will include development of a monitoring chart.

Notes

1. Before you begin this activity it would be helpful to have information on:
- the design principles of different sanitation options
- the effectiveness of different options
- the maintenance and ongoing servicing requirements of each type of option
- the costs of different sanitation options
- the costs (time and money) of operation and maintenance
- the subsidies available
- the durability of the structure and the sustainability of each system.

2. The sanitation ladder shows that improvements can be made step by step. The idea that the community can progress up the ladder at different rates can be very appealing to groups. They realize that changes can be made over time, at a pace that is appropriate and manageable for them. When groups discover this, it can inspire them to become more involved.

3. When selecting sanitation options it is important to consider the amount of water each option would require. The risk of contaminating the environment and existing water sources must also be considered. Make sure the participants discuss these issues.

4. Some options are equally good. Thus two options can be placed side by side - that is, the ladders can have "branches". The idea of progression and choosing for the future is more important than the shape of the ladder.

Other types of ladders

This activity can also be used to deal with other questions and other problems. For instance the sanitation ladder can be adapted to make a water ladder. The activity would be conducted in the same way as described for sanitation options, but using drawings showing different water options for improving the quality, quantity and access of water supply. The options shown would need to range from the most simple to the more complex. Additionally, drawings of unsafe or unprotected water collection would have to be included since some communities would be starting from this step. However, water supply options tend to be fewer, so a water ladder is likely to have fewer steps. Sometimes, in fact, only two situations apply: the current traditional water source and an alternative or improved water supply.

4-1-1. sanitation options/ water and sanitation ladder

- 20 – 25 pictures of different water supply and sanitation options like the use of bush to water born systems in the case of sanitation and from water collection in streams to water taps inside a house.
- This tool helps the community explore different water supply and sanitation options. Investigate what the constraints and opportunities are for water supply and sanitation development in the community.

4-2 Choosing improved hygiene behaviors

Purpose

To help the group identify hygiene behaviours that it:

· wants to change

· wants to encourage and reinforce

· wants to introduce into the community

Time

· 1 hour

Materials

· tool: three-pile sorting drawings used in Step 2: Activity 2.

What to do

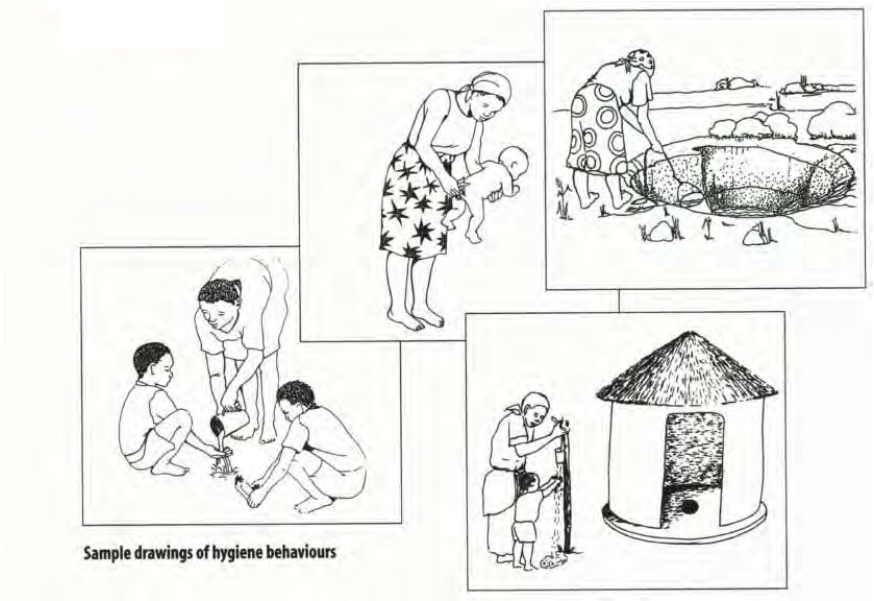
1. If there has been a break between this activity and the previous one, start with a group discussion to review what was learned or decided at the previous meeting.

2. Ask the participants to form groups of 5-8 people.

3. Give the groups the task using these words:
"Choose from the three-pile sorting drawings one or more hygiene behaviours that you agree on as being healthy and which you would like to encourage, and one or more that you agree on as being unhealthy and which you would like to discourage.

4. Give the groups 10-20 minutes to select their hygiene behaviours. Then ask each group to explain its selection to the other participants.

5. Facilitate a group discussion aimed at:
- reaching an agreement about which good and bad behaviours are the most important to work on
- how to influence the community to:
- use good practices all the time
- accept new behaviours
- stop bad practices.



Sample drawings of hygiene behaviours

6. At this point it may be important to know how common the selected behaviours are in the community. This information could be used for setting specific goals. The tools that can be used to obtain this information are: pocket chart and/or a community survey.
Below is an example of how a pocket chart can be used to measure the most common types of behaviour in the community in relation to hand washing after defecation.
Set up a pocket chart with the row across the top showing the following options for handwashing after defecation: water only, soap and water, dirt or ash, and nothing. The vertical column could show: man, woman and child. Participants then use two tokens of different colour and/or shape; one to indicate the options usually used, and another to indicate the options sometimes used.

Sample pocket chart for hand washing options in next page

7. Have the group record its conclusions, which will be needed later in the process for use in other activities, including development of a monitoring (checking) chart.

8. Facilitate a discussion with the group on what it has learned during this activity, what it liked and what it did not like about this activity.

Sample *pocket chart* for handwashing options

Notes

1. Past experience has shown that programmes which include changes both in hygiene behaviours and in facilities are more effective in controlling diarrhoeal disease than those which only include changes to facilities. There is often a tendency to concentrate more on physical facilities, so this activity aims to make sure that hygiene behaviours are not overlooked.

2. How to introduce new hygiene behaviours and/or reinforce existing ones will be addressed in Step 5: Planning for new facilities and behaviour change

4-3 Taking time for questions

Purpose

· to provide an opportunity for participants to ask questions about the process (or other matters), and to obtain information and feedback from other participants

· to help the group recognize the wealth of knowledge and information it possesses collectively

Time

· 1-2 hours

Materials

· tool: question box

· paper and pens

· container (such as a basket, a hat or a box)

What to do

1. If there has been a break between this activity and the previous one, start with a group discussion aimed at reviewing what was learned or decided at the previous meeting.

2. This activity can be carried out successfully as one group, provided the group does not contain more than 40 people.

3. Give the group the task using these words:
"Could everyone please write on a slip of paper or make a simple drawing of a question that they would like answered. Once you have written or drawn your question, fold the paper in half."

4. Ask a participant to collect all the questions in the container. This container becomes the question box.

5. When all the questions have been collected, pass the question box to one person at a time and ask each person to pick out a slip of paper and answer the question. If anyone picks their own question, they should be asked to replace it and pick another one.

6. If a participant cannot answer a question, encourage someone else in the group to provide an answer.

7. Facilitate a discussion with the group on what it has learned during this activity, what it liked and what it did not like about this activity.

Notes

1. Alternatively, if some participants cannot write, ask everyone to think of a question and then to mark their piece of paper. Or each participant can be given a piece of different coloured paper. The pieces of paper are then collected in the question box. Next, the question box is passed around and when that person's marked or coloured piece of paper is chosen, they say their question out loud. With this method, the questions are not anonymous but everyone can participate.

2. This activity can help to remind the group that it does not need to rely so much on outside experts. Collectively, it has most of the information and knowledge it needs.

3. Some of the questions may not relate directly to the subject. But they should not be put aside. They may indicate different concerns, and also serve as a positive distraction. Humour should not be discouraged!

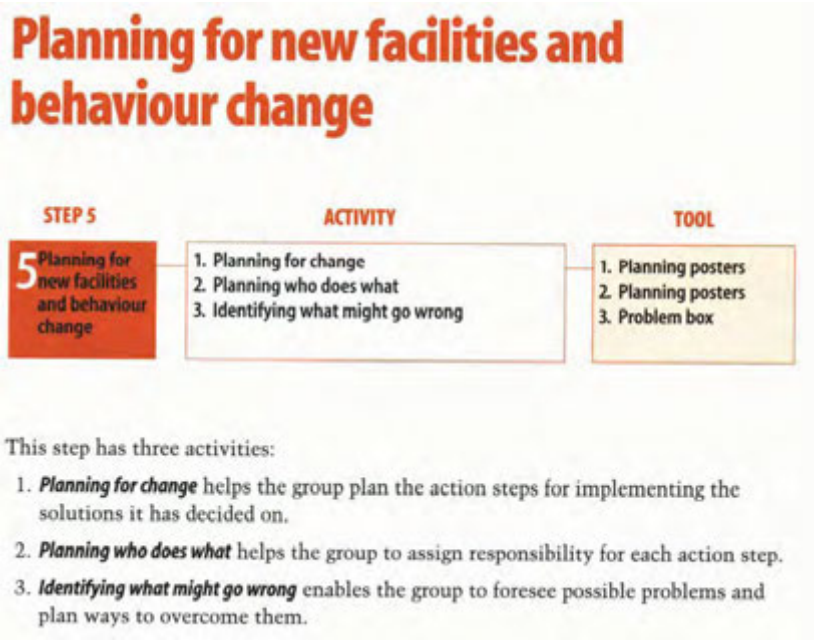
4-3-1 Question box

- This tool uses a box with a hole for the community to deposit their questions.
- With this tool the community is provided with an opportunity to ask questions in a way that doesn't force them to voice out their concern publicly.
- This gives the community a chance to ask in a confidential way, in a way what won't worry them about being victimized as no names are written on a strip paper.

(4) steps

5) Planning for new facilities and behavior change

As this stage the community will elect a person/ or person that will assume responsibility for their actions



5-1 Planning for change

Purpose

· to enable participants to develop a plan to implement changes in sanitation and hygiene behaviours

Time

· 2 hours

Materials

· tool: planning posters

· the "now" and "future" sanitation options (from Step 4: Activity 1)

· sticky tape

· pens and paper

What to do

1. If there has been a break between this activity and the previous one, start with a group discussion to review what was learned or decided at the previous meeting.

2. Put the sanitation option drawings (or drawings representing other options) developed in Step 4 up on the wall.

3. Ask the participants to work in groups of 5-8 persons. Give the participants the task using these words:

"Do you agree that this [point to the sanitation option(s) that the group considers represent their current situation] is a common situation in the community? And do you agree that this [point to the group's preferred "future" option] would be a desirable future situation?

"Let's now work out what needs to be done to move from the present situation to where you want to be. To do this we need to develop a plan to "fill in the gap" To help you do this, each group will be given a set of planning posters showing some of the steps that might be needed.

"Each group should look at the planning posters and arrange them in the order it thinks would bring about the desired change most effectively. Use the blank paper to draw any additional steps that you would like to include."

4. Give each group an identical set of "now" and "future" drawings and planning posters.

5. Give the group about 30-45 minutes to work out its arrangements of steps, and then ask each group to explain its plan to the other participants. Each group should be prepared to answer any specific questions which might arise, although a more general discussion or debate should be limited until each group has had a chance to present its work.

6. After the presentations, encourage a group discussion aimed at reaching an agreement on a common plan.

The discussion should cover:

- the similarities among and differences between the steps chosen by each group, and their order
- what difficulties they might come across in trying to carry out these steps

- what resources they might need to carry out these steps

- the amount of time necessary to carry out the plan.

7. Facilitate a discussion with the group on what it has learned during this activity, what it liked and what it did not like about this activity.

"Now" and "future" sanitation options and planning posters

Notes

1. The "now" and "future" drawings4 may refer to changes in both facilities and behaviour as identified by the group using the sanitation options and three-pile sorting tools.
   In other guides, a tool using "now" and "future" drawings is called story with a gap.

2. Be prepared to do this planning activity for all the changes the group wants to introduce. Remember the purpose of the activity is to simplify the planning process.
   One group may find it easier to make one plan for changes to facilities, one for improving maintenance of existing systems and a third for behavioural change. Another may be able to look at the three together. There is no one way or right plan. Your role is to help the group simplify the process so that it becomes manageable.

3. Don't worry if the group is not willing to make a plan to introduce all the changes it has identified. It is enough at this time that it is willing to plan to introduce some of the changes. Once these have been introduced successfully, the results will inspire the group to keep on with its work and plan for further changes. A smaller plan which group members are highly committed to is more likely to be successful than a larger, less well-supported plan.

4. The original community map can be used to help the group think about the impact of the changes it is planning to introduce.

5. Discussion may already have taken place or questions may have been raised about who should have responsibility for doing certain parts of the plan. Planning who does what, the next activity, helps groups to assign responsibility for tasks effectively so that the tasks are done properly and on time.

5-2 Planning who does what

Purpose

· to help identify who will take responsibility for carrying out the steps in the plan

· to set a timeframe for implementing the plan

Time

· 1-2 hours

Materials

· tool: the planning posters agreed cm at the previous session

· pieces of paper or card for writing down names

What to do

1. If there has been a break between this activity and the previous one, start with a group discussion to review what was learned or decided at the previous meeting.

2. Put the planning posters - which the group agreed represented the steps in its plan - up on the wall, in one straight row, in the order that the group agreed to.

3. Give the group the task using these words:

"These planning posters [point to them] show the steps that you decided are required to put your plan into action. Now you need to decide who should carry out each of these steps. Discuss together each step and the type of personal qualities and skills needed to carry it out. Decide who should carry out each step. When you have decided who will be responsible and for what, write the names on pieces of paper or card. Write men's names in one colour and women's names in another. Then stick each piece of paper or card beneath the corresponding planning poster."

4. Referring to earlier discussion and the conclusions reached during Tasks of men and women in the community, invite the group to review the task allocation in terms of the impact on men and the impact on women, and to make any adjustments at this time if it wishes.

5. When the tasks have been allocated, ask the group to discuss and agree on who will coordinate the carrying out of the steps in the plan. Write the name or names of the coordinators above the planning posters.

6. Invite the selected person or persons to coordinate the rest of the meeting. This will cover developing a timeframe for completing each part of the plan.

7. Ask the group to discuss and agree on the amount of time each step will take to complete. Record this information above the planning posters.

8. Facilitate a discussion on:

- the importance of seeing that things are being done on time
- how the group can check that people are doing what they are responsible for
- what the group can do if tasks are not carried out.

9. Facilitate a discussion with the group on what it has learned during this activity, what it liked and what it did not like about this activity.

Notes

1. Do not be surprised, if, during this task allocation, more steps are added to the plan. Once people become aware they are going to have to do something themselves, they will start to think more carefully about what it might take to do it.

2. If the group is reluctant to accept responsibility itself and allocates most of the tasks to outsiders, it will need to consider:

- why it is not prepared to take responsibility for tasks
- whether it really believes that hygiene behaviour or sanitation is a problem and, if so, whether this plan will help it overcome this problem
- why representatives of these external groups have not been included as participants
- how external representatives could be invited to join the group
- whether these external representatives would be committed to carrying out a plan they did not help to develop
- whether this plan will work on the basis of this task allocation.

If the group does not believe in the importance of sanitation, this could be a key reason why it does not support the plan. In which case, you may need to go back and repeat earlier activities or find other ways for the group to discover key information.

3. Deciding who should do what can be very time-consuming. This activity may have to be carried out over a series of sessions to ensure adequate discussion time. A pocket chart can be useful for choosing people for the tasks. Create a pocket chart as follows:

- Put drawings of each different task in the spaces of the horizontal row across the top of the chart.
- Put drawings, names or some other means of identifying the possible candidates in the spaces in the column on the left-hand side of the chart.
- Give each voter one token for each task.
- Show the group how it must place the token for each task in the pocket in the column below the drawing of the task, in the row that represents the person it thinks is best qualified to carry it out.

This activity could be preceded by a discussion of the possible qualities that one might look for in the person selected to perform a particular task.

4. There is no right way for the group to allocate tasks. You should keep in mind the local practices usually used for assigning tasks to people. Selections should not be based solely on favouritism or popularity.

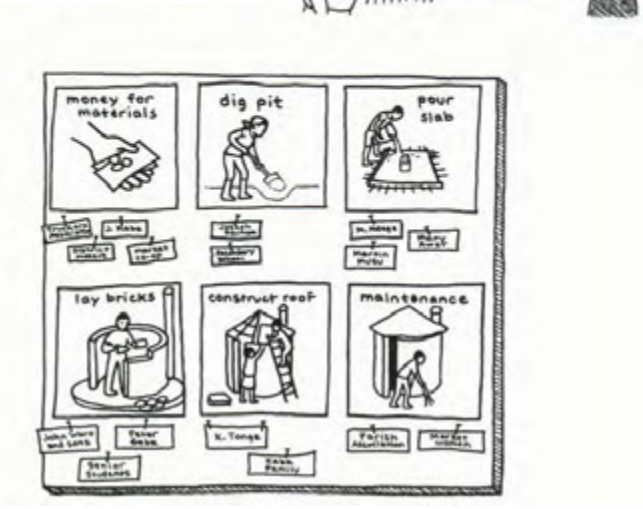
You could suggest to the group that it takes into account the personal qualities and skills defined by the group as necessary to complete the task. You could also suggest that those selected should be asked whether they think that they are the right people for the tasks they have been assigned.

Encourage the group to achieve a cross-section of the community (in terms of age, ethnic background, religion, education, and other characteristics) when making their selection.

5. Help the group by reminding it that making plans for activities such as health education sessions, which will be necessary if the community is to be encouraged to change hygiene behaviours, is just as important as making plans for physical changes, such as building new latrines.

6. Don't worry if the group, having completed the Planning who does what for one plan, then wants to leave the other plans until later. It is enough if the planning has been carried out completely from start to finish for one of the changes the group wants to introduce. Hopefully, if one plan can be introduced successfully, this will inspire the group to continue with its work. Also, the group will have developed the skills necessary to follow later plans through.

7. Ask the group to display the planning posters, including the names of people responsible for each step, in a public place in the community. This will help to keep everyone informed of what is happening.



5-3 Identifying what might go wrong

Purpose

· to get the group to think about possible problems in implementing the plan, and devise ways of overcoming them

Time

· 1 hour

Materials

· tool: problem box

· paper and pens

· container (such as a basket, a hat or a box)

What to do

This activity is similar to the Taking time for questions activity carried out during Step 4, and is conducted in basically the same way.

1. If there has been a break between this activity and the previous one, start with a group discussion to review what was learned or decided at the previous meeting.

2. Present the task as follows:

"Could everyone please write on a slip of paper a problem they think might arise. Write this problem in the form of a question or a drawing. For example:

"What would we do if the person trained to do the maintenance leaves the community?"

3. Ask a group member to collect all the problems in the container. This container becomes the problem box.

4. When all the problems have been collected, pass the problem box to one participant at a time and ask each participant to pick out a slip of paper and answer the question. Participants who pick their own question should be asked to replace it and pick another.

5. Give the group plenty of time to discuss the answers. If a participant cannot answer a question, the question can be answered by someone else in the group.

6. Facilitate a discussion with the group on what it has learned during this activity, what it liked and what it did not like about this activity.

7. Optional: If there is time, it may be helpful to have the group sort the problems into different categories. Suggestions for two-pile sorting of problems are:

- pile 1: start-up problems	pile 2: ongoing problems
- pile 1: technical problems	pile 2: social problems
- pile 1: problems the group can deal with by itself	pile 2: problems the group needs outside help to solve

Notes

1. If necessary, more time can be allowed for participants to think of questions. For example, the activity could begin before a lunch break or at the end of the day, and continue after the break or on the next day.

Important note

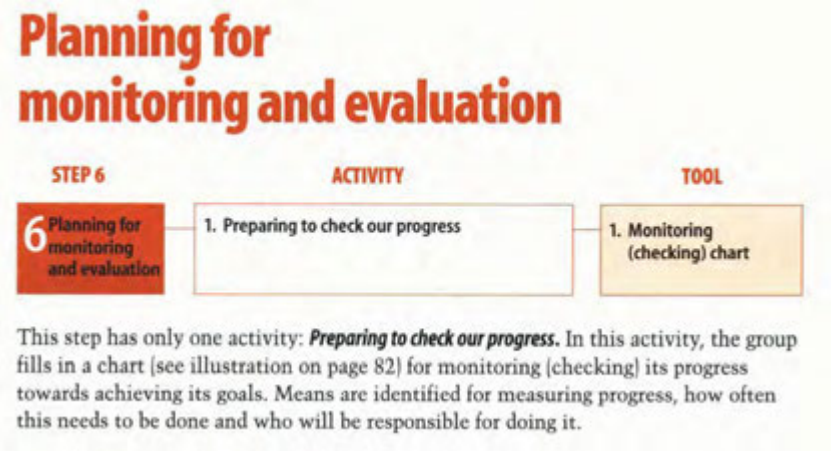
This activity can involve a lot of writing. However, if your participants have difficulty in reading and writing, you will need to work out ways of doing the activity using drawings and as little writing as possible. For example:

- instead of writing the goals in words on the chart, participants could place the drawings that represent the activities/facilities they want to carry out/construct under the goals headings
- write numbers only if people are able to understand them; for instance, participants could write the number of facilities the group wants to build beside the drawings of these facilities
- drawings or symbols can be used to represent ideas or words
- participants could choose a symbol such as a flower, bird or colour to represent themselves to put on the chart under the heading of who will be responsible for carrying out activities or ensuring that they are carried out.

(4) steps

6) Planning for monitoring and evaluation

Conduct monitoring and evaluation with participatory way



6-1 Preparing to check our progress

Purpose

· to establish a procedure for checking progress

· to decide how often checking should be done and who should be responsible for this

· to set a date for the evaluation activity, which will take place with the wider community at some point in the future

Time

· 2 hours

Materials

· tool: monitoring (checking) chart

· paper, pens, or whatever is available for drawing

· sanitation option drawings of the facilities that the community would like to have (optional)

· three-pile sorting drawings (optional) (chosen during the Choosing improved hygiene behaviours activity)

What to do

1. If there has been a break between this activity and the previous one, start with a group discussion to review what was learned or decided at the previous meeting.

2. Have the participants work together in one group. Show the drawings which represent their goals.

3. Have a monitoring chart ready (see illustration on previous page).

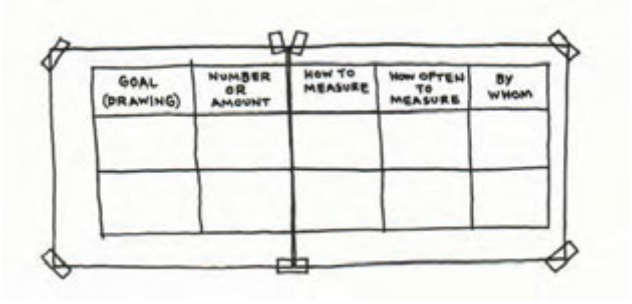
4. Ask the persons who were selected to manage specific tasks (these were chosen during the Planning who does what activity) to facilitate this activity, using the following words:

"I would like those of you who were selected during the Planning who does what activity to lead the group in this activity. You will be helping the group to fill in those parts of the chart which it can fill in at this stage, and to agree on how it can continue to carry out this checking process in the future.

"Stick the drawings which represent your goals on the left-hand side of the chart. Continue to fill in the rest of the chart."

5. After the chart has been filled in, facilitate a group discussion on:

- how to measure the progress being made
- how often progress should be measured
- who should be responsible for measuring progress
- how to involve other members of the community in checking progress and the achievement of project goals.



6. Ask the group to set a date for the project evaluation (Step 7).

7. Facilitate a discussion with the group on what it has learned during this activity, what it liked and what it did not like about this activity.

8. End the session with a party, celebration, prayer or other activity to celebrate the group's achievements.

(4) steps

5) Participatory evaluation

Conduct evaluation with participatory way using tools already familiar with the community member through previous activities in steps

Participatory evaluation

STEP 7	ACTIVITY	TOOL
7 Participatory evaluation	1. Checking our progress	1. Various tool options

This step is carried out after the community has implemented its plan, perhaps six months or one year after the start of the programme.

The participatory evaluation should involve as many people as possible from the community as well as other community workers, officials, and perhaps representatives of neighbouring communities. This step should be fun and a celebration of the group's achievements. During the evaluation the group will identify:

- how much has been done in the community
- how much of the plan still needs to be done
- what has been successful
- any problems or difficulties encountered
- any corrective action that is needed.

The evaluation can be done in many different ways, for example:

- the group might carry out some evaluation activities itself and share the results with the wider community by displaying the materials where they can be seen by all
- the group might decide to involve the wider community in its evaluation activities; for instance, people could be invited to take part in a community event where everyone votes during a pocket chart activity
- or the group could combine the above activities by carrying out some specific evaluation activities separately, as well as organizing a community evaluation activity, such as presentation of a socio-drama about the programme to a wider group.

The group may therefore need to have planning meetings of its own to organize the evaluation or event for a wider group.

Your role is to help the group:

- work out what it wants to do to evaluate its progress
- work out how it wants to involve a wider selection of community members
- work out how to make the evaluation event enjoyable and satisfying for everyone.

It is important that the group decides what it wants to do. So instead of giving detailed guidance, a list of suggestions for different types of participatory evaluation activities follows. If the group has trouble deciding what to do for its evaluation activity, you could facilitate a discussion using some of these suggestions. Choose only those suggestions for the discussion which you think are suitable for the group. Consider the group's level of reading and writing ability, the different kinds of personalities and skills of group members, and how they work together as a team.

Try to encourage the group to prepare a socio-drama if the group is unwilling to try any of the other suggestions for evaluation activities. Community workers involved in PHAST have reported that this activity is usually very well received by the rest of the community and is a lot of fun to prepare.

Option 1 Monitoring (checking) chart

Option 2 Option 2: Community map

Option 3: Planning posters and who does what

Option 4: Pocket chart

Option 5: Community walk

Option 6: Socio-drama

flexiflans

Using flexiflans and flannel-graphs

The purpose of this exercise is to facilitate participants to present their views on local issues by pictures or stories using cut-out figures on a board. The exercise will also help the facilitator to gain insight into local views and priorities. The figures can be used to start open-ended discussions and are especially useful in working with people who do not have literacy skills to give a visual representation of their views.

Flexiflans are paper or card cut outs of human figures with flexible arms, legs and torsos joined together with sewing thread or press studs. On the reverse side of their feet, hands and heads they have sandpaper stuck to them. When they are placed on a felt or flannel covered board they stick loosely to the board. They can be moved around the board and made to do different things while the person adjusting them tells a story or illustrate a point of view.

Other props such as cut outs of houses, animals trees and household implements are needed for the background context of the figures.

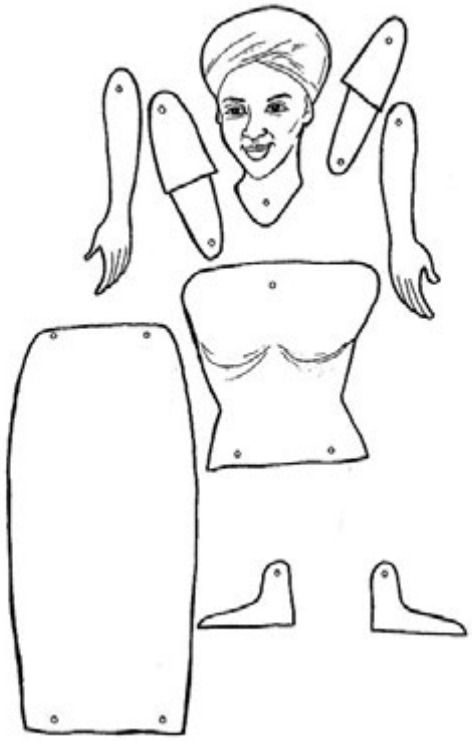
Flannel-graph figures are used in a similar way but do not have the same range of application as the limbs are not articulated. They can be made of paper or card with sandpaper stuck to their reverse sides to use on flannel boards or they can be made of flannel and stick onto sand-paper boards (or boards painted with an oil-based paint and covered with a thin layer of sand while the paint is still sticky).

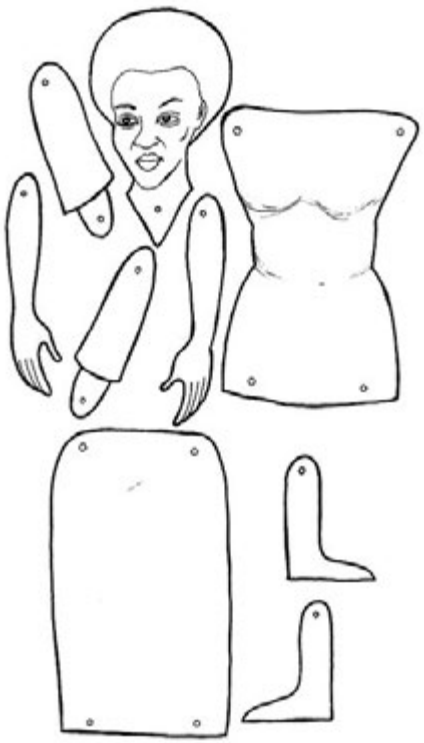
To use the flexiflans and flannel-graphs effectively:

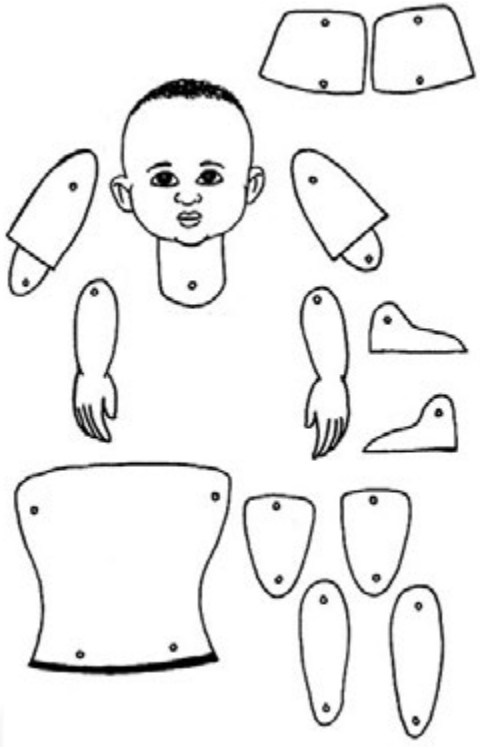
•Present a small group of participants with the flexiflan figures.

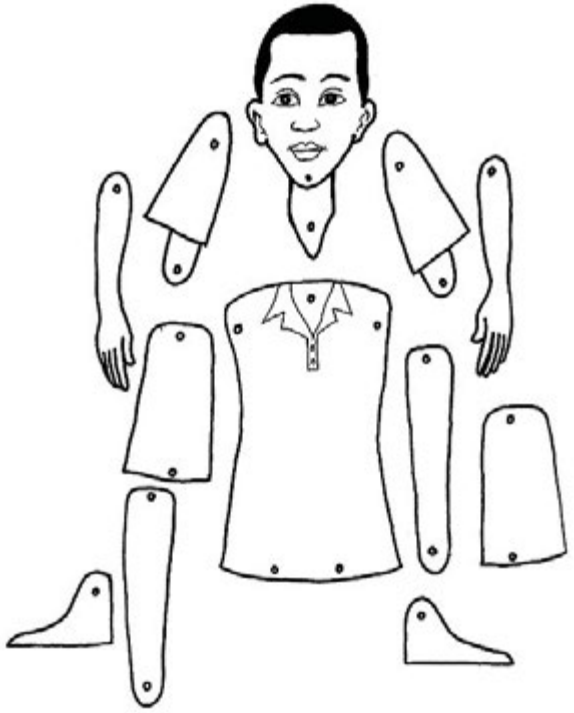
•Ask them to use the flexiflan figures as they like to tell a story about a local issue or describe a point of view.

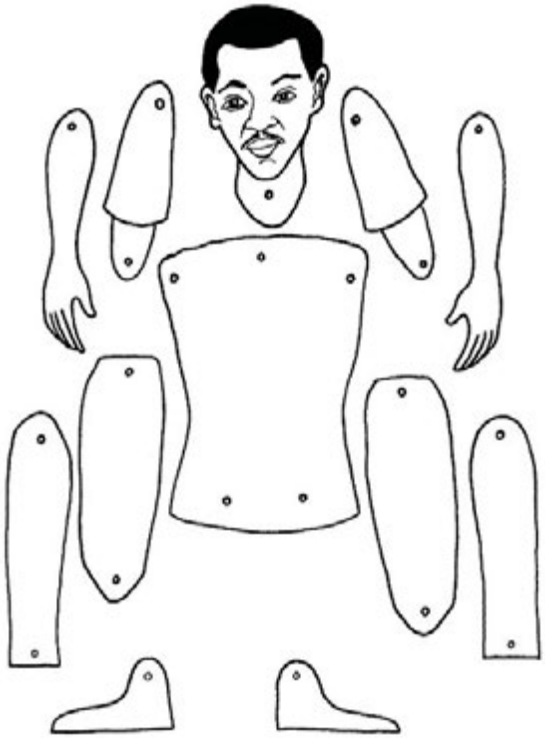
•Encourage discussion around the issues and not priority themes and ranges of opinion.

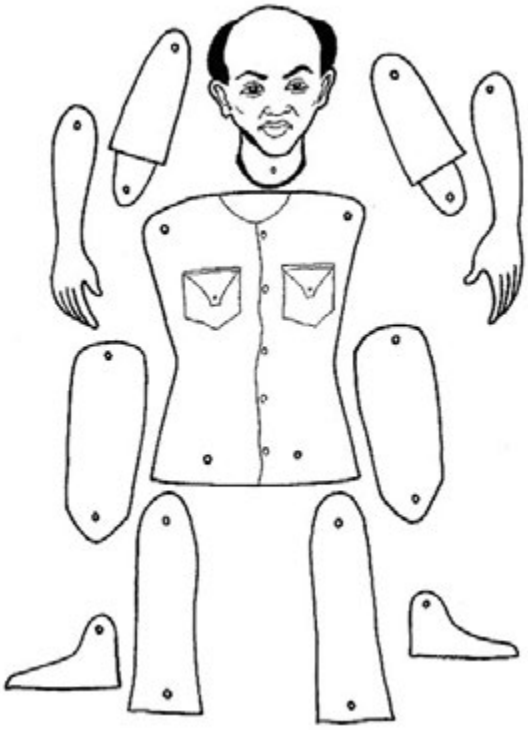


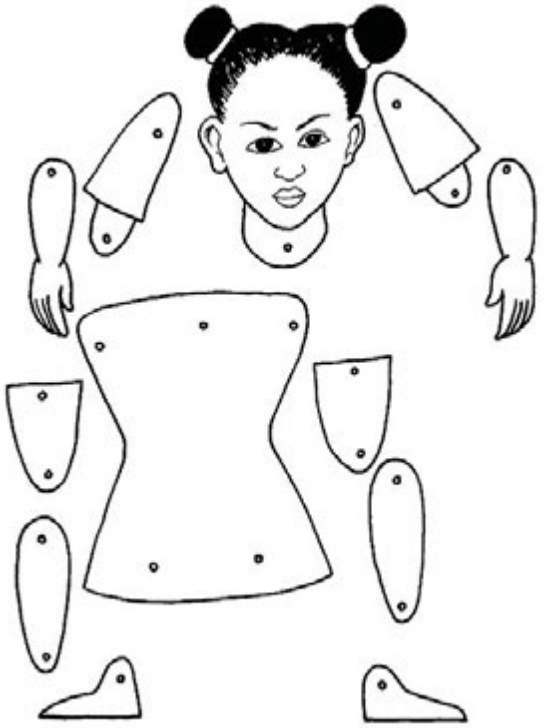


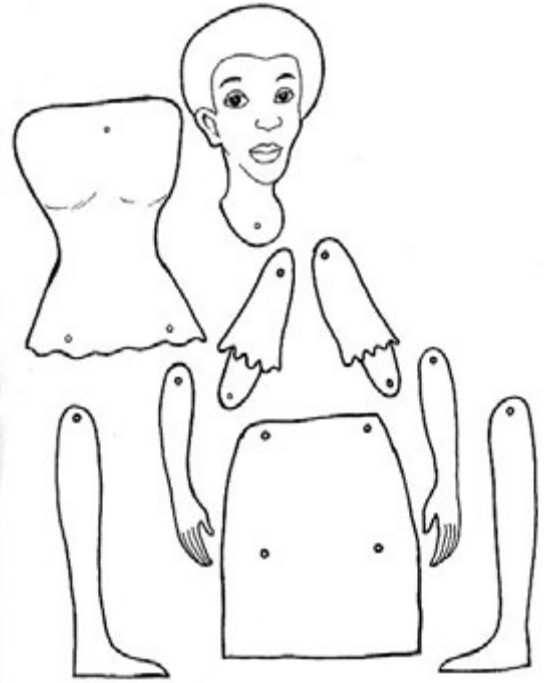


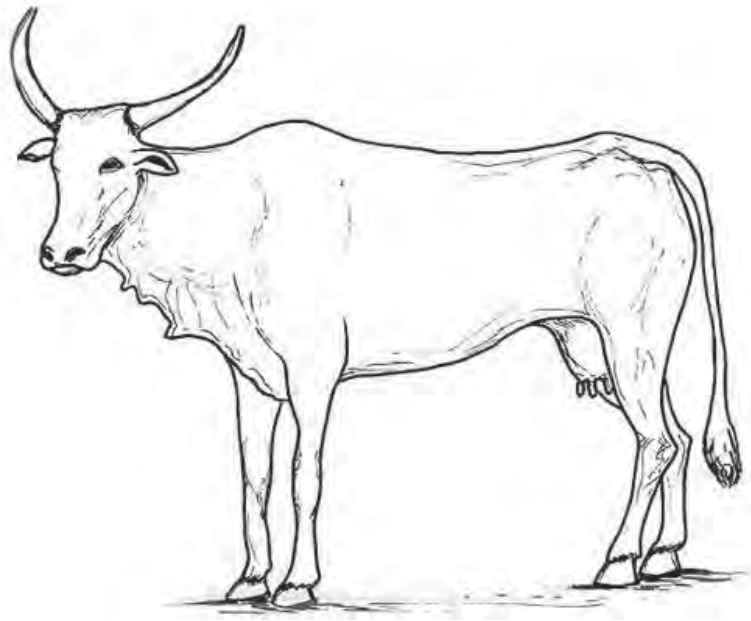


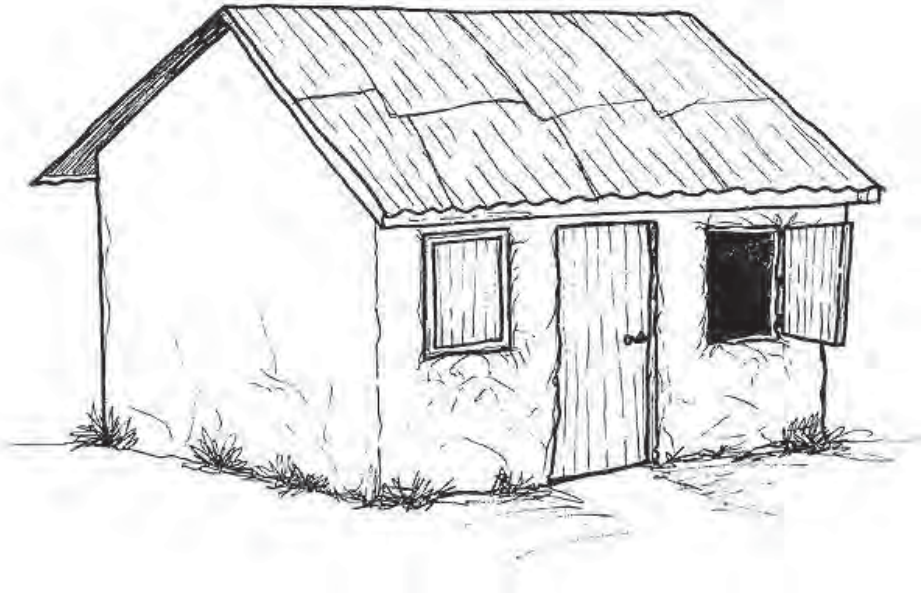


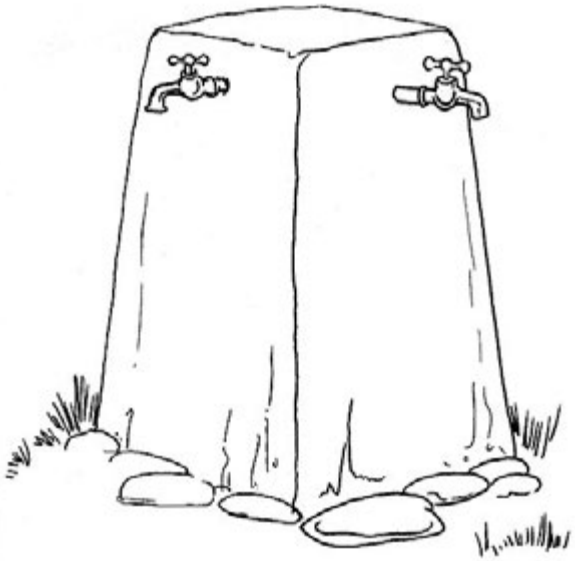


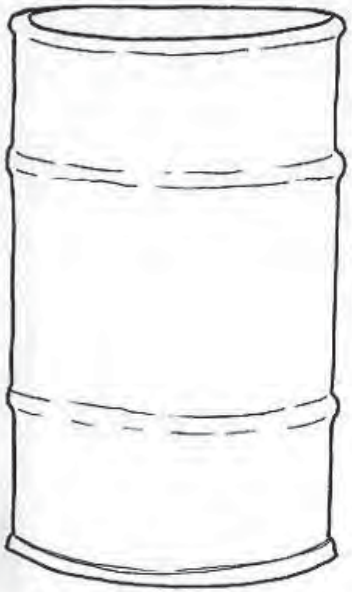












- Basically drawings used in PHAST must be prepared by your self. It means ask artists of Nepal, or ask someone lives in Nepal, or draw by yourself.
- No necessary to be fine good painting, but must have simple clear message. It means, drawing is no necessary to be art, but should have clear message.
- Localization is required, such as picture of house, hospital or clinic, people, water pots and water tank must be typical one in Nepal
- My experiences is, draw around 30 to 40 may enough for cover most activities and most situation.
- Please refer “Part III: Making a toolkit” in PHAST manual. This manual mentioned suggested scene of drawing for each tools.

2. Training material sample

1) School Sanitation and Hygiene Education – handbook for teacher

2) The Joy of Learning

3) Life Skill Based Hygiene Education

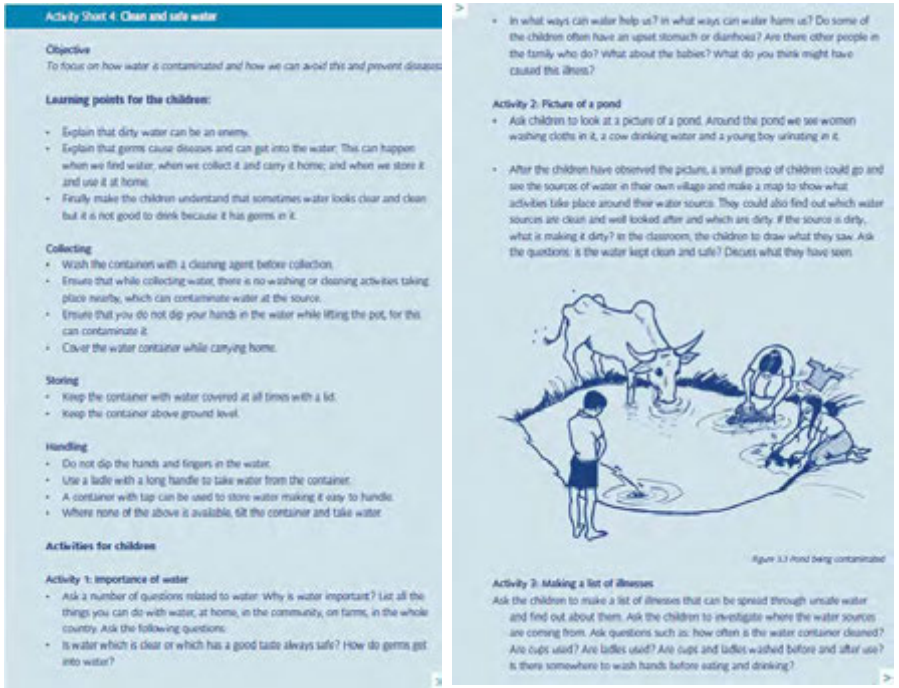
4) As well as sample wall hanging story board in “5. Role of water supply for hygiene”

Principle:

Learn hygiene practices through game and fun

2. Training material sample

1) School Sanitation and Hygiene Education – handbook for teacher



Activity Sheet 4: Clean and safe water

Objective

To focus on how water is contaminated and how we can avoid this and prevent diseases

Learning points for the children:

- Explain that dirty water can be an enemy.
- Explain that germs cause diseases and can get into the water. This can happen when we find water, when we collect it and carry it home, and when we store it and use it at home.
- Finally make the children understand that sometimes water looks clear and clean but it is not good to drink because it has germs in it.

Collecting

- Wash the container with a cleaning agent before collection.
- Ensure that while collecting water, there is no washing or cleaning activities taking place nearby, which can contaminate water at the source.
- Ensure that you do not dip your hands in the water while lifting the pot, for this can contaminate it.
- Cover the water container while carrying home.

Storing

- Keep the container with water covered at all times with a lid.
- Keep the container above ground level.

Handling

- Do not dip the hands and fingers in the water.
- Use a ladle with a long handle to take water from the container.
- A container with tap can be used to store water making it easy to handle.
- Where none of the above is available, tilt the container and take water.

Activities for children

Activity 1: Importance of water

- Ask a number of questions related to water. Why is water important? List all the things you can do with water, at home, in the community, on farms, in the whole country. Ask the following questions:
- Is water which is clear or which has a good taste always safe? How do germs get into water?
- In what ways can water help us? In what ways can water harm us? Do some of the children often have an upset stomach or diarrhoea? Are there other people in the family who do? What about the babies? What do you think might have caused this illness?

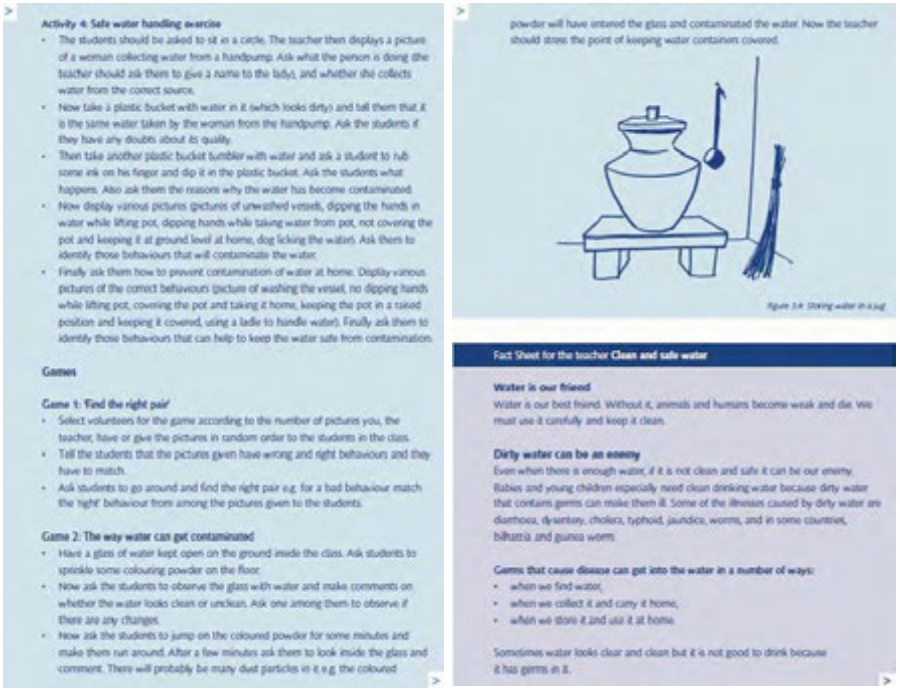
Activity 2: Picture of a pond

- Ask children to look at a picture of a pond. Around the pond we see women washing cloths in it, a cow drinking water and a young boy urinating in it.
- After the children have observed the picture, a small group of children could go and see the sources of water in their own village and make a map to show what activities take place around their water source. They could also find out which water sources are clean and well looked after and which are dirty. If the source is dirty, what is making it dirty? In the classroom, the children to draw what they saw. Ask the questions: is the water kept clean and safe? Discuss what they have seen.

Figure 3.3 Pond being contaminated

Activity 3: Making a list of illnesses

Ask the children to make a list of illnesses that can be spread through unsafe water and find out about them. Ask the children to investigate where the water sources are coming from. Ask questions such as: how often is the water container cleaned? Are cups used? Are ladles used? Are cups and ladles washed before and after use? Is there somewhere to wash hands before eating and drinking?



Activity 4: Safe water handling exercise

- The students should be asked to sit in a circle. The teacher then displays a picture of a woman collecting water from a handpump. Ask what the person is doing (the teacher should ask them to give a name to the lady), and whether she collects water from the correct source.
- Now take a plastic bucket with water in it (which looks dirty) and tell them that it is the same water taken by the woman from the handpump. Ask the students if they have any doubts about its quality.
- Then take another plastic bucket (tumbler) with water and ask a student to rub some ink on his finger and dip it in the plastic bucket. Ask the students what happens. Also ask them the reasons why the water has become contaminated.
- Now display various pictures (pictures of unwashed vessels, dipping the hands in water while lifting pot, dipping hands while taking water from pot, not covering the pot and keeping it at ground level at home, dog licking the water). Ask them to identify those behaviours that will contaminate the water.
- Finally ask them how to prevent contamination of water at home. Display various pictures of the correct behaviours (picture of washing the vessel, no dipping hands while lifting pot, covering the pot and taking it home, keeping the pot in a raised position and keeping it covered, using a ladle to handle water). Finally ask them to identify those behaviours that can help to keep the water safe from contamination.

Games

Game 1: 'Find the right pair'

- Select volunteers for the game according to the number of pictures you, the teacher, have or give the pictures in random order to the students in the class.
- Tell the students that the pictures given have wrong and right behaviours and they have to match.
- Ask students to go around and find the right pair e.g. for a bad behaviour match the 'right' behaviour from among the pictures given to the students.

Game 2: The way water can get contaminated

- Have a glass of water kept open on the ground inside the class. Ask students to sprinkle some colouring powder on the floor.
- Now ask the students to observe the glass with water and make comments on whether the water looks clean or unclean. Ask one among them to observe if there are any changes.
- Now ask the students to jump on the coloured powder for some minutes and make them run around. After a few minutes ask them to look inside the glass and comment. There will probably be many dust particles in it e.g. the coloured

powder will have entered the glass and contaminated the water. Now the teacher should stress the point of keeping water containers covered.

Figure 3.4: Storing water in a jug

Fact Sheet for the teacher Clean and safe water

Water is our friend

Water is our best friend. Without it, animals and humans become weak and die. We must use it carefully and keep it clean.

Dirty water can be an enemy

Even when there is enough water, if it is not clean and safe it can be our enemy. Babies and young children especially need clean drinking water because dirty water that contains germs can make them ill. Some of the illnesses caused by dirty water are diarrhoea, dysentery, cholera, typhoid, jaundice, worms, and in some countries, bilharzia and guinea worm.

Germs that cause disease can get into the water in a number of ways:

- when we find water,
- when we collect it and carry it home,
- when we store it and use it at home.

Sometimes water looks clear and clean but it is not good to drink because it has germs in it.

Keeping water clean and safe

We get water from many sources. Water comes from springs, rivers, ponds and wells. It is collected from these places as well as from rainfall or taps. There are many things that we can do to keep water clean. It is also important to keep it clean when we carry it home, and when we store it.

Storing water

Always keep a metal or wooden cover over the container where water is stored. Wash and dry the containers from time to time. Keep the stored water out of reach of small children and animals. Below are some ways of making water clean.

Different ways of cleaning water

- **Filtering with a cloth**
  Use a clean cloth (keep it well washed and dried) and place it over the empty storage container. Tie it in place if necessary. Pour water carried from the well or stream through the cloth to remove dirt, dust and insects.
- **Using sunlight**
  Strong sunlight will also destroy many germs in water stored in a transparent container and make it safer but of course leaving the cover on.
- **Making a sand filter**
  To make a sand filter, cut the bottom off a clean plastic bottle. Cut out a circle of fine mesh to make a wire screen large enough to block off the neck of the bottle. Put the screen inside the bottle to cover the neck completely. Put a layer of coarse pebbles on top of the screen, then a layer of coarse sand, and finally a layer of fine sand. Pour water into the open end of the filter and place a clean cup, dish or container under the filter to catch the clean water. The sand traps germs, but it needs to be taken out of the filter and cleaned or replaced every few weeks. Replace the sand when the water trickles through the filter more slowly or stops flowing altogether.

Drinking water

If the water has been kept clean, it is probably safe for drinking. If you know that the water has been made safe by chemicals, you can certainly drink it safely!
If you are not sure that it is safe, the water can be made safe by boiling. Water must be boiled for at least 10 minutes to kill all the germs. It is especially important to use boiled water for babies, very young children and sick people. Remember to put it in a clean container and to keep it covered.

When taking water from a storage jar, always use a clean ladle, and pour the water into a clean glass or cup before drinking it.

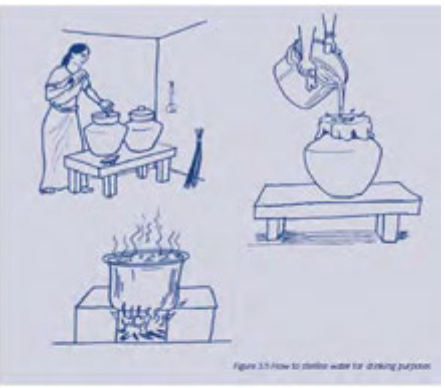
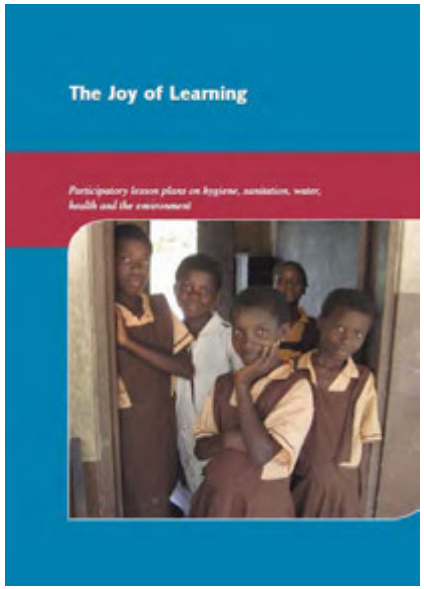


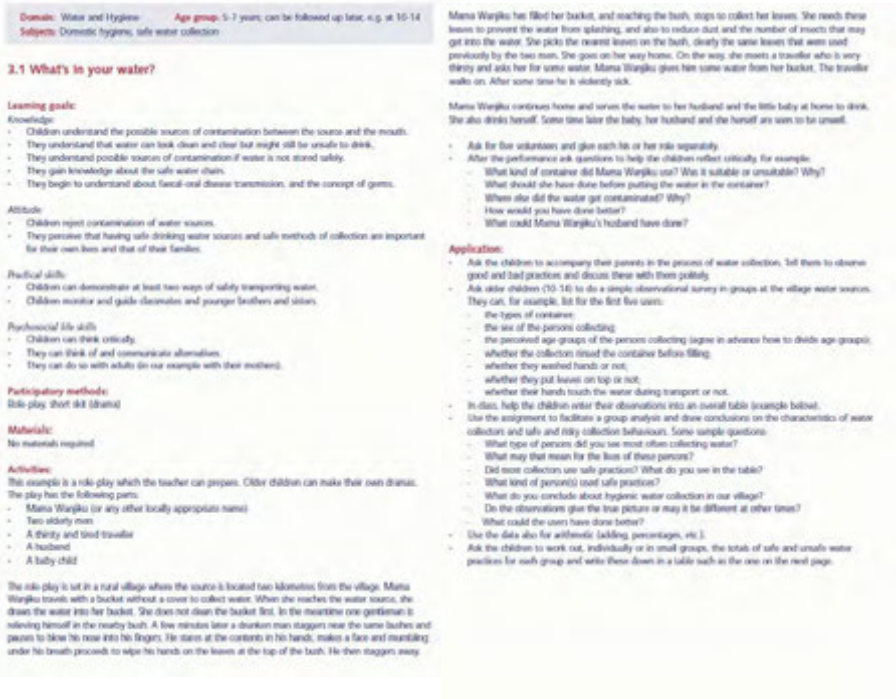
Figure 3.5: How to sterilize water for drinking purposes

2. Training material sample

2) The Joy of Learning



1. Hygiene	1.1	Clean is beautiful	Personal Hygiene
	1.2	I am a 'well washer'	Handwashing
	1.3	The WASH song	Water and sanitation-related diseases
	1.4	Showtime	Handwashing, sanitation-related diseases
	1.5	Mad mandazis	Food vendors, food hygiene
	1.6	My changing body	Puberty and personal hygiene
	1.7	HIV/AIDS – a disease you can avoid	Hygiene and HIV/AIDS
	1.8	The 'who' game	Gender and SSHE
2. Sanitation	2.1	My beautiful school	Sanitation, water, hygiene
	2.2	Ouch and Bah	Refuse disposal and reuse
	2.3	The unseen enemy	Sanitation, worms
	2.4	The six Fs	Diarrhoeal transmission
	2.5	Racing to the loo	Sanitation and handwashing
	2.6	Building blocks	Basic technical know-how and skills
	2.7	Wonderful waste	Solid waste disposal and recycling
3. Water	3.1	What's in your water?	Safe water collection and transport
	3.2	I drink....safe water!	Safe water consumption
	3.3	What a surprise	Safe water collection and transport
	3.4	Yoopy scoopy	Safe water storage and handling
	3.5	Wash and drain	Source contamination
	3.6	Filtering the flow	Water purification
	3.7	The rainmakers	Water resources management
	3.8	Bill Harzia	Urinary Schistosomiasis transmission



Domain: Water and Hygiene **Age group:** 5-7 years; can be followed up later, e.g. at 10-14
Subjects: Domestic hygiene, safe water collection

3.1 What's in your water?

Learning goals:

Knowledge:
- Children understand the possible sources of contamination between the source and the mouth.
- They understand that water can look clean and clear but might still be unsafe to drink.
- They understand possible sources of contamination if water is not stored safely.
- They gain knowledge about the safe water chain.
- They begin to understand about faecal-oral disease transmission, and the concept of germs.

Attitude:
- Children reject contamination of water sources.
- They perceive that having safe drinking water sources and safe methods of collection are important for their own lives and that of their families.

Practical skills:
- Children can demonstrate at least two ways of safely transporting water.
- Children monitor and guide classmates and younger brothers and sisters.

Psychosocial life skills
- Children can think critically.
- They can think of and communicate alternatives.
- They can do so with adults (in our example with their mothers).

Participatory methods:
Role-play, short skit (drama)

Materials:
No materials required

Activities:
This example is a role-play which the teacher can prepare. Older children can make their own dramas.
The play has the following parts:
- Mama Wanjiku (or any other locally appropriate name)
- Two elderly men
- A thirsty and tired traveller
- A husband
- A baby child

The role-play is set in a rural village where the source is located two kilometres from the village. Mama Wanjiku travels with a bucket without a cover to collect water. When she reaches the water source, she draws the water into her bucket. She does not clean the bucket first. In the meantime one gentleman is relieving himself in the nearby bush. A few minutes later a drunken man staggers near the same bushes and pauses to blow his nose into his fingers. He stares at the contents in his hands, makes a face and mumbling under his breath proceeds to wipe his hands on the leaves at the top of the bush. He then staggers away.

Mama Wanjiku has filled her bucket, and reaching the bush, stops to collect her leaves. She needs these leaves to prevent the water from splashing, and also to reduce dust and the number of insects that may get into the water. She picks the nearest leaves on the bush, clearly the same leaves that were used previously by the two men. She goes on her way home. On the way, she meets a traveller who is very thirsty and asks her for some water. Mama Wanjiku gives him some water from her bucket. The traveller walks on. After some time he is violently sick.

Mama Wanjiku continues home and serves the water to her husband and the little baby at home to drink. She also drinks herself. Some time later the baby, her husband and she herself are seen to be unwell.

- Ask for five volunteers and give each his or her role separately.
- After the performance ask questions to help the children reflect critically, for example:
  - What kind of container did Mama Wanjiku use? Was it suitable or unsuitable? Why?
  - What should she have done before putting the water in the container?
  - Where else did the water get contaminated? Why?
  - How would you have done better?
  - What could Mama Wanjiku's husband have done?

Application:
- Ask the children to accompany their parents in the process of water collection. Tell them to observe good and bad practices and discuss these with them politely.
- Ask older children (10-14) to do a simple observational survey in groups at the village water sources. They can, for example, list for the first five users:
  - the types of container;
  - the sex of the persons collecting;
  - the perceived age-groups of the persons collecting (agree in advance how to divide age groups);
  - whether the collectors rinsed the container before filling;
  - whether they washed hands or not;
  - whether they put leaves on top or not;
  - whether their hands touch the water during transport or not.
- In class, help the children enter their observations into an overall table (example below).
- Use the assignment to facilitate a group analysis and draw conclusions on the characteristics of water collectors and safe and risky collection behaviours. Some sample questions:
  - What type of persons did you see most often collecting water?
  - What may that mean for the lives of these persons?
  - Did most collectors use safe practices? What do you see in the table?
  - What kind of person(s) used safe practices?
  - What do you conclude about hygienic water collection in our village?
  - Do the observations give the true picture or may it be different at other times?
  - What could the users have done better?
- Use the data also for arithmetic (adding, percentages, etc.).
- Ask the children to work out, individually or in small groups, the totals of safe and unsafe water practices for each group and write these down in a table such as the one on the next page.

No. of persons	Male	Female	Child	Adolescent	Adult	Elderly	Rinse Yes	Rinse No	Leaves No	Leaves Yes	Touch No	Touch Yes
1	x			x				x	x		x	
2		x		x				x	x		x	
3		x			x		x		x		x	
4		x		x				x	x		x	
5		x	x					x	x		x	
		x										
TOTAL	1	5	1	3	1	0	1	4	1	4	0	5

Learning indicators:
- The children can list containers that are safer and less safe to transport water.
- Children can describe ways in which water contamination can take place.
- Older children can critically observe, record and analyse water collection behaviour on health and social aspects.

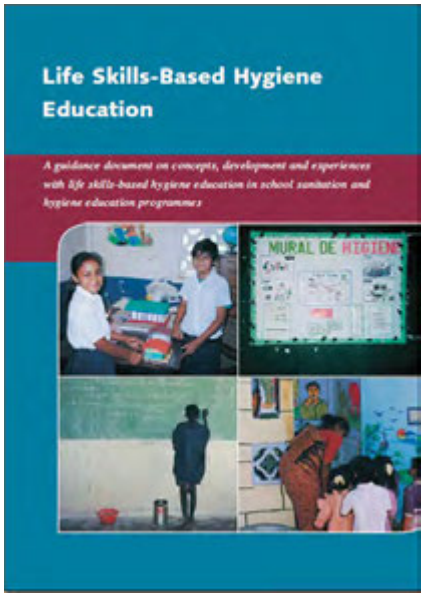
Demonstration of school children in Gujarat for better hygiene
(Photo: Kathleen Shordt, IRC)

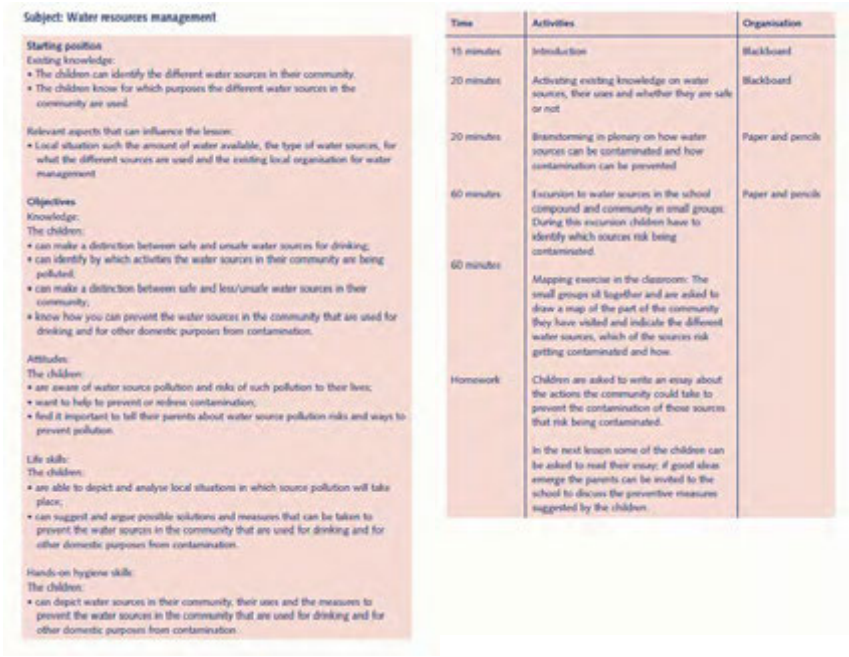
Competence:

Safe water chain

2. Training material sample

3) Life Skill Based Hygiene Education





Subject: Water resources management

Starting position
Existing knowledge:
- The children can identify the different water sources in their community.
- The children know for which purposes the different water sources in the community are used.

Relevant aspects that can influence the lesson:
- Local situation such the amount of water available, the type of water sources, for what the different sources are used and the existing local organisation for water management

Objectives
Knowledge:
The children:
- can make a distinction between safe and unsafe water sources for drinking;
- can identify by which activities the water sources in their community are being polluted;
- can make a distinction between safe and less/unsafe water sources in their community;
- know how you can prevent the water sources in the community that are used for drinking and for other domestic purposes from contamination.

Attitudes:
The children:
- are aware of water source pollution and risks of such pollution to their lives;
- want to help to prevent or redress contamination;
- find it important to tell their parents about water source pollution risks and ways to prevent pollution.

Life skills:
The children:
- are able to depict and analyse local situations in which source pollution will take place;
- can suggest and argue possible solutions and measures that can be taken to prevent the water sources in the community that are used for drinking and for other domestic purposes from contamination.

Hands-on hygiene skills:
The children:
- can depict water sources in their community, their uses and the measures to prevent the water sources in the community that are used for drinking and for other domestic purposes from contamination.

Time	Activities	Organisation
15 minutes	Introduction	Blackboard
20 minutes	Activating existing knowledge on water sources, their uses and whether they are safe or not	Blackboard
20 minutes	Brainstorming in plenary on how water sources can be contaminated and how contamination can be prevented	Paper and pencils
60 minutes	Excursion to water sources in the school compound and community in small groups. During this excursion children have to identify which sources risk being contaminated.	Paper and pencils
60 minutes	Mapping exercise in the classroom: The small groups sit together and are asked to draw a map of the part of the community they have visited and indicate the different water sources, which of the sources risk getting contaminated and how.	
Homework	Children are asked to write an essay about the actions the community could take to prevent the contamination of those sources that risk being contaminated. In the next lesson some of the children can be asked to read their essay; if good ideas emerge the parents can be invited to the school to discuss the preventive measures suggested by the children.	

3. Discussion

1) What kind of training materials would be necessary for carry on promotion of hygiene at school in WUSC's jurisdiction?

2) What kind of training material could be possible to develop for promotion of hygiene at primary school in WUSC's jurisdiction?

Some information for discussion of 2): materials use in Philippines and other countries

a) Make student fun

- fan, poster contest and essay contest, facility tour, water day party (picnic)

b) Provide knowledge for hygiene and sanitation, water supply and environment conservation

- Wall hanging story board, situational picture cards, posters, pamphlet, sub textbook

4. Development of training material for primary school student

- Discuss what kind of training material we could develop during in this workshop. If anybody has no idea, suggestion is wall hanging storyboard and/or guideline of poster/essay contests.

1) Wall hanging story board

Step-1: discuss context

Step-2: discuss message in context

Step-3: discuss stream of explain

Step-4: draw picture and write explanation in Suwahili

Step-5: Edit and complete wall hanging story board

Step-6: Edit guideline for teacher (explanation of each picture on wall hanging story board, and add additional information or reference)

4. Development of training material for primary school student

1) Wall hanging story board

Sample of explanation stream

- Human body and water
- What cause water born diseases
- Risk practices
- Good hygiene practices
- Conservation of water
- Conservation of water resources

4. Development of training material for primary school student

2) Guideline of poster/essay contest

Step-1: discuss theme for poster and essay (e.g. water and life, cleaning of environment, environment conservation, water conservation)

Step-2: discuss targets (e.g. 4th and 6th grade primary student of all schools in Nepal)

Step-3: discuss duration (e.g. during water day and after hygiene education for 4th and 6th grade students in primary school)

Step-4: discuss and determine criteria of evaluation (e.g. message clearness, impact and techniques of drawing for poster contest, message clearness, consistency of logic, rhetoric, spell and grammar, and impacts for essay contest)

Step-5: Edit guideline

4. Development of training material for primary school student

2) Guideline of poster/essay contest

Sample table of contents for guideline of poster contest

- Objectives
- Theme
- Target applicants
- Rules of the contest (size of poster, etc.)
- Schedule and place to submit
- Judges
- Criteria (message clearness, impact and techniques)

7. Development of training materials for adults

Objectives of topic-7: Development of training materials for adults

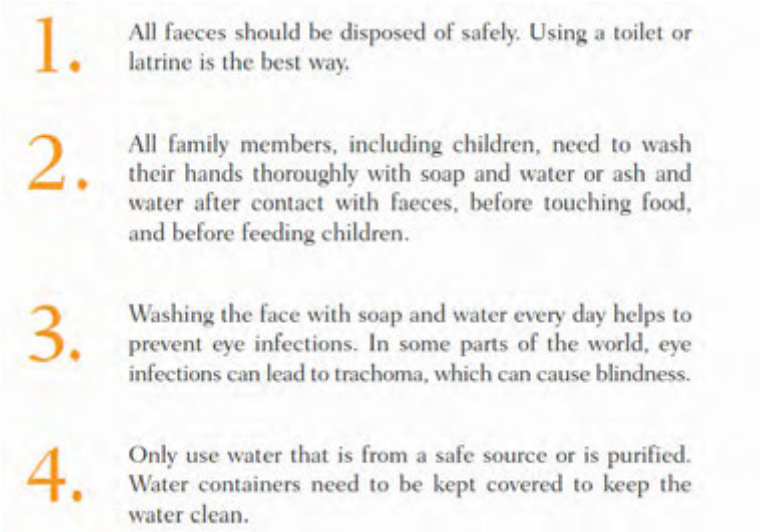
- Discuss what kind of training material could be possible to develop for promotion activity to mothers/female groups
- Develop one or two training material for promotion of hygiene to mothers/female groups

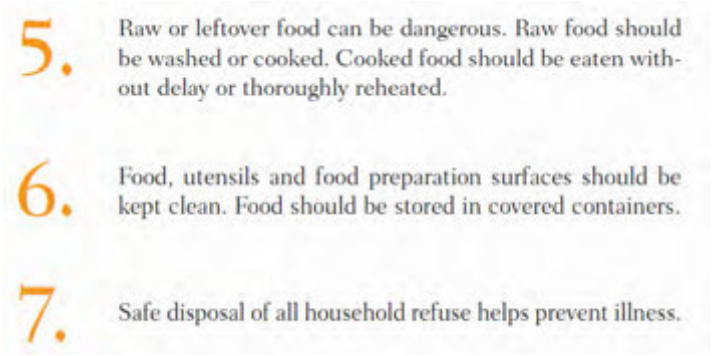
7. Development of training materials for adults

Agenda of topic-7: Development of training materials for adults

1. Information of hygiene
2. Discussion
3. Development of training material for mothers/female groups
4. Development of hygiene promotion workshop program plan

1. Information of hygiene





1. All faeces should be disposed of safely. Using a toilet or latrine is the best way.

Many illnesses, especially diarrhoea, come from germs found in human faeces. If the germs get into water or onto food, hands, utensils or surfaces used for preparing and serving food, they can be swallowed and cause illness.

The single most important action to prevent the spread of germs is to dispose of all faeces – both human and animal – safely. Human faeces need to be put down a toilet or latrine. The latrine needs to be kept clean. Animal faeces need to be kept away from the house, paths and areas where children play.

If it is not possible to use a toilet or latrine, everyone should always defecate well away from houses, paths, water sources and places where children play. The faeces should be buried immediately.

All faeces, even those of infants, carry germs and are therefore dangerous. If children defecate without using a toilet, latrine or potty, their faeces should be cleaned up immediately and put down the latrine or buried.

Latrines and toilets need to be cleaned frequently. Latrines should be kept covered and toilets should be flushed.

Local governments and NGOs often can help communities build sanitary latrines by giving advice on the design and construction of low-cost latrines.

2. All family members, including children, need to wash their hands thoroughly with soap and water or ash and water after contact with faeces, before touching food, and before feeding children.

Washing the hands with soap and water or ash and water removes germs. Rinsing the fingers with water is not enough – both hands need to be rubbed with soap or ash. This helps to stop germs and dirt from getting onto food or into the mouth. Washing the hands can also prevent infection with worms. Soap and water or ash and water should be placed conveniently near the latrine or toilet.

- It is especially important to wash the hands after defecating and after cleaning the bottom of a baby or child who has just defecated. It is also important to wash hands after handling animals and raw foods.
- Hands should always be washed before preparing, serving or eating food, and before feeding children. Children should be taught to wash both hands after defecating and before eating to help protect them from illness.

Children often put their hands into their mouths, so it is important to wash a child's hands often, especially after they have been playing in dirt or with animals.

Children are easily infected with worms, which deplete the body's nutrients. Worms and their eggs can be found in human and animal faeces and urine, in surface water and soil, and in poorly cooked meat. Children should not play near the latrine, toilet or defecation areas. Shoes should be worn near latrines to prevent worms from entering the body through the skin of the feet.

- Children living in areas where worms are common should be treated two to three times per year with a recommended antihelmenthic medication.

3. Washing the face with soap and water every day helps to prevent eye infections. In some parts of the world, eye infections can lead to trachoma, which can cause blindness.

A dirty face attracts flies, spreading the germs they carry from person to person. The eyes may become sore or infected and vision may be impaired or lost if the eyes are not kept clean and healthy.

If the eyes are healthy, the white part is clear, the eyes are moist and shiny, and vision is sharp. If the eyes are extremely dry or very red and sore, if there is a discharge or if there is difficulty seeing, then the child should be examined by a health worker as soon as possible.

4. Only use water that is from a safe source or is purified. Water containers need to be kept covered to keep the water clean.

Families have fewer illnesses when they have an adequate supply of clean water and know how to keep it free of germs.

If the water is not clean it can be purified by boiling or filtering.

Clean water sources include properly constructed and maintained piped systems, tube-wells, protected dug wells and springs. Water from unsafe sources – such as ponds, rivers, open tanks and step-wells – can be made safer by boiling. Water should be stored in a covered container to keep it clean.

Families and communities can protect their water supply by:

- keeping wells covered and installing a handpump
- disposing of faeces and waste water (especially from latrines and household cleaning) well away from any water source used for cooking, drinking or washing
- building latrines at least 15 metres away and downhill from a water source

- always keeping buckets, ropes and jars used to collect and store water as clean as possible by storing them in a clean place, rather than on the ground
- keeping animals away from drinking water sources and family living areas
- avoiding the use of pesticides or chemicals anywhere near a water source.

Families can keep water clean in the home by:

- storing drinking water in a clean, covered container
- avoid touching clean water with unclean hands
- taking water out of the container with a clean ladle or cup
- having a tap on the water container
- not allowing anyone to put their hands into the container or to drink directly from it
- keeping animals away from stored water.

If there is uncertainty about the safety of the drinking water, local authorities should be consulted.

- Yogurt and sour porridge are good to use in meals because their acid prevents the growth of germs.

Raw food, especially poultry and seafood, usually contains germs. Cooked food can collect germs if it touches raw food. So raw and cooked foods should always be kept away from each other. Knives, chopping boards and surfaces where food is prepared should always be cleaned after preparing raw food.

- Breastmilk is the safest milk for infants and young children. Animal milk that is freshly boiled or pasteurized is safer than unboiled milk.
- Expressed breastmilk can be stored at room temperature for up to eight hours in a clean, covered container.
- Special care should be taken with preparing food for infants and small children. Their food should be freshly made and not left standing, if possible.
- Fruit and vegetables should be peeled or washed thoroughly with clean water, especially if they are to be given raw to babies or small children. Chemicals such as pesticides and herbicides cannot be seen on fruit and vegetables but nonetheless can be dangerous.

5. Raw or leftover food can be dangerous. Raw food should be washed or cooked. Cooked food should be eaten without delay or thoroughly reheated.

Cooking food thoroughly kills germs. Food, especially meat and poultry, should be cooked all the way through.

Germs grow quickly in warm food. Food should be eaten as soon as possible after cooking so it does not have time to collect germs.

- If food has to be kept for more than two hours, it should be kept either very hot or very cool.
- If cooked food is saved for another meal, it should be covered to keep off flies and insects and then thoroughly reheated before being eaten.

6. Food, utensils and food preparation surfaces should be kept clean. Food should be stored in covered containers.

Germs on food can be swallowed and cause illness. To protect food from germs:

- food preparation surfaces should be kept clean
- knives, cooking utensils, pots and plates should be kept clean and covered
- cloths for cleaning dishes or pans should be washed thoroughly every day and dried in the sun. Plates, utensils and pans should be washed immediately after eating and put on a rack to dry
- food should be kept in covered containers to protect it from insects and animals
- feeding bottles or teats should not be used because they can contain germs that cause diarrhoea unless they are cleaned each time with boiling water. Children should be breastfed or fed from a clean, open cup.

7. Safe disposal of all household refuse helps prevent illness.

Germs can be spread by flies, cockroaches, rats and mice, which thrive in refuse such as food scraps and peelings from fruit and vegetables.

If there is no community-wide collection of garbage, each family needs a garbage pit where household refuse is buried or burned every day.

Keeping the household and nearby areas clean and free of faeces, refuse and waste water can help prevent disease. Household waste water can be disposed of safely by making a soak pit or a channel to the kitchen garden or to the field.

Chemicals such as pesticides and herbicides can be very dangerous if even small quantities get into the water supply or onto food, hands or feet. Clothes and containers used when handling chemicals should not be washed near a household water source.

Pesticides and other chemicals should not be used around the household or near a water source. Chemicals should not be stored in or near drinking water containers or near food. Never store food or water in pesticide or fertilizer containers.

5. If the child is dehydrated with severe or persistent diarrhoea, only oral rehydration solution or medicines recommended by a trained health worker should be used. Other diarrhoea medicines are generally ineffective and could be harmful to the child.

6. To prevent diarrhoea, all faeces should be disposed of in a latrine or toilet or buried.

7. Good hygiene practices protect against diarrhoea. Hands should be thoroughly washed with soap and water or ash and water after contact with faeces, and before touching food or feeding children.

Diarrhoea

1. Diarrhoea kills children by draining liquid from the body, thus dehydrating the child. As soon as diarrhoea starts, it is essential that the child be given extra fluids as well as regular foods and fluids.

2. A child's life is in danger if there are several watery stools within an hour or if there is blood in the faeces. Immediate help from a trained health worker is needed.

3. Breastfeeding can reduce the severity and frequency of diarrhoea.

4. A child with diarrhoea needs to continue eating regularly. While recovering from diarrhoea, the child needs at least an extra meal every day for at least two weeks.

1. Diarrhoea kills children by draining liquid from the body, thus dehydrating the child. As soon as diarrhoea starts, it is essential that the child be given extra fluids as well as regular foods and fluids.

A child has diarrhoea when he or she passes three or more watery stools a day. The more numerous the watery stools, the more dangerous the diarrhoea.

Some people think that drinking liquids makes diarrhoea worse. *This is not true.* A child with diarrhoea should be given drinks as often as possible until the diarrhoea stops. Drinking lots of liquids helps to replace the fluids lost during diarrhoea.

Recommended drinks for a child with diarrhoea:

- breastmilk (mothers should breastfeed more often than usual)
- soups
- rice water
- fresh fruit juices
- weak tea with a little sugar
- coconut water
- clean water from a safe source. If there is a possibility the water is not clean, it should be purified by boiling or filtering.
- oral rehydration salts (ORS) mixed with the proper amount of clean water. (*See box on page 83.*)

To avoid dehydration, breastfed children should breastfeed as often as possible, and other children should drink the following amounts of liquids every time a watery stool is passed:

- for a child under the age of two years: between a quarter and a half of a large cup
- for a child aged two or older: between a half and a whole large cup.

Drinks should be given from a clean cup. A feeding bottle should never be used. It is difficult to clean bottles completely and unclean bottles can cause diarrhoea.

If the child vomits, the caregiver should wait for 10 minutes and then begin again to give the drink to the child slowly, small sips at a time.

The child should be given extra liquids until the diarrhoea has stopped.

Diarrhoea usually stops after three or four days. If it lasts longer than one week, caregivers should seek help from a trained health worker.

- refuses to eat
- has sunken eyes
- looks weak or is lethargic
- has had diarrhoea for more than one week.

If the child has *any* of these signs, help from a trained health worker is needed urgently. In the meantime, the child should be given ORS solution or other liquids.

If the child passes several watery stools in one or two hours and vomits, there is cause for alarm – these are possible signs of cholera. Cholera can kill children in a matter of hours. Seek medical help immediately.

- Cholera can spread throughout the community quickly through contaminated water or food. Cholera usually occurs in situations where there is poor sanitation and overcrowding.
- There are four steps to be taken to limit the spread of cholera or diarrhoea:
  1. Dispose of all faeces in a latrine or toilet or bury them
  2. Wash hands with soap or ash and water after contact with faeces
  3. Use safe drinking water
  4. Wash, peel or cook all foods.

2. A child's life is in danger if there are several watery stools within an hour or if there is blood in the faeces. Immediate help from a trained health worker is needed.

Parents should immediately seek help from a trained health worker if the child:

- passes several watery stools in one or two hours
- passes blood in the faeces
- vomits frequently
- has a fever
- is extremely thirsty
- does not want to drink

3. Breastfeeding can reduce the severity and frequency of diarrhoea.

Breastmilk is the best source of liquid and food for a young child with diarrhoea. It is nutritious and clean and helps fight illness and infections. An infant who is fed only breastmilk is unlikely to get diarrhoea.

Breastmilk prevents dehydration and malnutrition and helps replace lost fluids. Mothers are sometimes advised to give less breastmilk if a child has diarrhoea. *This advice is wrong.* Mothers should breastfeed more often than usual when the child has diarrhoea.

4. A child with diarrhoea needs to continue eating regularly. While recovering from diarrhoea, the child needs at least an extra meal every day for at least two weeks.

A child with diarrhoea loses weight and can quickly become malnourished. A child with diarrhoea needs all the food and fluid he or she can take. Food can help stop the diarrhoea and help the child recover more quickly.

A child with diarrhoea may not want to eat or may vomit, so feeding can be difficult. If the child is around six months of age or older, parents and caregivers should encourage the child to eat as often as possible, offering small amounts of soft, mashed foods or foods the child likes. These foods should contain a small amount of salt. Soft foods are easier to eat and contain more fluid than hard foods.

Recommended foods for a child with diarrhoea are well-mashed mixes of cereals and beans, fish, well-cooked meat, yogurt and fruits. One or two teaspoons of oil can be added to cereal and vegetables. Foods should be freshly prepared and given to the child five or six times a day.

After the diarrhoea stops, extra feeding is vital for a full recovery. At this time, the child needs to eat an extra meal a day, or breastfeed more every day, for at least two weeks. This will help the child replace the energy and nourishment lost due to diarrhoea.

A child is not fully recovered from diarrhoea until he or she is at least the same weight as when the illness began.

5. If the child is dehydrated with severe or persistent diarrhoea, only oral rehydration solution or medicines recommended by a trained health worker should be used. Other diarrhoea medicines are generally ineffective and could be harmful to the child.

Diarrhoea usually cures itself in a few days. The real danger is the loss of liquid and nutrients from the child's body, which can cause dehydration and malnutrition.

A child with diarrhoea should never be given any tablets, antibiotics or other medicines unless these have been prescribed by a trained health worker.

The best treatment for diarrhoea is to drink lots of liquids and oral rehydration salts (ORS) properly mixed with water.

If ORS packets are not available, dehydration can be treated by giving the child a drink made with four level teaspoons of sugar and half a level teaspoon of salt dissolved in one litre of clean water. Be very careful to mix the correct amounts, as too much sugar can make the diarrhoea worse, and too much salt can be extremely harmful to the child. If the mixture is made a little too diluted no harm can be done and there is very little loss of effectiveness.

Measles frequently causes severe diarrhoea. Immunizing children against measles prevents this cause of diarrhoea.

Vitamin A capsules and foods that contain vitamin A help a child recover from diarrhoea. Foods that contain vitamin A include breastmilk, liver, fish, dairy products, orange or yellow fruits and vegetables, and green leafy vegetables.

6. To prevent diarrhoea, all faeces should be disposed of in a latrine or toilet or buried.

Children and adults can swallow germs that cause diarrhoea if faeces touch the household's drinking water, food, hands, utensils or food preparation surfaces. Flies that settle on faeces and then on food also transmit the germs that cause diarrhoea. Covering food and drinking water protects them from flies.

All faeces, even those of infants and young children, carry germs and are therefore dangerous. If children defecate without using the latrine or toilet, their faeces should be cleaned up immediately and put down the toilet or buried. Keeping latrines and toilets clean prevents the spread of germs.

If there is no access to a toilet or latrine, adults and children should defecate away from houses, paths, water supplies and places where children play and then the faeces should be buried under a layer of soil.

In communities without toilets or latrines, the community should consider joining together to build such facilities.

Water sources should be kept clear of animal or human faeces.

7. Good hygiene practices protect against diarrhoea. Hands should be thoroughly washed with soap and water or ash and water after contact with faeces, and before touching food or feeding children.

Hands should always be washed with soap and water or ash and water after defecating, after cleaning the baby's bottom, and immediately before feeding children, handling food or eating.

Young children frequently put their hands in their mouths, so it is important to keep the household area clean and to wash children's hands often with water and soap or ash, especially before giving them food.

Other hygiene measures can help to prevent diarrhoea:

- Food should be prepared and thoroughly cooked just before eating. Food left standing can collect germs that can cause diarrhoea. After two hours cooked foods are not safe unless they are kept very hot or very cold.
- All refuse should be buried, burned or safely disposed of to stop flies from spreading disease.

ORS solution

A special drink for diarrhoea

What is ORS?

ORS (oral rehydration salts) is a special combination of dry salts that, when properly mixed with safe water, can help rehydrate the body when a lot of fluid has been lost due to diarrhoea.

Where can ORS be obtained?

In most countries, ORS packets are available from health centres, pharmacies, markets and shops.

To make the ORS drink:

1. Put the contents of the ORS packet in a clean container. Check the packet for directions and add the correct amount of clean water. Too little water could make the diarrhoea worse.
2. Add water only. Do not add ORS to milk, soup, fruit juice or soft drinks. Do not add sugar.
3. Stir well, and feed it to the child from a clean cup. Do not use a bottle.

How much ORS drink to give?

Encourage the child to drink as much as possible.

A child under the age of two needs at least a quarter to a half of a large cup of the ORS drink after each watery stool.

A child aged two or older needs at least a half to a whole large cup of the ORS drink after each watery stool.

Diarrhoea usually stops in three or four days.

If it does not stop after one week, consult a trained health worker.

Activity Sheet 5: Diarrhoea

Objective

To understand that diarrhoea is dangerous because it can both kill and cause malnutrition. It can be prevented by keeping clean, using clean water and by eating properly.

Learning points for the children:

- If the child has diarrhoea action should be taken immediately. Do not wait for signs of severe dehydration. We can prevent serious dehydration by doing the following:
- Giving the child plenty to drink to replace the water that is lost, as soon as the diarrhoea starts.
- Giving the child enough food to keep him/her strong.
- Food that contains salt is particularly important.

Activities for children

Activity 1: Collecting information about diarrhoea

- Children can collect information about diarrhoea and how common and dangerous it is. How many times have their younger brothers and sisters had diarrhoea in the last year? They can find out at what ages it is most common by counting how many times children of different ages had diarrhoea.

They can see how often breast-fed babies and bottle-fed babies get diarrhoea. Which get diarrhoea the most? Why?

How many children in the community have died of diarrhoea? This information can be used later to help decide if different health activities have made a difference to children's health.

Activity 2: Knowledge of diarrhoea

- Make the group sit in a circle.
- Ask them if they or their siblings had diarrhoea recently.
- Display a picture of a child having diarrhoea in the centre of the circle. Stimulate children to discuss the reasons why the person might have diarrhoea.
- Write their reasons on the board and let the children clarify them.
- Display all the pictures depicting possible treatments and ask them to identify the treatments adopted in their village and display it around the picture of the child having diarrhoea.
- Ask them the following questions.
- What are the reasons for choosing the treatment? Is it safe?
- What was the effect of the treatment? Was there an improvement or did it increase diarrhoea?
- Has there been any death in the family or in the village due to diarrhoea?
- What were the costs/resources involved in the treatment?
- Did it leave any harmful effects on the child after treatment?
- After you have identified the reasons and treatment methods adopted, explain them in a separate session.

a. What are the reasons for getting diarrhoea?

b. What does diarrhoea lead to?

c. How do you identify dehydration?

d. What is the safe/correct treatment method for diarrhoea?

Activity 3: Making Oral Rehydration Solution (ORS)

- Make the students work in pairs. Each pair gets a bit of sugar, salt and water from the teacher.
- Ask them to make a glass of ORS based on mixing:
  - four level teaspoons of sugar and
  - half a level teaspoon of salt dissolved in one litre of clean water.
- Ask each pair to re-state the number of sugar, salt and water required for Oral Rehydration Solution.

Games

Game 1: Preparing a ORS solution

- Tell the students that their thumb represents one pinch of salt and that four fingers represent four pinches of sugar.
- After students have understood this, the teacher calls out sugar/salt alternatively in a fast and tricky manner and the students have to respond with the correct action by holding up the thumb or fingers.
- Students who take the wrong action are eliminated from the game.

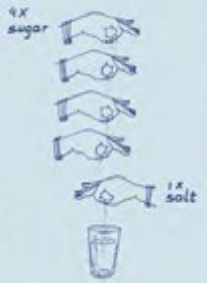


Figure 3.6 How to make an Oral Rehydration Solution

Fact sheet for the teacher Diarrhoea

Diarrhoea is dangerous

Children who have diarrhoea lose a lot of water and salt, especially if they are vomiting and have a fever. Children may die of diarrhoea, usually because they lose too much water and vital salts from their bodies and nobody helps them to drink. This loss of water and salts is called dehydration. The family should understand that the water lost in diarrhoea needs to be quickly replaced.

What to do when a child has diarrhoea?

- Act immediately! Do not wait for signs of severe dehydration. We can prevent serious dehydration by doing the following:
- Give the child plenty to drink to replace the water that is lost, as soon as the diarrhoea starts.
- Give the child enough food to keep him/her strong.
- Food that contains salt is particularly important.

What are the signs of dehydration?

The child is thirsty or may appear irritable, restless or half-asleep. The mouth and tongue become dry, and there are few tears when the child cries. Eyes appear sunken and when the skin is pinched it returns to normal slowly. These signs only appear if the child becomes very dehydrated from diarrhoea. A child with these signs is in great danger.

Figure 3.7: Danger signs of a child who is dehydrated

Take the child to a health worker if any of these danger signs of dehydration begin or if the diarrhoea lasts more than two days. Keep giving the child liquids (the oral rehydration drink is best) while going to the health centre.

How can diarrhoea be prevented?

Diarrhoea can be prevented by:

- Keeping ourselves and our surroundings clean.
- Eating properly so the child grows well.
- Using clean water.

Stools, dirt and rubbish contain germs that can cause diarrhoea. These germs can be carried by flies as well as on dirty hands. Keep these germs away from food and drinking water. Wash your hands and remember to wash the children's hands too:

- After using the toilet: if there is none, make sure that the whole family passes stools far off from the house and far from any water. Stools passed close to the house should be taken away and buried.
- After cleaning children who have defecated.
- Before cooking or eating.
- Before feeding children.

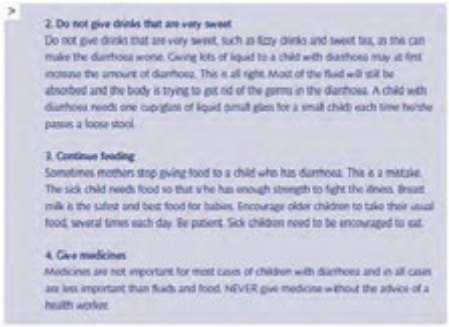
Treating diarrhoea

1. Let the child drink plenty of fluids

The most important thing is to be sure that the child drinks as much liquid as he or she has lost, from the time the diarrhoea starts. Rehydration is putting back into the child's body the water that has been lost because of the diarrhoea and vomiting.

Anything that puts water back into the child helps to fight dehydration, e.g.

- Many of the herbal teas and soups that mothers give to children.
- Mother's breast milk which gives the child both food and water. It is important to continue breast-feeding a baby with diarrhoea. Milk in a bottle is never as good as breast milk.
- Rice water (the water in which rice has been boiled) or any other liquid in which food has been cooked, with a little salt, is an excellent liquid for preventing dehydration.
- Any other liquid drink, e.g. coconut water, lime or lemon water, diluted fruit juice, weak tea or soups.



2. Do not give drinks that are very sweet

Do not give drinks that are very sweet, such as fizzy drinks and sweet tea, as this can make the diarrhoea worse. Giving lots of liquid to a child with diarrhoea may at first increase the amount of diarrhoea. This is all right. Most of the fluid will still be absorbed and the body is trying to get rid of the germs in the diarrhoea. A child with diarrhoea needs one cup/glass of liquid (small glass for a small child) each time he/she passes a loose stool.

3. Continue feeding

Sometimes mothers stop giving food to a child who has diarrhoea. This is a mistake. The sick child needs food so that s/he has enough strength to fight the illness. Breast milk is the safest and best food for babies. Encourage older children to take their usual food, several times each day. Be patient. Sick children need to be encouraged to eat.

4. Give medicines

Medicines are not important for most cases of children with diarrhoea and in all cases are less important than fluids and food. NEVER give medicine without the advice of a health worker.

2. Discussion

1) What kind of training materials would be necessary for carry on promotion of hygiene to mothers/female groups in WUSC's jurisdiction?
2) What kind of training material could be possible to develop for promotion of hygiene to mothers/female groups in WUSC's jurisdiction?

3. Development of training material to mothers/female groups

- Discuss what kind of training material we could develop during in this workshop. If anybody has no idea, suggestion is wall hanging storyboard for child care against water born diseases.

Wall hanging story board

Step-1: discuss context

Step-2: discuss message in context

Step-3: discuss stream of explain

Step-4: draw picture and write explanation in Suwahili

Step-5: Edit and complete wall hanging story board

7. Development of training materials for adults

4. Development of hygiene promotion workshop program plan

- Develop hygiene promotion workshop program plan

Considering:

- Suggested target to school or mother/women's group
- Suggest to use material developed in previous activities
- objectives?
- target?
- Process that could be schedule?
- attendants?
- necessary resources (budget, staff, facility)?

Objectives of topic-7: Development of training materials for adults
- Planning of Workshop

- Discuss what kind of workshop could be possible for promotion of hygiene with cooperation among related agencies

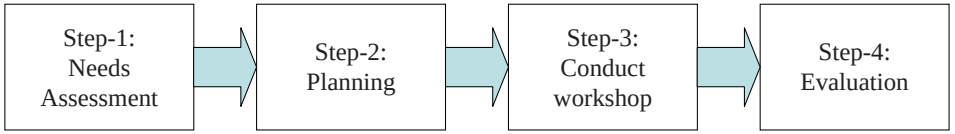
- Developing hygiene promotion workshop program plan

Step-1: Needs assessment -> stakeholder analysis (sample)

Stakeholders	Their concerns regarding promotion of hygiene	Expected attitudes to this workshop (cooperative?)	Opportunities of cooperation and areas could be coop.	Resources persons and area in the organization
Ministry of Health and Welfare				
Health centers				
Ministry of Water, Construction, Energy and Land				
WUSC				
People lives in Urban area				
People lives in Rural area				
NGO				
etc.				

7. Development of training materials for adults-Planning of Workshop

Steps of prepare workshop



Step-1: Needs assessment
- Assess needs of workshop. Determine objectives of workshop based on needs assessment. Stakeholder analysis (including WUSC) would be useful for analyze the relation and concerns of agents and parties related with promotion of hygiene.

Step-2: Planning
- Planning workshop, and determine theme, topics, attendants, schedule and place

Step-3: Conduct workshop
- Make task force for conduct workshop, prepare invitation letters, make appointment with resource speakers and guest speakers, prepare presentation material, room for workshops, decoration of room, Carry on the workshop. Staff may so busy and happening makes sometimes trouble. But Hakuna Mattata!

Step-4: Evaluation
- Review and evaluate workshop. Based on the evaluation, make lesson learns and prepare report for feedback to next workshops

Step-1: Needs assessment -> assessment sheet (sample)

items	Narrative description	remarks
Needs		
Expected outputs		
Expected cost		
Assumptions and conditions for carry on the workshop		

Step-2: Planning -> summary of plan (sample)

1. Theme of the workshop:
2. Objective/purpose of the workshop:
3. Topics and agenda:
4. Place:
5. Resources speakers:
6. Attendants:
7. Deliverable:
8. Schedule:
9. Budget:

“8. schedule” means implementation schedule and “3 topics and agenda” means schedule of workshop

Step-4: Evaluation (sample evaluation summary form)

items	Narrative description	remarks
Objectives and purpose of the workshop		
Original agenda and actual agenda		
Speakers and attendants		
Expected outputs and actual outputs		
Expected cost and actual cost		
Lesson learns		

Training for Developing Public Hygiene Education Program (2)

February 2011

Agenda:

1. Training materials for teaching hygiene and roles of water supply to school kids
2. Develop training material for school kids

Objectives:

- Introduce what and how teach hygiene and roles of water supply to school kids
- Discuss item and contents for training material for school kids
- Develop training material for school kids

1. Training materials for teaching hygiene and roles of water supply to school kids
2. Develop training material for school kids

(1) School kid

- Focus for understanding through thinking
- Make fun
- Provide not only knowledge of hygiene and roles of water supply, but also provide related knowledge such as water cycle, difference between rainy season and dry season, etc.

(2) Women, young mother

- Save her children from water born disease
- Transfer practical knowledge

.Japan)

(1) Provide sub reading textbook for Grade 4 and Grade 7

(2) Poster and essay contest

(3) Facility tours

(4) Water museum tour

Sub reader textbook for grade 4

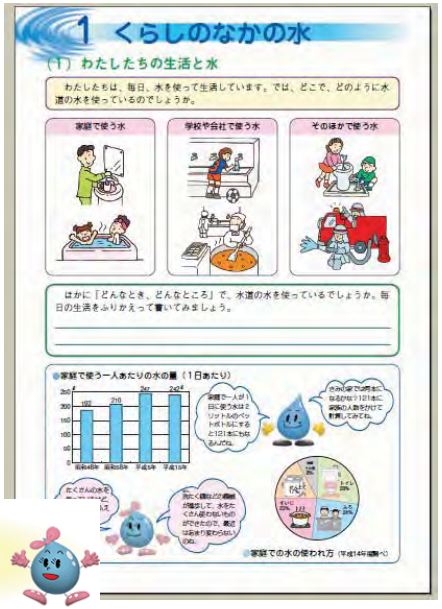
Use in social science class

26 pages

Sub reader textbook for grade 7

Use in environment science class

24 pages

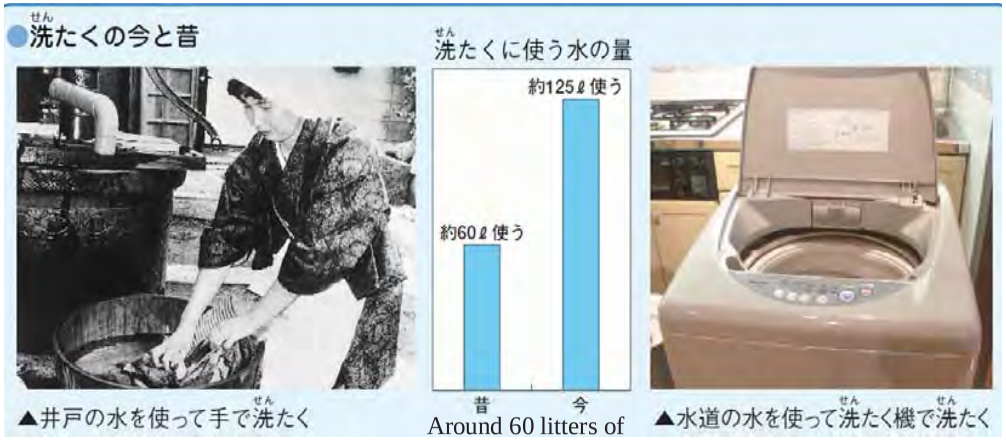


Teaching how water supply system change the life style of people in this page for the sub reader textbook for grade 4 students.

"Previously, people use river water and wells. People must washing by hand. Many people die with diarrhea and other oral diseases. Now, people can use tap water, and washing machine washes clothes. Also people can drink tap water".

1. Training materials for teaching hygiene and roles of water supply to school kids

Life style and life standard was changed by Water Supply System. For example washing.



▲井戸の水を使って手で洗たく

Washing was by hand using water from shallow well

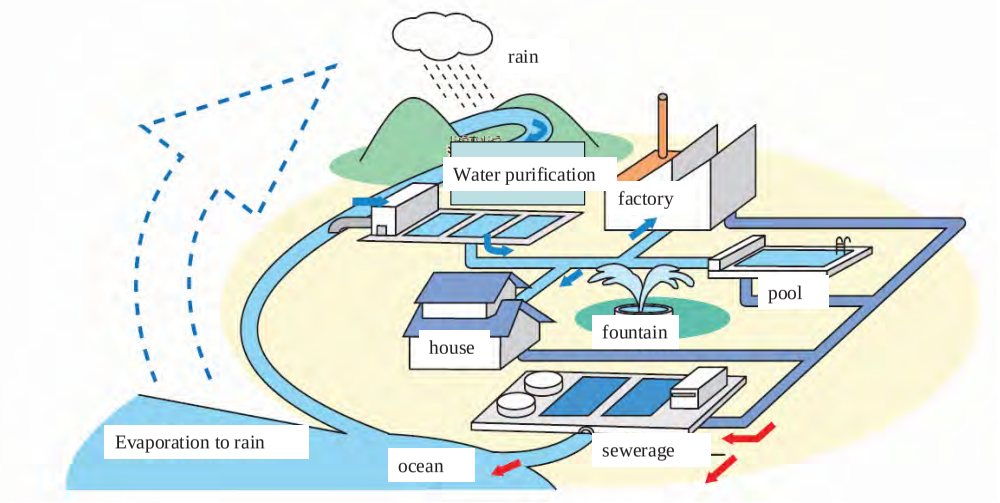
Around 60 litters of water was consumed for washing previously, but now use around 125 litters

▲水道の水を使って洗たく機で洗たく

Washing is using with washing machine and water of water supply system

Sample of chart for explain water supply system as promotion of hygiene improvement and roles of water supply system

(from sub reading text for children Grade 4, Tokyo Metropolitan Waterworks)



Sample of chart for explain water supply system as promotion of hygiene improvement and roles of water supply system

(from sub reading text for children Grade 4, Tokyo Metropolitan Waterworks)

Sample of chart for explain water supply system as promotion of hygiene improvement and roles of water supply system

(from sub reading text for children Grade 4, Tokyo Metropolitan Waterworks)

(1) In take

(2) Pond

(3) Filtration

(4) Chlorination

Poster contest.

Tokyo Waterworks has in such ceremonial event of poster exhibition for kids after teaching roles of water supply in the class.

1. Training materials for teaching hygiene and roles of water supply to school kids

1. Training materials for teaching hygiene and roles of water supply to school kids

.Japan)

(3) Facility tours

- Facility tour and invite school kid for their social science class
- Show facility and explain how water is purified and distributed, water conservation

(4) Water museum tour

- Tokyo waterworks has water museum and invite school kid for their social science class
- Show historical archetype and explain water supply system of old type and how modernized today, as well as how water change our lifestyle

1. Training materials for teaching hygiene and roles of water supply to school kids

(Philippines)

(1) Storyboard

(2) Poster

(3) Cartoon (give a way)

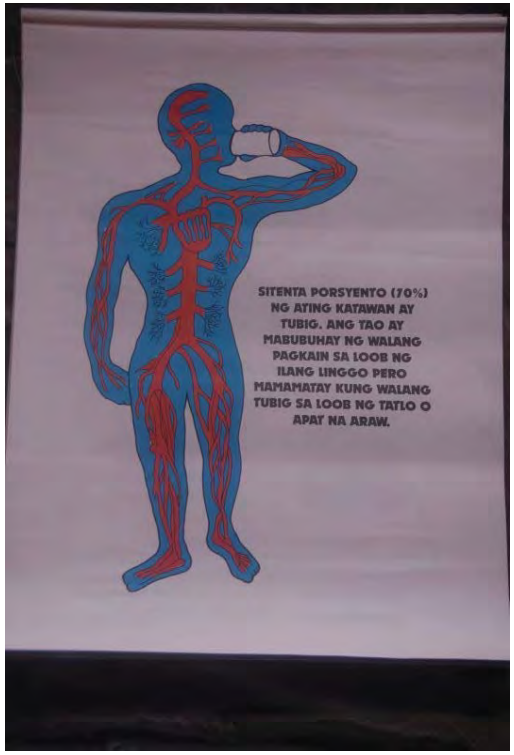
(4) Fan (give a way)

(5) Sticker

Story board

Wall hang training material for “A Health, Hygiene and Water Conservation Education Program” made by Water Authority of Philippines.

Hallow Kids!



Hyman body contained 70% of water. Water in the body flows like arrows and sustain life.

Water is very important. Without water human could not survived even couple of days.

Death or sickness by oral disease come from water dehydrate and change the balance of water in the body.

Water distributed by the authority is purified for safe to drink.

However, boils water 5 minutes for drinking.

Just put water to pot, heating and boiling for 5 minutes.

Safe water protect from oral diseases such as Cholera and Diarrhea.

Dehydrate by diarrhea

Ambulance by Cholera

Wash your hand well for remove micro bacteria before eating protect from oral diseases.

Wash food well with clean and safe water from the authority.

Cover dishes for protect from contamination by insect.

Remove and keep away insects including fry while cooking. Insects contaminating food and cause oral diseases.

Cooperate to community hygiene ands clean community environment including clean dust and garbage.

Brush and clean your teeth and mouth.

Watering for plant to conserve green.

Repair quickly for broken water supply facility including water pipe.

Wash your body and keep clean.

Wash your car.

Wash your shoes

Wash your clothes

Wash your hand

Wash dishes and pots

Tanked water

Volume of water and water level is different with dry season and rainy season.

River is dry up in dry season

Water level of well is high in rainy season but low in dry season

Spring water is also dry up in dry season

For conserve green forest with afforesting, conserve water resources.

Water is recycling in nature, hyporation, drop as rain and flow to river.

Keep clean your house with all member of your family.

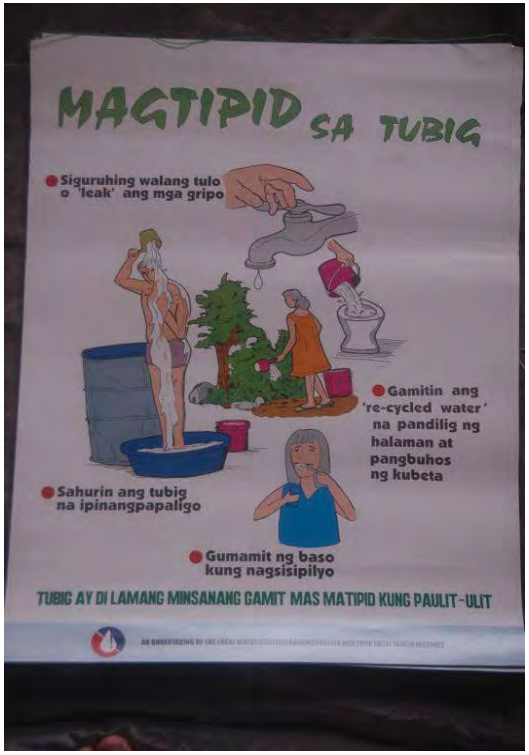
Keep clean your environment and keep social rules for good and comfortable society. Dump disposal to garbage trash.

Poster for wash hand

Wash your hand well for proper hygiene

Wash your kitchen well for proper hygiene

Use shampoo for cleaning your hand and protect from contamination by micro virus



Poster for water conservation

Water conservation: not flushing water while:

- Close the tap faucet when not use water

- Use recycle water for plant or washing toilet

- Use tanked water for washing (not flashing water while washing body)

-Use glassed water for clean your mouth and teeth for proper hygiene (again not flashing water while brushing tooth)

Water is valuable resources and need to use efficiently

Cartoon: give away and try to make understand with fun

1. Training materials for teaching hygiene and roles of water supply to school kids

1. Training materials for teaching hygiene and roles of water supply to school kids

Fan: give away and children bring back home and show their family

1. Training materials for teaching hygiene and roles of water supply to school kids

Sticker

1. Training materials for teaching hygiene and roles of water supply to school kids

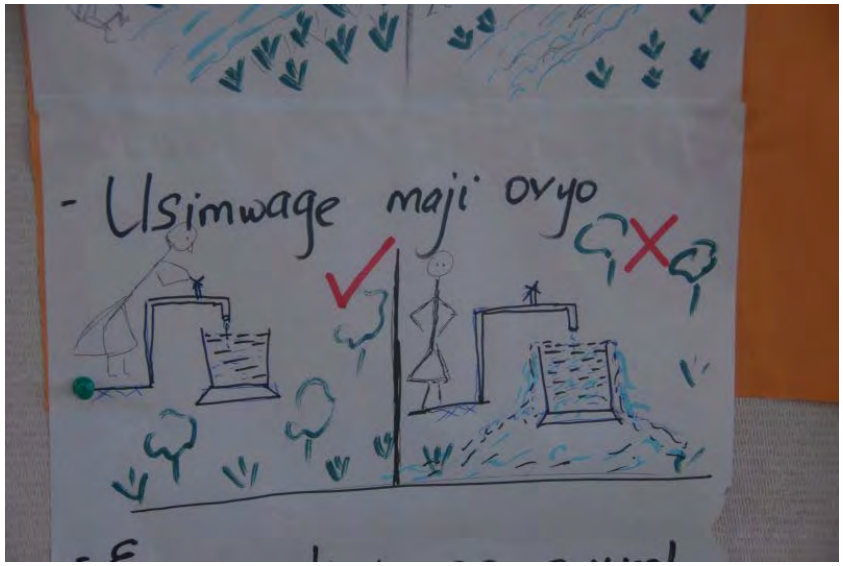
.Tanzania)

(1) Storyboard

(2) Reading books

(3) Fan

storyboard



1.5 Mad mandazis

Learning goals:

Knowledge:

- Children understand the importance of safe food protection and handling.
- They recognise that germs are not visible and obvious but are very dangerous.

Activities:

The teacher tells a story about food vendors such as the one from East Africa below. S/he asks the children to listen carefully as they will get some questions at the end.

On a dusty afternoon Mangezi, a flamboyant mandazi vendor, stood under a shaded bamboo tree. "Mandazis!" he crooned, "Buy Mangezi's sweet, sweet mandazis!" He was an eye-catching figure wearing flared, polka-dotted trousers, large, dark sunglasses and a bright red scarf tied around his neck. For some unknown reason he had a sheen of sweat on his brow and every once in a while this would accumulate into a droplet which he would casually brush away with his fingertips. The mandazis stood before him in a high pile. They were smooth, round, golden brown pancakes which had attracted the attention of numerous flies that swarmed madly and energetically around them. A family passed by with a mother, father and two little girls.

"Buy me a mandazi, mama," said the older girl. "I'm hungry."

"We are almost home," responded mother gently. "Wait until we reach home."

"Why do you refuse her food?" asked the father. "In fact I too will have one."

Mother looked doubtfully at Mangezi, who suddenly turned around and disappeared into a latrine on the other side of the bamboo tree. After a while he reappeared, wiping sweat from across his brow and hastily explained that he had a problem with his tummy. Clutching two large mandazis at the top of the pile he handed them to the father and daughter. The family walked away happily, two of them eating the mandazis.

- Ask the children to describe the choices made by Mangezi in handling the food.
- Ask what they would have done in the same situation.
- Make copies of the story, dictate it or ask the children to write it down from memory.
- Ask them to write an end for the story in not more than ten lines, imagining what may have happened after the father and daughter ate the mandazis.
- Invite the children to share the ending of their stories in the group.
- Ask the children to explain the meaning of the new words introduced in the first part of the story.

Application:

Facilitate a discussion about food vending near the school. Is this food always safe? If not, why not? What can happen? What can be done?

Learning indicators:

- Children can name three ways in which food can be contaminated.
- They can explain what may happen when eating contaminated food; older children can name diseases.
- They can name at least three ways to avoid eating contaminated food.
- They can give examples of avoiding risky food/eating safe food at school and at home.

3.2 I drink.....safe water!

Learning goals:

Knowledge:

- The children know the importance of safe drinking water and the risks of drinking water that is less safe.
- They can distinguish between safer and less safe sources.
- They know the local water environment (geography).
- They can describe water treatment processes (science and technology).

Activities:

- Ask the children from where they get their drinking water.
- Ask each child to draw/model/cut and paste his or her drinking water source (techniques adjusted to age).
- Let them display their drawings on the wall or floor; older children may also group drawings by type of water source.
- Facilitate a discussion about what children and others do in these sources, e.g. swim, wash clothes, bathe, water animals, wash cars/lorries, take drinking water, etc.
- Encourage the children to discuss what this means for the cleanliness of the water and what this may mean for their stomachs if they drink this water.
- Ask older children to write the names of water-borne diseases in local and official languages on the blackboard/slates/cards/notebooks.

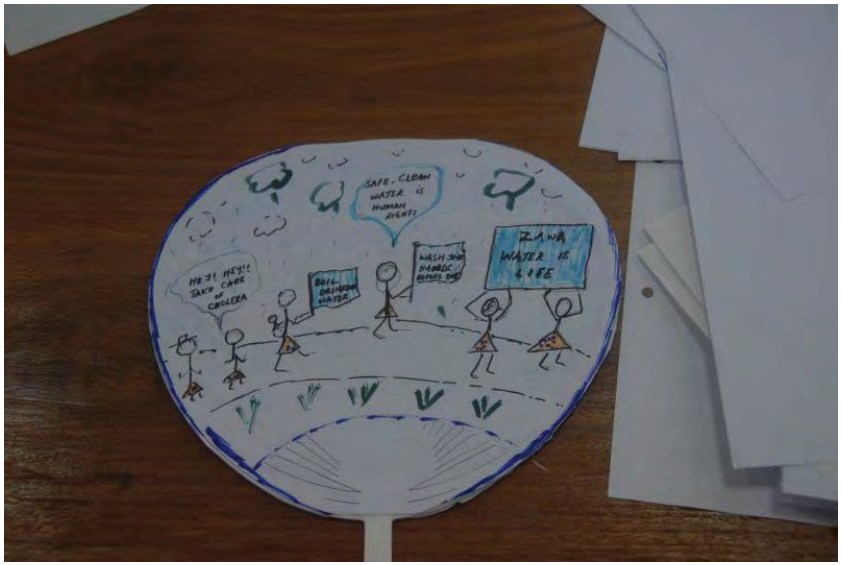
Demonstration

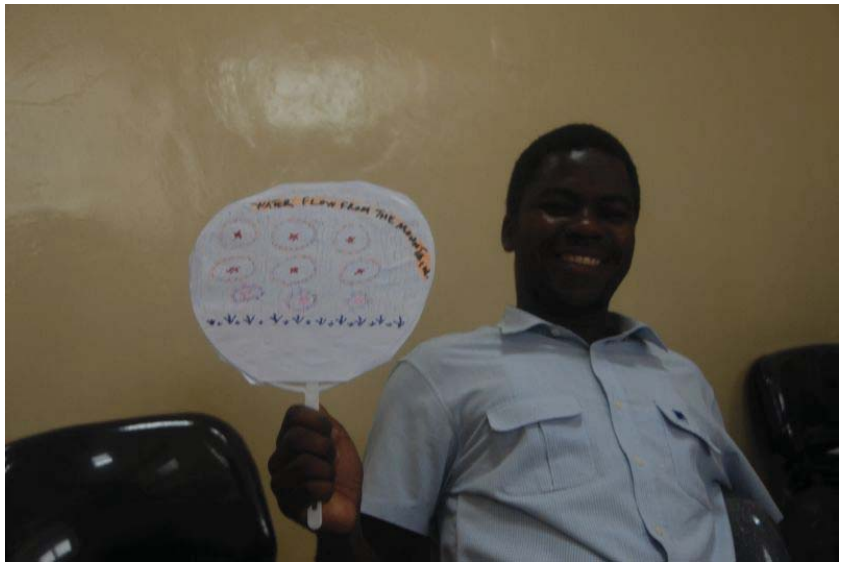
- For younger children, show the preparation of safe water according to what is locally feasible. For example, where people may not have access to enough fuel and/or time to boil water, focus on solar disinfection or water filtration, e.g. using a sand filter or a three-folded saree. (The saree will not purify the water, only sift out larger particles.) (For filtration, see also 3.6 Filtering the flow.)
- With older children, facilitate a discussion about feasibility of the various treatment methods, asking for example:
  - What may dissuade people from boiling their drinking water?
  - What makes it hard for some children to bring safe(r) drinking water to school?
  - What alternatives can they think of to solve/reduce problems?

Application:

- Let the children make a drawing on the importance of safer drinking water in whatever way they wish (free expression). Ask literate children to add messages.
- Let them take the drawings home to show and, if agreed, put it on the wall at home.
- The next day/lesson, facilitate an open discussion about what they have done at home with the drawing and how their parent(s) reacted.
- For older children, link the activity with an experiment (e.g. solar disinfection (SODIS) of drinking water or sand filtration, link with a visit to the local water facilities, etc.)

fan





WATER =LIFE

ZAWA
PROMOTION HYGEINE

1. Training materials for teaching hygiene and roles of water supply to school kids

2. Develop training material for school kids

Making storyboard

Step 1. list up items including storyboard (e.g. water cycle, washing hand, water supply facility)

Step 2. Arrange these to story

Step 3. Draw pictures for explain items and add explanation

Step 4. Compile

Step 5. Conduct demonstration presentation and discuss if necessary to improving

Seminar on Water Quality Control

O&M on Water Treatment Plant/Water Quality Management Expert

Topics of this Seminar

- Seminar on Meanings of Drinking Water Quality Standard in Nepal (Appendix-7)
- Seminar on process control with understanding of equipment functions
- Simple experiment of water treatment process
- Seminar on key-points of process

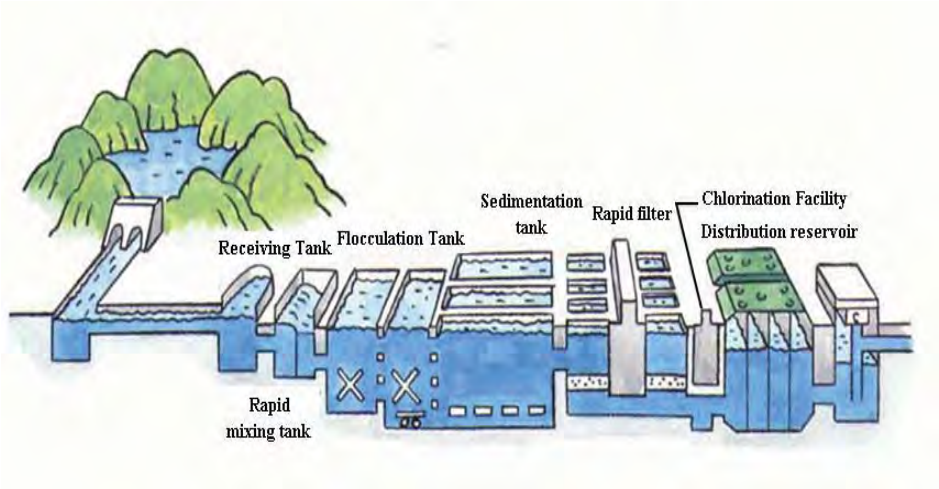
Drinking Water Quality Standard in Nepal

- There are more parameters in advanced countries and regulated parameters has been increasing with the time
- Maximum concentration limits change from country to country; have been stricter and stricter
- Parameters in black are the ones related to human health and classified as toxic parameters.

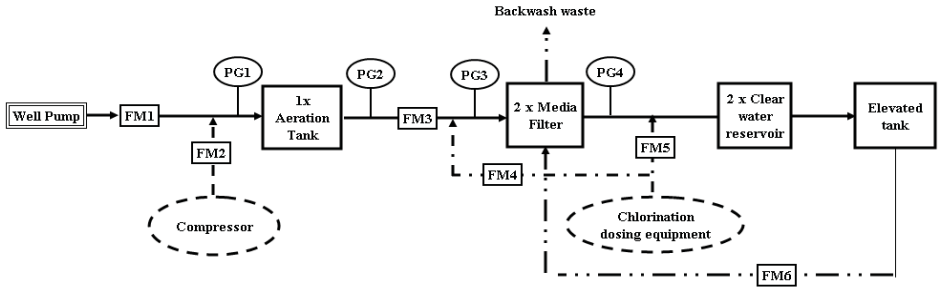
How to determine maximum concentration limit

- Risk assessment conducted by many countries,
- Taste,
- Obstacles in use of water like scaling in the pipe or erosion of pipe,
- Purification technology and cost,
- Analysis technology

Conceptual figure of drinking water purification plant



Conceptual Flow Sheet of Iron Removal



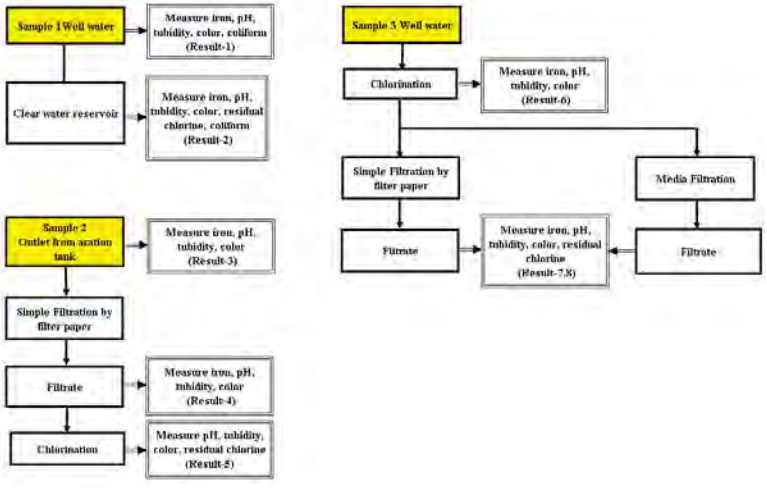
Legend

FM1	Inflow volume to aeration tank
FM2	Air flow volume for oxidation of ferrous
FM3	Inflow volume to media filter
FM4	Chlorine dosing flow for chlorination
FM5	Chlorine dosing flow for disinfection
FM6	Backwash flow volume
PG1	Inlet pressure of aeration tank
PG2	Outlet pressure of aeration tank
PG3	Inlet pressure of media filter
PG4	Outlet pressure of media filter

Process explanation of Iron Removal

1. Iron in deep ground water exists in the form of the ferrous (Fe^{2+}) -soluble. It can't be removed by conventional water purification process which basically consists of liquid-solid separation.
2. Soluble ferrous changes solid ferric hydrate ($Fe(OH)_3$) by oxidation. Compressor or chlorine is used for oxidation that's why there are two lines in the flow-sheet.
3. After the oxidation, solid ferric hydrate ($Fe(OH)_3$) is removed by filter dual media filter; anthracite ad manganese sand. (Media filter- Iron removal tank) Almost oxidized iron is removed by anthracite layer.

Simple experiments to understand the purification process



Least Key Points of O/M

1 Consider the meanings of equipment and facilities shown in Figure-1 such as pump, compressor, and chlorine dosing facility, pressure gauges and flow meters. After understanding the functions and meanings of pressure gauges, you will understand how the pressure gauges are important, for an example.

2 Check the electric and current and wiring and level switches

3 Check and maintain these equipment and facilities followed by O/M manual.

Least Key Points of O/M

4 Confirmation of flow rates

1) Air inflow to aeration tank
   - Air / water volume ratio — 350 – 450 L/min at 0.2 MPa
   - Water level in the aeration tank below from Max water level — 400 mm
   - Compressor air reducer valve (adjust by needle valve) — 0.2 Mpa

2) Inflow to media filter

Least Key Points of O/M

4 Confirmation of flow rates

3) Chlorine dosing rate
   - Make mixed solution for its concentration that is 1% of powder solution assumed 0.3% of chlorine solution
   - **Feed chlorine solution to make the concentration of the free chlorine should over 0.2 mg/L at the pipe end.**
   - How to calculate dosing rate

Least Key Points of O/M

- *In generally, when an Iron removal process gives poor results, the cause will usually be poor oxidation of the ferric hydrate due to the presence of certain protective colloids, to too acidic pH or to an excessive of ammonia, chlorine is used for oxidizing iron, the dosing rate shall bee calculated as the followings.*
- *Chlorine dosing rate (mg/L) = 0.56 x [Fe^{2+}] (Ferrous iron) + 1.3 x [Mn] (Manganese) + 7. 7 x [NH_4-N] (Ammonium nitrogen) + 0. 5*

Least Key Points of O/M

4 Confirmation of flow rates

4) Backwashing flow

Back wash time shall be considered as follows.
Allowable differential pressure (App. Maximum 1.5m)

- Total filtration time (maximum 24 hrs.)
- Water treated quality (more than 0.3 mg/Lit as total Fe, more than 5 NTU as Turbidity, others)

Least Key Points of O/M

4) Backwashing flow

- Reducing valve is adjusted 0.2 MPa
- Back wash flow 150 m^3/Hour = 2.5 m^3/min(Mangadh)
- x 10 minutes
- Confirm backwash water becomes clear and the anthracite flow out of the iron removal (media) tank

5 Cleaning of flow meter to iron removal tank

- When flow meter to iron removal tank becomes dirty, remove and clean it by soaking it into weak acid solution such as lemon water or vinegar.

Least Key Points of O/M

6 Check water quality

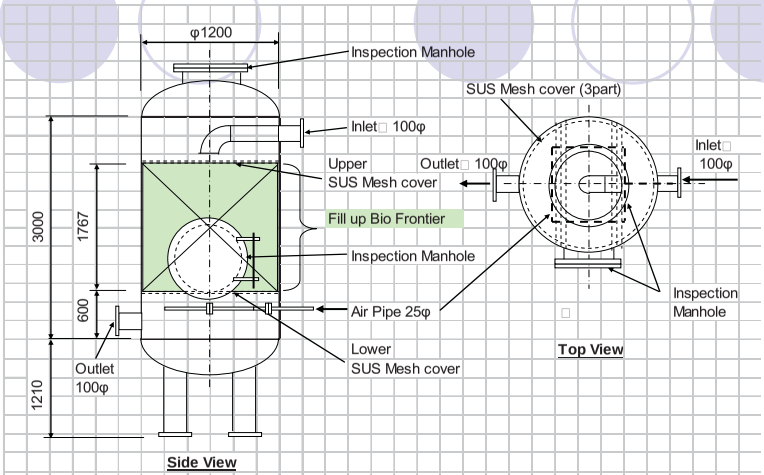
The main roll of water purification plant is to supply safety water to the people. Check water quality regularly such as pH, iron, turbidity, color, residual free chlorine and coliform.

- Residual free chlorine should be checked at tap water.
- Get correlation with official analysis method
- Simple analysis kits sometimes give you wrong information. Accordingly correlations with official analysis methods should be gotten for iron, arsenic, coliforms, NO_2-N and NO_3-N; the parameters which are directly risky for human health. If there is no correlation, don't use the simple analysis kit.

Least Key Points of O/M

7 Record all data and information to analysis and evaluate for process control

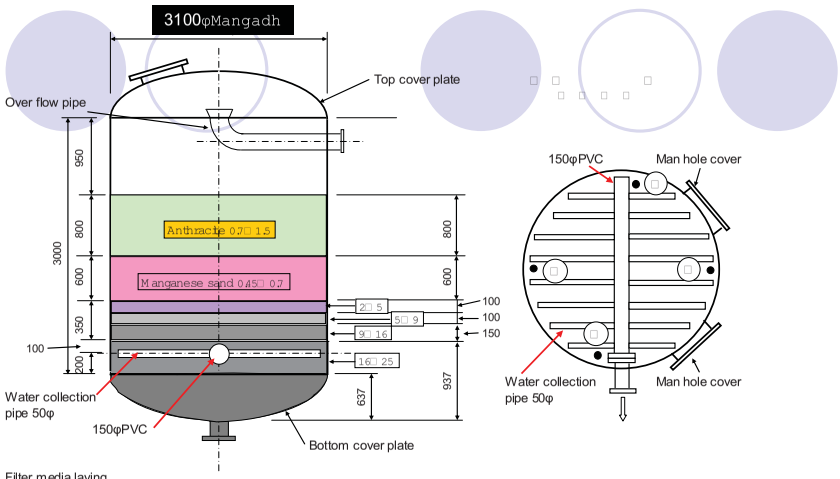
- Prepare record formats by referring to the ones in O/M to analysis and evaluate the process control



Bio frontier laying

No.	Description	Design	Result	Evaluation
1	Fill up Bio frontier Polypropylene	4500 liter		

Structure of Aeration Tank



Filter media laying

S.No.	Name of Filter media & Size	Filling Height (mm)	Top level from bottom of top cover	Total Volume (m^3)
1	Gravel 16□ 25	*1 937	2700	5.30
2	Gravel 9□ 16	150	2550	1.14
3	Gravel 5□ 9	100	2450	0.76
4	Gravel 2□ 5	100	2350	0.76
5	Manganese sand	600	1750	4.53
6	Anthracite	800	950	6.04

*1 Filling level is 300mm from top of bottom cover

Structure of Iron Removal Filter

Features of Slow Sand Filter

- Slow filtration rate: need large area
- Biological treatment processes rather than physical filtration
- Possible to remove soluble substances such as manganese, iron, ammonium nitrogen, etc.
- Very low disinfectant levels thereby reducing chlorine dosing rate
- Slow sand filter is not backwashed; it is maintained by having the top layer of sand scraped off when flow is eventually obstructed by biological growth.

Cleaning of slow sand filter

1. Before cleaning
The state of lack of filtration due to mad or algae

2. Clearing of walls
Removing dirt on the walls

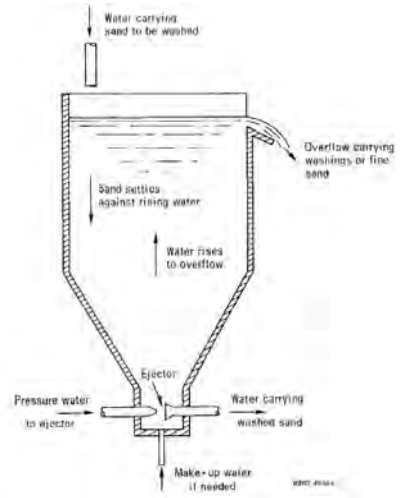
3. Scrapping dirted sand
Scrapping dirty parts on the surface of the sand layer

4. Cleaning with sand washer
Cleaning the scrapped sand by sand washer with high pressure water

5. Preparing the surface evenly

6. Completion of the works

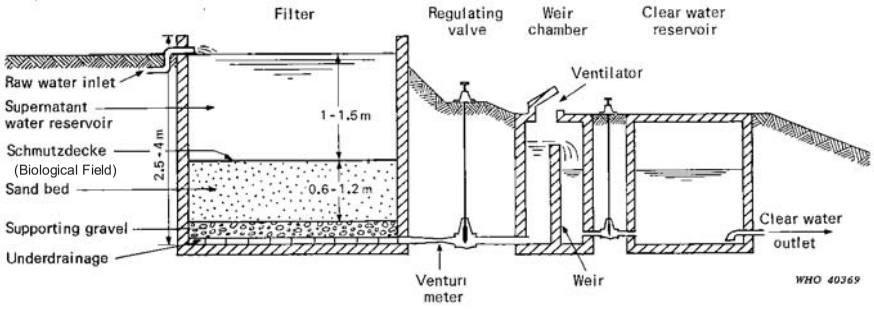
Sand cleaning facility for slow sand filter



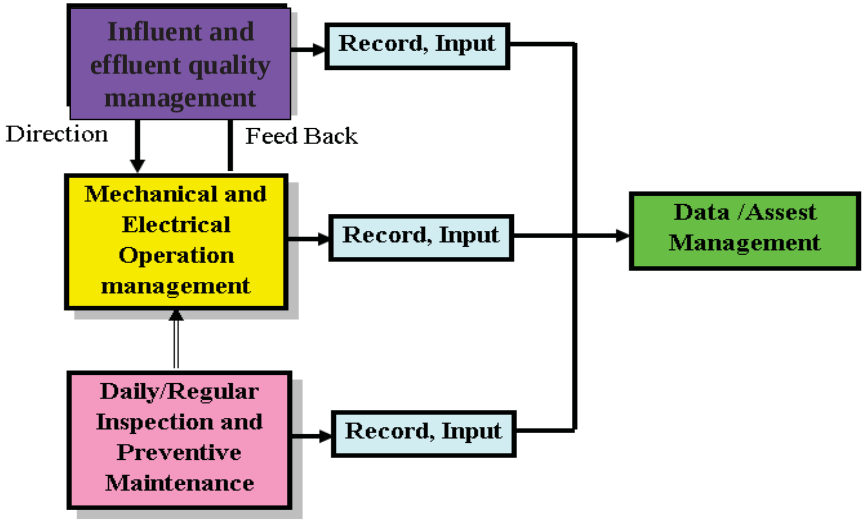
Item	Slow Sand Filter	Rapid Sand Filter
Pre treatment	Not required except plain sedimentation	Coagulation, Flocculation and Sedimentation
Base materials	Gravel base of 30 to 75 cm depth with 3 to 65mm size graded gravel.	Gravel base of 45 to 50 cm depth with gravel size varies from 3 to 50 mm in 4 or 5 layers
Filter sand ▪ Effective size ▪ Uniformity coefficient ▪ Thickness of sand bed	▪ 0.25 to 0.35 mm ▪ 3 to 5.0 ▪ 80 to 100 cm	▪ 0.45 to 0.70 mm ▪ 1.2 to 1.7 ▪ 60 to 75 cm
Under drainage system	Open jointed pipes or drains covered with perforated blocks	Perforated pipe laterals discharging into main header
Size of each unit	50 to 200 sq.m	10 to 100 sq.m
Rate of filtration	100 to 200 Lph/sq.m	4800 to 7200 Lph/sq.m
Cost ▪ Installation ▪ O&M	▪ High ▪ Low	▪ Low ▪ High
Efficiency ▪ Turbidity of feed water ▪ Removal of bacteria	Low; < 30 NTU 98 to 99%	Any level of turbidity of feed water; (with pre-treatment) 80 to 90%
Suitability	For water supply to rural areas and small town	For public water supply to towns and cities
Post treatment	Slight disinfection	Complete disinfection is a must
Ease of construction	Simple	Complicated;
Skilled supervision	Not essential	Essential
Loss of head ▪ Initial ▪ Final	▪ 10c m ▪ 80 to 120 cm	▪ 30 cm ▪ 250 to 350 cm
Method of cleaning	▪ Scrapping and removing *Schmutzdecke* and 1.5 to 3 cm thick sand layer ▪ Laborious	▪ Back washing with or without compressed air agitation ▪ Simple and easy
Quantity of wash water required	0.2 to 0.5% of total water filtered	1 to 5% of the total water filtered
Cleaning Interval	Three to four months	One to two days

Comparison of Slow and Rapid Sand Filter

Structure of Slow Sand Filter



Concept of Quantitative Operation



Service pipe Installation, Water Meter Reading and Meter Calibration Control

Table of Contents

1. Installation of Service pipe and Water Meter

1.1 Service Pipe

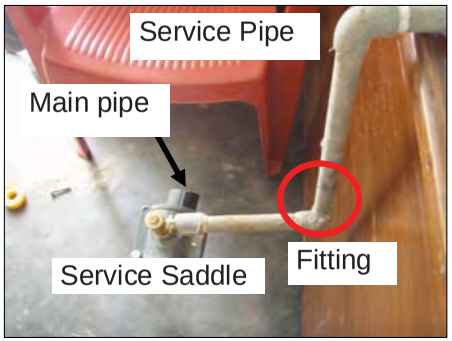
a. Connection point from distribution pipe should be surveyed sufficiently to avoid cross connections.

b. Service pipe diameter should be smaller in principle than distribution (main) pipe diameter.

c. Not to connect from joint and/or fitting point on main pipe.

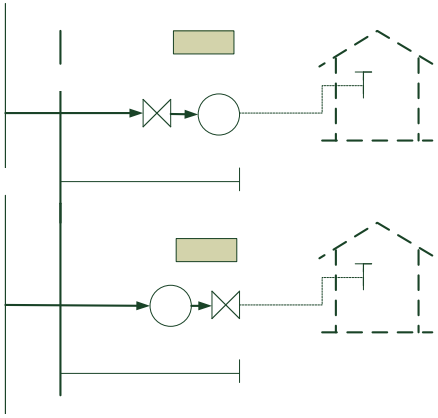
d. Clean the surface of main pipe when service pipe is connected. During the installation of service saddle, fasten equally with bolts on the main pipe.

Main pipe and Service pipe



1.2 Location of Stop valve

- Stop valve will be installed in front and behind meter and/or meter box without hindering meter maintenance.



1.3 Location of Water Meter

a. Water meter is principally located inside the ground for easy inspection and/or replacement and where the probability of meter damage is low.

b. In case of installing a water meter under ground, use a meter box.

c. In case of installing water meter, inflow direction sign on meter should be confirmed and set in the horizontal position.

1.4 Pipe Working

a. Distance of service pipe and other embedded pipes should be kept at least 30 cm to avoid accidents such as cross connection and pipe damage.

b. Underground pipe works should be kept in a straight line as much as possible as it is easier to understand and locate the pipes later and such pipe laying is much economical.

c. Put a stopper at pipe end with plug to avoid filthy water from flowing into pipe when pipe stops working temporary or daily.

Water Meter

Installed water meter

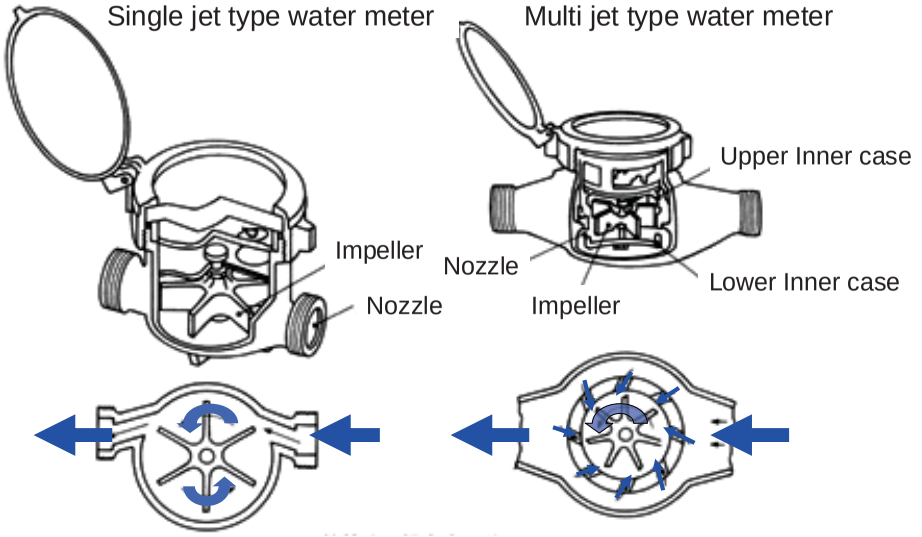
Water meter

Water Meter Inner Case

Meter indicator

Impeller and Gear wheel

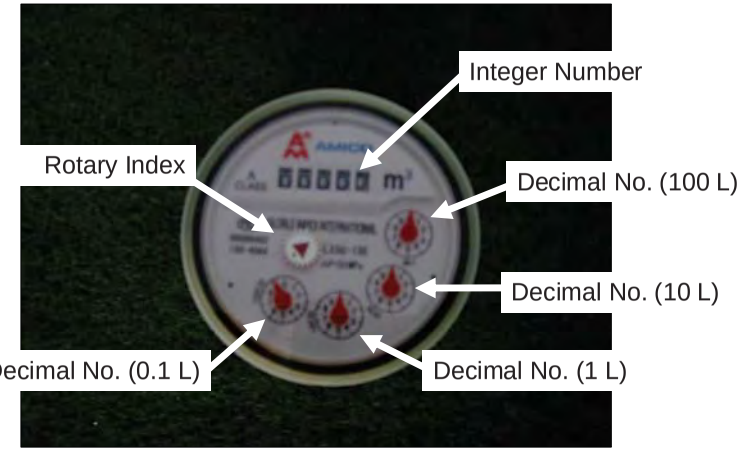
Vane wheel jet type water meter



2. Outline of Meter Reading

- Meter reading is the foundation of water tariff. It is necessary to keep conditions for easy reading and replacement, and effort should be made to improve accuracy of meter reading.

Meter Reading



3. Responsibilities of installation fee and maintenance of water meter

		WUSCs	Customer
House Connection	Install	Work	Prepare material
	Pay	-	Pipes and Fittings
Water Meter	Install	Supply and Work	-
	Pay	-	Pay
Charge of Repair		-	Pay
Maintenance		WUSCs	-

4. Water Meter Calibration Control

ERMSO Water Meter Accuracy Management Equipment
(at Technical Support Center (TSC) in Itahari, in Sunsari district)

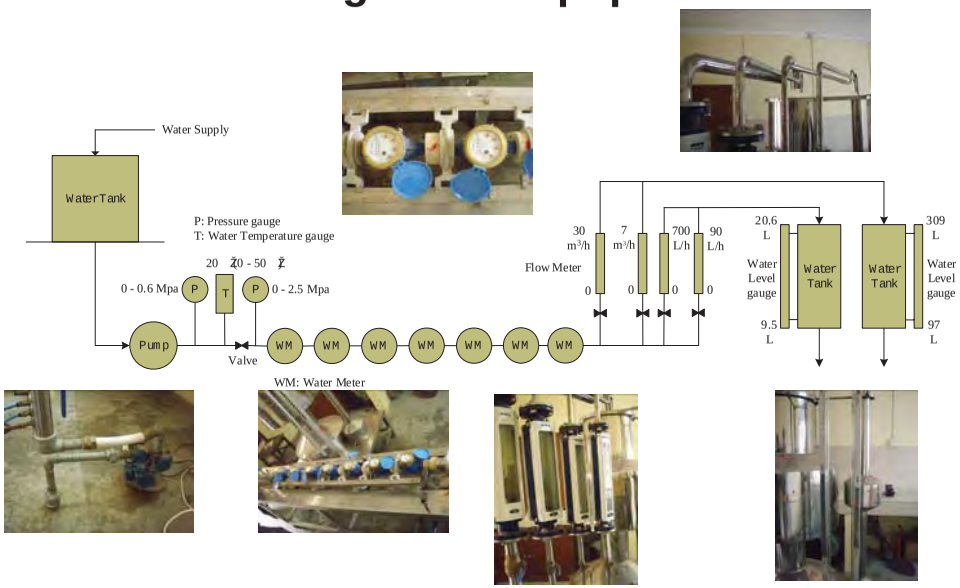
[Purpose of Establishment]

- Improvement in performance of the repair meter of WUSC (based on the charge)

[Principle of Equipment]

- Measurement of theoretical amount of water is calculated from a water gauge.
- Accuracy management is evaluated from the different of the measurement value of water amount and a water meter
- The range of an allowable error of measurement may be ±2 - 5% (for TCS laboratory)
- (Allowable error ±10% is for an existing water meter)

Flow sheet of Water Meter Accuracy Management Equipment



5. Out of Order and Measures of Water Meter (1)

- No proceeding indicator:
  Indicators stop after installing or during use.
- Delay of indicator:
  Phenomenon that indiscrete value decreases temporary or continuously during use.
- Inverse rotation of indicator:
  Phenomenon of indiscrete value subtraction due to inverse rotation of indicator.
- Derangement of indicator:
  Phenomenon that indicator sometimes moves inversely, unstable due to damaged meter parts.

5. Out of Order and Measures of Water Meter (2)

- Leakage from meter: Phenomenon of leakage from meter or surroundings of meter.
- Unclearness of meter: It is not easy to read a meter due to unclearness of meter indicator and plate glass.
- Meter damage: Phenomenon that water meter is partially damaged due to external factors such as collision.

5.1 No indicator proceeding

Cause	Instance	Measure
Alien substance such as sands, rust and pipe material get into gear portion and stops meter	Indicator stops immediately after opening the valve.	Pipe cleaning is always conducted after pipe works.

5.2 Delay of indicator

Cause	Instance	Measure
Bad meter installation posture	The installed meter is leaning extremely.	Install meter on horizontal pipes

5.3 Inverse rotation of indicator

Cause	Instance	Measure
Reverse installation	-	Meter should be installed in the direction as indicated in the case.

5.4 Derangement of indicator

Cause	Instance	Measure
Cause of over flow	Gear wheels were dislocated and make irregular turn due to abnormal abrasion of meter parts.	Change meter to big rating one.

5.5 Leakage from meter

Cause	Instance	Measure
Destruction by water hummer	When opening a valve forcefully, there is a dash in plumbing and the windowpane destroyed.	Stop valve in a meter should be opened slowly

5.6 Unclearness of meter

Cause	Instance	Measure
Accumulation of alien substance such as sands, rust inside the meter	Iron rust and other substances get accumulate inside the meter and meter reading becomes difficult.	Clean pipe regularly

5.7 Meter damage

Cause	Instance	Measure
Falling meter	Indicator plate and gear wheel are damaged.	Damaged meters should not be used.

Meter Record No.

Registration No.	Installation Record									Test and Repair Record				Date of disposal (dd/mm/yy)
	Installation date (dd/mm/yy)	Meter Type	Meter Size	Make	Date of purchase (dd/mm/yy)	Manufacturer's serial No.	User's name	Word No.	Address	Date of Repair (dd/mm/yy)	Result	Date of Test (dd/mm/yy)	Result	

[Management Items]

Installation date, meter size, registration number, make, type, date of purchase, manufacturer’s serial number or utility’s number, user name, installation location (Word No., address), etc.

6. Management of Water Meter

Purpose:

A suitable record of meter is one that provides full and complete information on the installation, repair and testing of each meter with a minimum of expense.

- Time and effort
- Number of Meters
- Meters do not remain at one location
- Meters can be relocated/moved

Site Survey Report in Dhulabari

February 3, 2011

Survey Team

Transmission Pipe Route

Blockade!

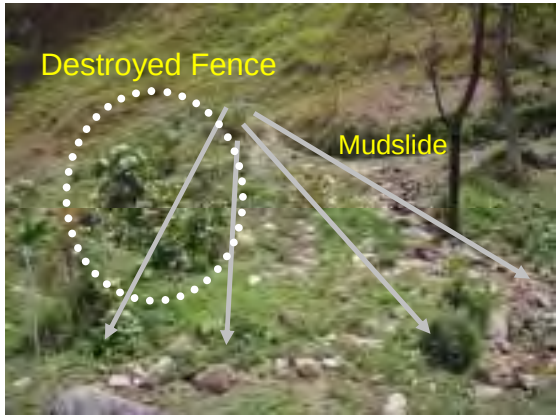
Main Access Road to WTP and Intake

Survey Staff

Date;
Feb. 3rd, 2011
Staff;
WUSC Eng.
Targets;

- Intake
- Raw Water Transmission
- Transmission

Catchment Area in Intake (May 2010)



Intake Site (Feb. 2011)

Intake Site (Feb. 2011)

The Area around Intake

Intake Cannel (May 2010)

Intake Cannel (Feb 2011)

Exposed Raw water Transmission (May 2010)

- Exposed the pipe by floods, rain.
- Need to be covered
- Need the support below the pipe

Buried Raw water Transmission (Feb 2011)

Cut the Transmission (May 2010)

- Raw waster transmission pipe is 2 lines
- One was cut, the other is OK.
- Need to reconnect before rainy season

Reconnected Transmission Pipe (Feb 2011)

Exposed and Cut Raw water Transmission 2 (May 2010)

- Exposed new pipe and cut existing pipe by floods

Reconnected Raw water Transmission (Feb 2011)

Washout and Valve on Transmission (May 2010)

Washout Point under the field
(drainage is bad.)
↓

↑
Washout and valve are located in a rice field.

Washout and Valve on Transmission (Feb 2011)

To cover and fasten with a bolt

Valve Chamber (May 2010)

Missing cover
(VT-2) (Feb 2011)
↓

↑
Valve box cover
(VT-5)

Air valve Chamber (May 2010)

No cover (VT-7)
↓

↑
No cover (VT-3)

Air valve Chamber (Feb 2011)

Cover and Clean
(VT-7)
↓

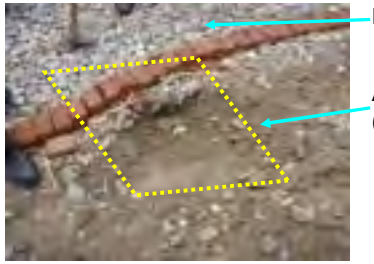
↑
Cover and Clean
(VT-3)

Leakage and Cleaning

Removed a garbage
↓ (Feb 2011)

↑ (May 2010)
Rain water and waste in valve chamber
If pipe inside has negative pressure, waste water infiltrates in pipe.

Necessary to consistency with other project Case-1 (May 2010)



Road under construction

Air valve chamber
(VT-14)

- Road is constructed on existing air valve.
- WUSC should announce the road department to avoid the water facilities.
- It is important to maintain and supervise water facilities.

Survey Format

Inspector:

Date: April 19, 2010

No.	Symbol	Pipe Dia. Material	Condition (Looks)	Valve working	Leakage	Sound, Etc.	Valve status
Sample							
1	VR-3	OD160 HDPE	Bad, Rusty	Ok	No	No	Open
Other; Malfunction and Repair Records							

Recommendation 2

[Transmission pipe]

- To put a cover of chamber

Tentative

Permanent

- To clean inside chamber

Recommendation

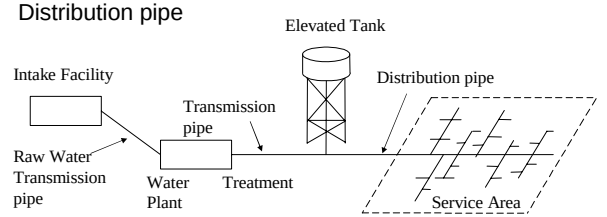
- Pipe network map is made up including existing and new pipes.
- Periodical inspection for water facilities
- Record their conditions, malfunction and repair

Draft Standard Operation Procedure (SOP) on O&M of Water Distribution Facilities

1.1 Water Distribution Facilities

Regular check of water distribution facilities

- Intake facility
- Raw water transmission pipe
- Transmission pipe
- Elevated tank
- Distribution pipe



1.2 Purpose of Activities

1st Target

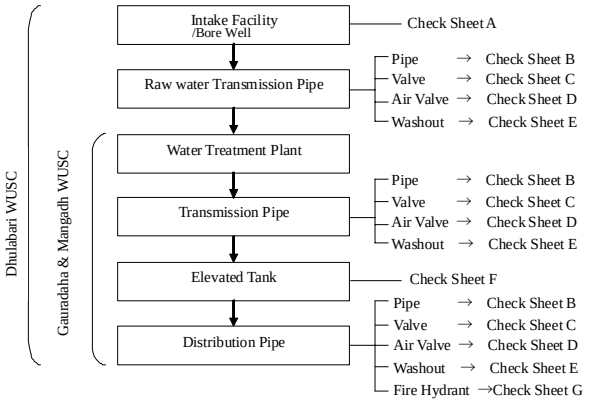
- To confirm the current status of distribution facilities included in the existing facilities.
- To make inspection record, flow record and repair record of facilities

2nd Target

- To create water distribution map
- Pipe routes, locations of valves, washout drains, fire hydrant, pipe dia. and material

→Information map is necessary for maintenance and repair

1.3 Object Facilities of Inspection and Check Sheet



2. Provision of Survey

Required items in facilities inspection

- ✓ Inspection Sheets
- ✓ (Digital) Camera
- ✓ Cover Opener (T key)
- ✓ Wrench, Spanner, Screw driver, Cotton work gloves
- ✓ Maps
- ✓ others

3. Facility Survey

3.1 Intake Facility

- Observational items are mainly Fence, Concrete degradation, Facility condition (Appearance), Water quality (turbidity, unusual odor), Screen (rust, trash-filled), Sedimentation in canal.
- To conduct the intake facility survey periodically. The inspectors contact the WUSC when discovering malfunction of the facility.
- The guard always supervises the fence to prevent trespassing.
- To displays “Keep Off” of general people in the bulletin board and signs at the intake site.

3.2 Raw Water Transmission and Transmission Pipes

- There is little information of pipe from residents since raw water transmission pipes are located far from the WTP office such as the rice fields and mountainous region.
- It is thought of behind in the discovery when the pipe has a malfunction.

→WUSC staffs make periodical inspection.

3.3 Distribution Pipes

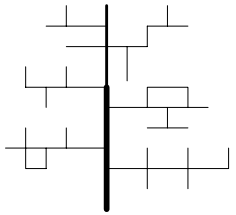
- To prevent leakage of water in pipes, especially leakage from joint parts.
- To replace a old pipe when there is too much water leakage from pipe and not from the joint.
- To monitor and maintain pipes where it is possible to generate rust-colored water by stagnation of water at dead ends.

Welding Joints of HDPE

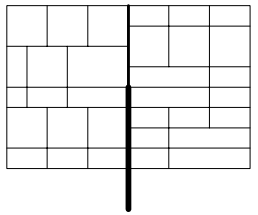
- Welded joints are restrained and can not be pulled apart under pressure and is appropriate for manual jointing. However, in case of incorrect joint such as insufficient and gappy at joint point, joints may pull apart and/or leakage of water may occur.

a) Soldering iron	b) Heating soldering iron over a gas burner	c) Manual welding joint.	d) Handmade socket type conjugation tube

Distribution Network System

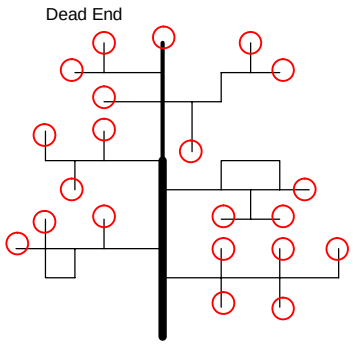


Tree Type Distribution System

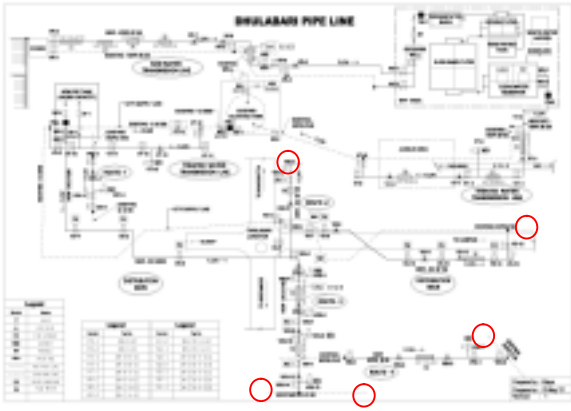


Grid Type Distribution System

Tree Type Distribution System



Flow Diagram of Pipelines in Dhulabari



3.4 Valve

Gate Valve:

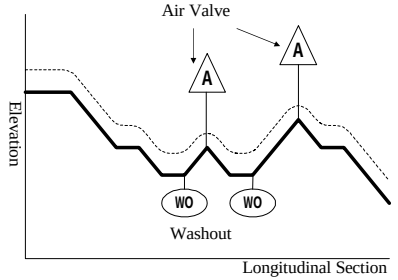
- ✓ Gate valve is mainly used by on-off control.
- ✓ In case of opening only some position of valve disc, use of the gate valve is not advised.
- ✓ Valve disc in valve box moves up and down, and opens and shuts.

Butterfly Valve:

- ✓ Valve disc in the valve box moves a valve rod in an axis, turns and opens and shuts.

3.5 Air Valve

- Air valves are located on all high points in the distribution pipelines to allow trapped air to be release from pipelines without loss of water.



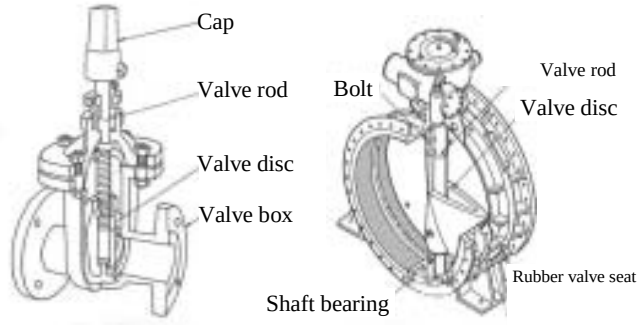
3.6 Washout Drain

- Washout drains are provided to keep the pipelines free from blockade.
- It shall be washed out at least once in 3 months in dry season and once a month in rainy season with enough water to flush the deposited dirt until clear water at washout is observed.

3.7 Check Items of Water Facilities

Facilities	Check Items	Remarks
Intake	Date, Fence, Concrete degradation, Condition (Appearance), Water quality, Screen, Sedimentation, etc.	Inspection and Repair record, Sketch, Photograph
Pipe	Location, Diameter, Material, Condition, Water quality, Leakage, Sound, Customer complaints, etc.	Inspection and Repair record, Sketch, Photograph
Valves, Washout, FH	Type, Location, Main pipe dia., Condition, Working, Leakage, Sound, Valve status, etc.	Inspection and Repair record, Sketch, Photograph
Elevated Tank	Location, Crack of concrete, Condition, Water Quality, Leakage, Sound, Cleaning, etc.	Inspection and Repair record, Sketch, Photograph

3.8 Gate and Butterfly Valve



Gate Valve

Butterfly Valve

3.9 Out of Order and Measures of Valve
Gate Valve - 1

Malfunction: It is Impossible to open and shut a valve

Causes	Measures
The valve seat is filled with alien substance such as garbage and sand	Removes alien substance
Abnormal abrasion of valve rod joint	Adjustment and repair of valve joint
Twist and distortion of valve rod	Replacement of valve rod
Abnormal abrasion of valve rod and valve box guide	Repair of valve box edge.
Malfunction of reduction gear	Decomposition and parts cleaning. Replacement of parts of reduction gears

3.9 Out of Order and Measures of Valve
Gate Valve - 2

Malfunction: Torque generates strongly in case of operation of the valve. Leakage of water from ground of valve

Causes	Measures
The valve seat and valve rod are filled with alien substance	Remove alien substance
Packing gland tighten up too much	Adjustment of packing gland nut.
Valve disc digs deep into valve seat	Adjustment of valve opening
Abnormal abrasion of packing, bad fastening of packing	Adjustment or replacement of packing
Dirt and so on adhere to a outcrop of valve rod, and surface of rod is a flaw.	Grinding or replacement of valve rod

3.9 Out of Order and Measures of Valve
Gate Valve - 3

Malfunction: Leakage of water in spite of indicating close on opening gauge

Causes	Measures
Abnormal abrasion or damage of valve seat	Repair or replacement of valve seat
Bad opening gauge	Inspection, replacement of valve and gauge
Bad adjustment with valve	Readjustment with valve

Malfunction: Vibration and/or noise from a valve

Causes	Measures
Generation of cavitation in valve box	Set the valve opening with no generation of cavitation

3.10 Out of Order and Measures of Valve
Butterfly Valve - 1

Malfunction: It is impossible to open and shut a valve

Causes	Measures
The valve seat is filled with alien substance such as garbage and sand	Remove alien substance Repair rubber valve seat Repair a edge of valve disc
Malfunction of reduction gears	Decomposition and parts cleaning Replacement of parts of reduction gears.

3.10 Out of Order and Measures of Valve
Butterfly Valve - 2

Malfunction: Torque generates strongly in case of operation of the valve

Causes	Measures
Bad shaft bearing of valve disc	Replacement of shaft bearing
Valve disc moved down	Adjustment of valve disc position with adjusting-bolt
Valve disc digs deep into valve seat	Adjustment of valve opening

3.10 Out of Order and Measures of Valve
Butterfly Valve - 3

Malfunction: Leakage of water from valve seat with abnormal torque when closing valve

Causes	Measures
Separation of rubber valve seat	Replacement of rubber valve seat
The valve seat and valve rod are filled with alien substance	Remove alien substance

3.10 Out of Order and Measures of Valve
Butterfly Valve - 4

Malfunction: Leakage of water in spite of indicating close on opening gauge

Causes	Measures
Damage of rubber valve seat	Replacement of rubber valve seat
Bad opening gauge	Conducting inspection of valve and gauge
Bad adjustment with valve	Readjustment with valve

3.10 Out of Order and Measures of Valve
Butterfly Valve - 5

Malfunction: Vibration and/or noise from a valve

Causes	Measures
Backlash of gear in second reduction gears	Adjustment and/or replacement of gear
Generation of cavitation in a valve box	Inspect a cause of cavitation, and remove it.

3.11 Elevated Tank

- To clean the inside of the tank once a year.
- In case of cleaning inside the tank, staffs confirm leakage of water from the concrete crack and joint inside the tank.

4. Check Sheet

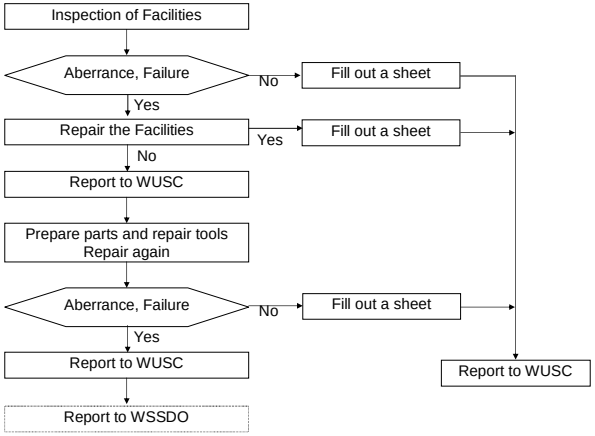
No.	Inspection Date (dd/mm/yy)	Fence	Concrete degradation	Condition (Appearance)	Water Quality (Turbidity, unusual odor)	Screen (Rust, trash-filled)	Sedimentation in canal	Repair Record Date (dd/mm/yy)
1								
	[Sample of fill-in]							
1	12/09/2010	5m damage	Crack on Canal	Dirty in valve pit Need to clean	Thick, sallow	Trash-filled Need to clean	Sedimentation 4cm	Fence 20/9/2010 Concrete 20/9/2010 Clean for pit and Screen 20/9/2010 Removed sand from canal 22/9/2010
4								
5								

Sketch
or
Photograph

5. Procedures of Investigation and Report to WUSC

- At the time of the regular investigation of the water supply facilities, WUSC staffs make a inspection record, and report to WUSC (Manager).
- When the abnormality and problem in the water facilities are discovered, staffs repair it and inform WUSC (Manager) of its result.
- WUSC reports and/or requests WSSDO to support when necessary.

5.1 Procedures of investigation and Report



6. Water Distribution Network Map

6.1 Purpose

- Distribution pipelines and appurtenances have enormous length, and embedded pipes have various environments and conditions.
- Conditions of embedded pipes and structures should be grasped in order to maintain the pipelines by engineer.

→Distribution Network Map and its ledger should be made and kept systematically.

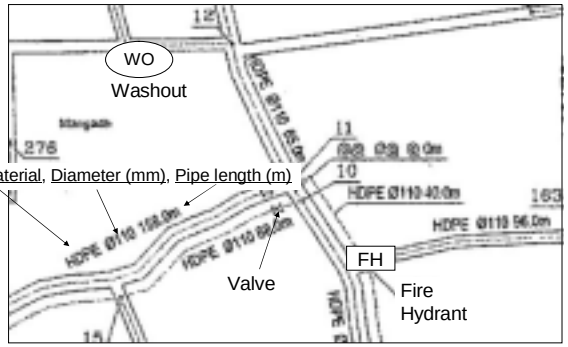
→This map can help engineers to understand and to conduct a new project such as improvement of facility and/or renewal in formulation stage of a planning.

6.2 Revision of Map

- Pipe change frequently with extension, improvement and moving of pipes.
- Engineers have to grasp a facility information promptly and revise the map accurately.

Item	Information	Remarks
Pipe	Location, Material, Diameter, length	Including abandoned pipe
Valve, Washout, FH	Location, Valve Type	
Topographical Factor	Road, House, River (Cannel)	

Sample of Water Distribution Network Map



Annex : Check Sheet

Check Sheet A : Intake Facility
Check Sheet B : Pipe
Check Sheet C : Valve
Check Sheet D : Air Valve
Check Sheet E : Washout
Check Sheet F : Elevated Tank
Check Sheet G : Fire Hydrant

Check Sheet A : Intake Facility/Bore Well

Intake Facility

Inspector: Inspection Date:

No.	Inspection Date (dd/mm/yy)	Fence	Concrete degradation	Condition (Appearance)	Water Quality (Turbidity, unusual odor)	Screen (Rust, trash-filled)	Sedimentation in canal	Repair Record Date (dd/mm/yy)
1								
4								
5								

Sketch or Photograph

Check Sheet A : Intake Facility/Bore Well

Bore Well

Inspector: Inspection Date:

No.	Inspection Date (dd/mm/yy)	Wall (Fence)	Bore Hole Plat Form	Condition (Appearance)	Water Quality (Turbidity, unusual odor)	Submersible Pumps	Submersible Cable	Non-return Valve	Wash out Valve	Flow Meter	Pressure Gauge	Repair Record Date (dd/mm/yy)
1												
4												
5												

Sketch or Photograph

Check Sheet B: Pipe

Inspector: Inspection Date:

No.	Location	Main pipe Dia., Material	Condition (Appearance)	Water Quality	Leakage	Sound, etc	Customer Complaints	Repair Record Date (dd/mm/yy)
1								
2								
3								
4								
5								

Check Sheet C : Valve

Inspector: Inspection Date:

No.	Type	Location	Main pipe Dia.	Condition (Appearance)	Working	Leakage	Sound, etc	Valve Status	Repair Record Date (dd/mm/yy)
1									
	[Sample of fill-in]								
3	Gate	VR5-4 (route No.+Nos)	OD 160 HDPE	Rusty Need to clean	Ok	Water leakage	No	Open	clean 20/9/2010 Leakage 20/9/2010
4									
5									
6									

Sketch or Photograph

Check Sheet D : Air Valve

Inspector: Inspection Date:

No.	Location	Main pipe Dia.	Condition (Appearance)	Working	Leakage	Sound, etc	Valve Status	Repair Record Date (dd/mm/yy)
1								
2								
3								
4								
5								
6								

Check Sheet E : Washout

Inspector: Inspection Date:

No.	Location	Main pipe Dia.	Condition (Appearance)	Working	Leakage	Sound, etc	Valve Status	Repair Record Date (dd/mm/yy)
1								
2								
3								
4								
5								
6								

Check Sheet F : Elevated Tank

Inspector: Inspection Date:

No.	Location	Crack of Concrete	Condition (Appearance)	Water Quality	Leakage	Sound, etc	Cleaning inside tank	Repair Record Date (dd/mm/yy)
1								
2								
3								
4								
5								

Sketch or Photograph

Check Sheet G : Fire Hydrant

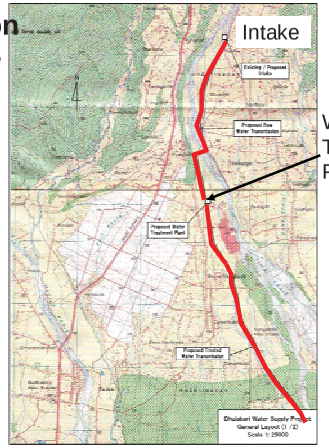
Inspector: Inspection Date:

No.	Location	Main pipe Dia.	Condition (Appearance)	Working	Leakage	Sound, etc	Valve Status	Repair Record Date (dd/mm/yy)
1								
2								
3								
4								
5								

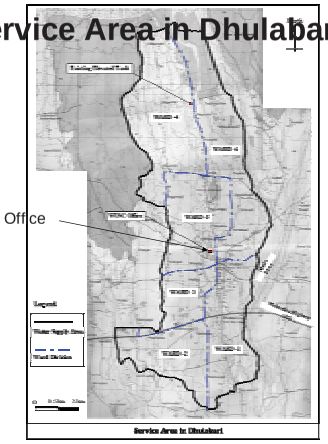
Transmission & Distribution Pipelines in Dhulabari

May 4, 2010

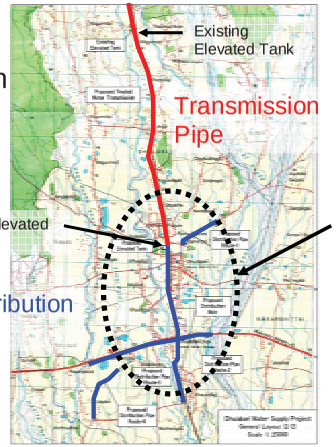
Transmission Pipe Route



Service Area in Dhulabari



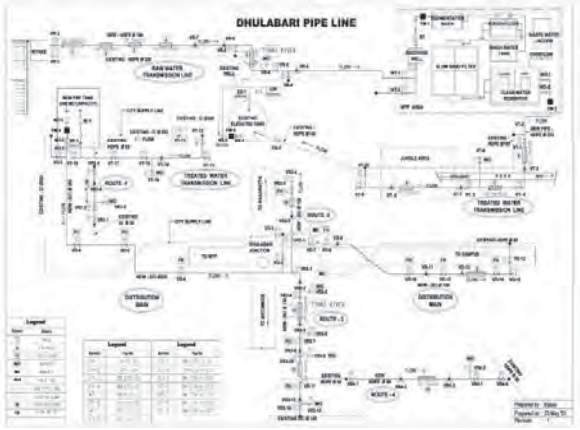
Transmission Distribution Pipelines



Flow Diagrams

The aim is to make

- ✓ The operation simple and
- ✓ Less in maintenance work and
- ✓ Supply safe and
- ✓ Continuous potable water to the people of Dhulabari.



Water Pipeline Information

- Pipe Networks
- Location of Valves, Air valves, Washouts and Fire Hydrants
- Pipe Material (HDPE, CI, GI)
- Pipe Diameter
- Flow direction
- Flow meter

Legend (Sample)

Symbol	Details
	Valve
	Air valve
	Fire Hydrant
	Washout
MH	Manhole
VR5-6	Valve Nos. (route Nos.+Nos.)
	New pipe line
	Existing pipe line
	River crossing

Available for What?

- Control and Maintenance
  Keep good water quality and pipe condition
  . Air valve
  Stop providing water . Valve
  Replace and clean a pipe . Valve, Washout
  Change a flow direction . Valve

- Repair
  . Location, pipe material, pipe size
- Fire
  . Location of Fire Hydrant

Water Facility Condition

- Reduce water supply ?
- Deterioration of water quality?
- No providing water in some areas?
- Extension of pipes
  . Water demand (Pipe Dia. Determination)
  Water Supply Plan
  . Connect to existing pipe
  . Pipe material
- Out of Order?

Roles of each facility for pipes 1

Intake:
Intake collects surface (spring) water through perforated PVC pipe.

Raw water transmission pipe:
Raw water collected at intake is transmitted to the Water Treatment plant
Method of raw water transmission is gravity flow and/or pumping flow.
In Dhulabari, the transmission system is gravity flow.

Transmission pipe:
The facility which conveys from water treatment plant to service reservoir (elevated tank).

Roles of each facility for pipes 2

Distribution pipe:
Cancellous pipe network to convey treated water to house connection

Valve:
Valves which are gate and butterfly valves control flow of water at different pipelines

Air valve:
Release trapped air from inside pipe. On the other hand, air valve has function to suction air under construction.
The valves located at higher elevations on pipe lines

Roles of each facility for pipes 3

Washout:

Washout drains are provided to keep the pipelines free from blockade. For keeping the pipe inside clean, sediment, deteriorated water shall be washed periodically.

At least every 3 months in dry season and once a month in rainy season

Fire Hydrant:

Fire hydrants can be used in case of fire.

Survey Staff

Date;
April 19-20, 2010
Staff;
WUSC Eng.
Targets;

- Intake
- Raw Water Transmission Pipe
- Transmission Pipe

Catchment Area in Intake

Intake Cannel

Exposed Raw water Transmission

- Exposed the pipe by floods, rain.
- Need to be covered
- Need the support below the pipe

Cut the Transmission

- Raw waster transmission pipe is 2 lines
- One was cut, the other is OK.
- Need to reconnect before rainy season

New Transmission Pipe

- Covered pipe by concrete

Exposed and Cut Raw water Transmission 2

- Exposed new pipe and cut existing pipe by floods

Valve Chamber

Missing cover (VT-2)

.

.

Valve box cover (VT-5)

Washout and Valve on Transmission

Washout Point under the field (drainage is bad.)

.

.

Washout and valve are located in a rice field.

Air valve Chamber

Inside chamber

.

.

Air valve box cover by concrete (VR-9)

Air valve Chamber

No cover (VT-7)

.

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No cover (VT-3)

Leakage and Cleaning

Rain water and waste in valve chamber

If pipe inside has negative pressure, waste water infiltrates in pipe.

.

.

Leakage from washout valve
Need to fix and save water

Necessary to consistency with other project Case-1

Road under construction

Air valve chamber (VT-14)

- Road is constructed on existing air valve.
- WUSC should announce the road department to avoid the water facilities.
- It is important to maintain and supervise water facilities.

Necessary to consistency with other project Case-2

Disconnected pipe

Is it cut when the cannel was constructed?

Survey Format

Inspector: Date: April 19, 2010

No.	Symbol	Pipe Dia. Material	Condition (Looks)	Valve working	Leakage	Sound, Etc.	Valve status
Sample							
1	VR-3	OD160 HDPE	Bad, Rusty	Ok	No	No	Open
Other; Malfunction and Repair Records							

Recommendation 1

[Intake site]
- Need to repair a fence
- To Dredge and remove sand in cannel

[Raw water transmission]
- To set a support and protect the pipe
- To reconnect pipes (2 points)
- Extension washout drain pipe in rice field
- To protect the valves in rice field

Recommendation 2

[Transmission pipe]
- To put a cover of chamber

Tentative

Permanent
- To clean inside chamber

Recommendation 3

- Pipe network map is made up including existing and new pipes.
- Main water facilities which consist of valve, air valve, washout and fire hydrant are put on the network map.
- Periodical inspection for water facilities
- Record their conditions, malfunction and repair