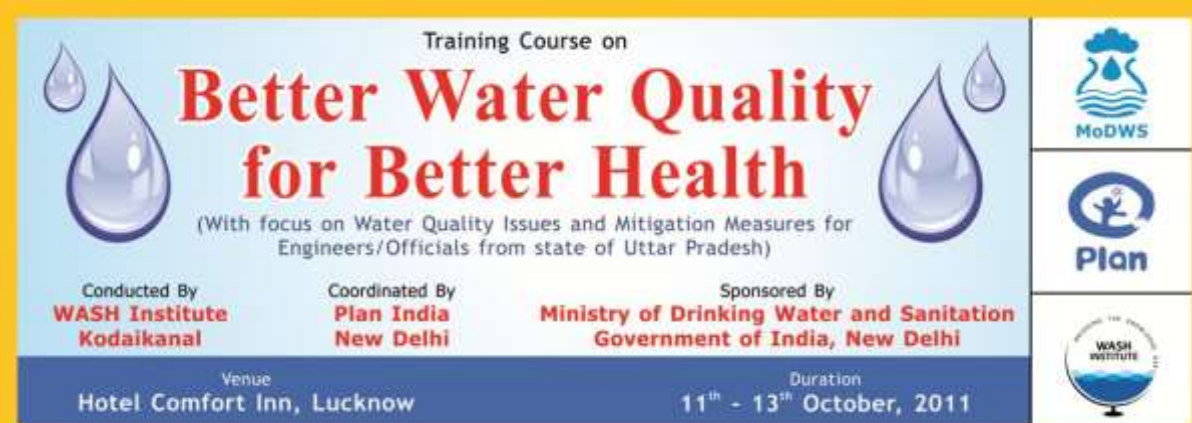


Project Completion Report

Project Supported by Ministry of Drinking of Water and Sanitation

Project Phase: 19th May 2011 to 30 November 2011



Training Course on

Better Water Quality for Better Health

(With focus on Water Quality Issues and Mitigation Measures for Engineers/Officials from state of Uttar Pradesh)

Conducted By **WASH Institute**
Kodaikanal

Coordinated By **Plan India**
New Delhi

Sponsored By **Ministry of Drinking Water and Sanitation**
Government of India, New Delhi

Venue
Hotel Comfort Inn, Lucknow

Duration
11th - 13th October, 2011

Logos: MoDWS, Plan, WASH Institute



Training Course on

Community Water Security Plan

for Jharkhand State PRI Members

Supported By: Ministry of Drinking Water and Sanitation

Conducted By: **WASH Institute, Kodaikanal.**

Coordinated By: State Water and Sanitation Mission, Jharkhand

13th - 17th March 2012

VISWA Training Centre, Ranchi

Logos: MoDWS, WASH Institute, Plan

Over view of WASH Institute

Water, Sanitation and Hygiene (WASH) Institute is a non-profit training and development organization dedicated to provide practical solutions to a wide range of water, sanitation, hygiene and environmental issues in India and the neighbouring countries. Core activities of WASH Institute would be to undertake training programs to groom water, sanitation, hygiene and environmental professionals and functionaries involved in the sector.

Special focus would be given to middle level professionals who are directly involved in managing the programmes on ground.

Round the year, WASH Institute would run various formal (academic) and non-formal training courses both on short and long-term basis.

Project Details

Implementing Organisation	Water, Sanitation and Hygiene Institute
Title of the Project	Strengthen Capacity and Knowledge of Stakeholders involved in State and Central Government Support Water Supply Scheme
Address for communication	Water, Sanitation and Hygiene Institute (WASH Institute) "Ashwath Nivas" 5-296, Anandhagiri 7 th street Kodaikanal 624 101, Dindigul District, Tamil Nadu. Ph: 04542-240881, Fax: 04542-240882 E-mail: office@washinstitute.org
Project No.	7799
Location of Implementation	Puducherry, Orissa, Bihar, Uttar Pradesh, Chhattisgarh, Jharkhand and New Delhi
Project Period	19 th May 2011 to 30 th November 2011
Reporting Period	Two Years
Amount approved by Plan India	Rs.47,68,000/-
Budget Revisions	April 2010, June 2010, May 2011.
Amount Spent so far	Rs.47,68,000/-
Accounts Statement	Annexure (number)

Introduction:

Issues such as fast depletion of ground water, water quality issues, poor sanitation coverage, poor focus on hygiene, problems in dealing in solid and liquid waste, fast urbanisation, emerging issues due to climate change etc., demand adequate human resources with necessary capacity, somehow this aspect is not being given priority.

Addressing the capacity gaps assumes significant importance with the growing complexities around the provision and management of water and sanitation facilities. Apart from capacity building initiatives for the people already associated in the sector, grooming younger generation is of prime importance towards achieving sustainable water and sanitation solution in the region. It is aimed to organize the non-formal training courses on “Water and Environmental Sanitation” through partnership with Department of Drinking Water and Sanitation (DDWS).

Background:

Water, Sanitation and Hygiene (WASH) Institute is a non-profit training and development organization dedicated to provide practical solutions to a wide range of water, sanitation, hygiene and environmental issues in India and the neighbouring countries. The core activity of WASH Institute is in organizing training programs to groom water, sanitation, hygiene and environmental professionals and functionaries involved in the sector.

WASH Institute had submitted a proposal to Department of Drinking Water Supply (DDWS) to conduct various trainings related to Water for the DDWS supported program through Plan India one of the leading Non Governmental organizations in India. Plan India/WASH Institute has been recognized and approved as a Key Resource Centre by the Department of Drinking Water Supply (DDWS), Ministry of Rural Development (MoRD), Government of India vide their letter no: W-11033/26/2009/WQ; dated 01/02/2010. Also DDWS Govt entrusted the responsibility to Plan India vide their sanction order No-33; dated 31/03/2011 to implement and manage the training project through WASH Institute.

The DDWS had sanctioned a total of 8 training programs and one conference. Three programs of “Five day duration” and five programs of three day duration have been sanctioned besides a two day national conference. The programs planned and shared with DDWS is as given below:-

Program Planned								
Sl.#	Title Of Program	Duration	Jun	Jul	Aug	Sep	Oct	Nov
1	Training Course on Community Based Water Security Plan with a focus on sustainability of drinking water sources	5 days		Puducherry				
2	Training on Construction and maintenance of ferro cement iron removal plant with a focus on iron contamination in ground water and removal methods	5 days				Bihar		
3	Training on Operation and maintenance of village water pumps	5 days			Chhattisgarh			
4	Training Course on Better water quality for better health -with a focus on water quality issues and mitigation measures	3 days	Puducherry	Chhattisgarh	Orissa	Bihar		UP
5	National Conference on Household and Community Level water treatment technology	2 days						New Delhi

Executive Summary

With the support of Plan India, WASHi is recognised and listed as one of the “**Key Resource centres**” under the Ministry of Rural Development, Department of Drinking Water Supply, GoI. This status helps in getting the financial support for taking up training and other programs for the government. The achievements during this project period were listed below.

- A total of eight training programs were completed, which include Two programs of “Five day duration” and five programs of three day duration and one three day program (which was actually planned for five days)
- A total of 253 Engineers were trained in Water Quality issues from states of Puducherry, Orissa, Bihar, Uttar Pradesh, Chhathisgarh and Jharkhand
- Training includes both theoretical and practical class. Participants were taken into field and demonstrated water analysis using the water quality kits (Jaj Dara, Orlab and TWAD Board kits)
- A Model of Iron Removal Plant (IRP) was constructed and demonstrated for the Orissa Engineers
- Part of the “Community Water Security Plan” training, participants of Jharkhand taken into field where the community water security project was successfully implemented and owned by the community
- Two days National Conference on House hold and community based water treatment technology was planned and conducted with the collaboration of DDWS, Plan India, unicef, CII etc.
- A total of 400 participants were participated from all over India and nearby countries.

Programme Interventions

With the continuous follow up with the concerned states we have completed all the training and details are given below:

Activity Performed					
	Date	Training Program	Number of Participants	States Covered	Venue
1	30 Jun-2 Jul 11	Better Water Quality for Better Health for Puducherry Officials	27	Puducherry	Kodaikanal, Tamil Nadu
2	7-9 Sep-11	Better Water Quality for Better Health for Orissa Officials	30	Orissa	Kodaikanal, Tamil Nadu
3	17-19 Sep-11	Better Water Quality for Better Health for Bihar officials	37	Bihar	Patna, Bihar
4	11-13 Oct-11	Better Water Quality for Better Health or UP state officials	27	UP	Lucknow, Uttar Pradesh
5	28-30 Nov-11	Better Water Quality for Better Health for Chhattisgarh officials	40	Chhattisgarh	Raipur, Chhattisgarh
6	15-16 Nov-11	National Conference on Community based Water treatment Technology	400	Delhi, National level	New Delhi

7	18-22 Nov-11	Training on Technology and Construction of Iron Removal Plant Orissa	34	Orissa	Bhubaneswar, Orissa
8	22-24 Dec-11	Community Water Security Plan for Bihar officials	31	Bihar	Patna, Bihar
9	13 – 17 Mar-12	Community Water Security Plan for Jharkhand officials	27	Jharkhand	Ranchi, Jharkhand

Better Water Quality for Better Life: A three day program with special focus on water quality issues and mitigation measures was organized for the state of, Puducherry, Orissa, Bihar, Uttar Pradesh and Chhatisgarh. The training program included theoretical and practical knowledge sessions with participatory games and films on the subjects for two days, and the third day was spent in the field to demonstrate water quality testing by using various water testing kits.

Community Water Security Plan: A five day program with special focus on water quality issues, low cost watershed management, water budgeting, demand calculation, village mapping, water security proposal development was organized for the state of, Bihar and Jharkhand. The training program included theoretical and practical knowledge sessions with participatory games and films on the subjects. The last two days participants were taken into field where the Community owned Water Security was implemented.

Construction and Maintenance of Iron Removal Plant: A five day training program included theoretical and practical knowledge sessions with demonstration on construction of Iron removal plant, and a visit to the TERA filter manufacturing lab, participatory games and films on the subjects

National Workshop cum Exhibition on Drinking Water Quality: A two-day workshop cum exhibition on “Drinking Water Quality” was held on 15th to 16th November 2011. The workshop jointly organized by Ministry of Drinking Water and Sanitation, Plan India, WASH Institute, Confederation of Indian Industry and UNICEF. WASHi is a co-organizer for the logistic arrangement of Conference Hall (India Habitat Centre).

The paper presenters from leading research organizations in India and nearby countries presented the issues on water quality. Many new innovations in technology were presented and deliberated during the workshop. A special focus was given for topics namely Arsenic, Fluoride, Nitrate, Salinity and bacteriological contamination's impacts, treatments and mitigation measures. Some of the papers presented related to community mobilization, community involvement and change management. A few paper on school water treatment technology without using the energy. The declaration of the workshop was on improving the surface water sources and dependence is more on surface water, and advising on reducing usage of ground water.

Learning for WASH Institute

Learning's for WASH Institute as a result of conducting this training

- A pre-test and post test were conducted for the participants, this helped to understand that the participants had gained in knowledge and skills on the subject water quality, they also appreciated the training.
- As this was the first time that this proposal on water trainings has been sanctioned by DDWS and the methodology and process to be followed is a new experience and learning for WASH.
- Since the trainings are targeted for the Engineers of the various government departments of the states, this requires a process of not only contacting the state heads but also getting their agreed dates at their convenience for conduct of the program.
- Innovative community mobilization methods for different settings should be made an integral part of all types of training programmes since in all the training programmes most of the participants expressed that involving community as it is the major challenge they face during implementation of projects.
- More practical and less class room sessions will help in easy understanding of the process of construction units.

- Exposure visits to successfully implemented different water treatment plants also should be part of training programmes to have practical knowledge for the participants.

Learning's for WASH Institute as a result of conducting this Conference

- Participation in the conference helped to understand the technology in various water filters and the various chemical contamination problems in the country. It was an opportunity to see the latest advancement in water treatment options by use of substances that can clean up thousands of litres of water to be started in India with foreign collaboration by some Indian companies.
- Understanding on costs involved for logistics.
- The efforts of the ministry are commendable in organising such conferences of Industries where a few NGOs had the opportunity to participate.

Acknowledgement

WASH Institute is grateful to Ministry of Drinking Water and Sanitation, Government of India and Plan India, New Delhi for entrusting us this assignment and look forward for continued support from them for the future.

WASH Institute

Kodaikanal

23.04.2012

Annexure -1

3-day training on Better Water Quality for Better Health for the Puducherry team: 30th June to 2nd July 2011 – Venue: Kodaikanal, Tamil Nadu

This was the first training program planned from among the series of 8 training programs. A three day training programme on “Better water Quality for Better life” with special focus on water quality issues and mitigation measures was planned and conducted during 30th June to 2nd July 2011 at JC Residency, Kodaikanal. There were 27 engineers who participated in the program. The training program included theoretical and practical knowledge sessions with participatory games and films on the subjects for two days, and the third day was spent on a field to demonstrate test water quality using various water testing kits.

The training Process and Methodology



Figure 1: A view of the Puducherry participants

The program began with the welcome address by K.Y.Babu. The WASH Institute Governing Board President Dr. T.T. Ranganathan gave the inaugural address. Being the first program the WASH Institute Trustees were present and Mr. L. Peter spoke on the purpose of the training and Mr. Arumugam Kalimuthu (AK) presented on the three day program schedule and the participatory methodology of the training.



Figure 2 WASH Institute President Dr. T.T. Ranganathan
Delivering the inaugural address

Day-1: - 30.06.2011

Given below is a brief of the sessions conducted during the days of the training program. The Introductory session was conducted through games and the training expectation was determined group work followed by a pre test questionnaire used at the start of the training to assess the knowledge level. This is followed by a post test at the end to know the progress made in skills and knowledge after the training.

Various technical sessions were conducted the topics being the

- Government policies and Millennium Development Goal
- Sector Overview,
- Government Policy- Water Quality monitoring and surveillance and sustainability of drinking water sources as per the revised policy.
- Water purification technologies and equipments for physical, chemical and biological contaminations.

- A detailed session was held on water quality issues and guidelines:

The session began with the definition of Safe water. Safe water must be free from bacteriological and chemical contamination and should be odourless, palatable and good for housekeeping. Standard for drinking water prescribed by Govt of India and World Health Organization was presented and differences on permissible limit between two standards were discussed elaborately. This was followed by the other topics on water and sanitation related diseases as per the five broad categories as below.

- Water Borne Diseases – diseases transmitted by water
- Water Washed Diseases – Disease due to lack of water
- Water Based Disease—Disease caused by infecting agents when contact with water
- Water Related Insect Vector Diseases – Diseases transmitted by insects which live close to water and Soil Based Disease.

Community based water quality monitoring and surveillance system using the facility /programme available from the Govt. was stressed.

Following this the topics on water contamination due to presence of fluoride, iron, nitrates, arsenic etc.



Figure 3: Resource Person Mr. Arumugam Kalimuthu (Right) discussing a point with a participant

and the health hazards and the way to mitigate those problems through some household filters were covered. The treatment methods like Activated Alumina filter, Nalagonda technique, Ferro cement Iron removal plant and AMAL filter functions, advantages and disadvantages were explained.

The participants doubts regarding water quality issues and mitigations were answered by the resource person with live examples. Cartoon film produced by WASH Institute. All the participants liked that film and they expressed that the film is very informative and it would be more useful for school children.

Dr. Marriappan, M.E., Phd from TWAD Board made a presentation on basics about water, the role of water and composition of human body. He explained about what is bottled water, and the different types of bottled water. In the purification technologies and equipments the following techniques were explained in detail with the help of short film taken in the TWAD pumping station.

- Aeration
- Coagulation
- Clariflocculation
- Conventional Settling and tube settlers
- Sludge Blanket Clarifier and
- Filtration



Figure 4: Dr. Mariappan from TWAD Board narrating his experience on the Better Water Quality issues

All the above technologies were explained with the help of various water treatment plants located in Madurai and Chempampakkam in short films.

Dr. Mariappan explained about Nitrate removal system and few house hold water treatment technologies were in his presentation. The participants' doubts were cleared in detail with illustrations from the successful treatment models from Tamil Nadu.

Day-2: 01.07.2011

The day two started with the recap of day one through a game.

The topics covered on day two were about the

- Importance of Sanitation in Maintaining Water quality.
- The Individual House Hold Latrine coverage (IHHL) stage wise also discussed.
- The various ill effects of open defecation like diarrhoea and other issues related to women are explained. "The Kitten" Short film about safe defecation by a cat was screened to create awareness about defecation. The characteristic features of human faeces, Faecal oral transmission route also discussed in detail. The minimum safe distance between water source and toilet horizontally and vertically also explained.
- The various sanitation options like onsite and offsite sanitation discussed with how it contaminate the water quality linkages.
- Village water and sanitation committee and habitation water sanitation group roles and responsibilities in maintaining water quality were discussed

Mr. Robert Chandra Kumar, M.A., B.L., Advocate in High court dealt on the topic legislations related to Water. The Water prevention and control of pollution act 1974 discussed in detail.

- The National Water Policy 1987 & 2002 were discussed with the important objectives related to ground water pollution, irrigation and so on.
- In State water policy-2004 the salient points like establish a management information system for water resource, promote research and training facilities, Establish allocation of priorities for water use by different sectors and so on discussed.
- Mr. Robert shared some Public Interest litigations related to water in his own experience and few important judgements related to water quality issues and water disputes in India. The participant's doubts regarding the over exploitation of water and how to file a Public Interest litigation on water were interesting aspects.



Figure 5: Er. Ravindran from Chennai

Er. Ravindran, Head Organisation Development, Centre for Excellence Chennai elaborately discussed about how the efficiency of water quality can be transformed to effectiveness

He presented a case study of a village on water quality results before and after monsoon in the year of 2008. Through various participatory games he emphasised that the change should come from the individual. He also shared about the water quality monitoring experiences as Engineer in TWAD and answered all the queries related to efficiency.

Day-3: 02.07.2011 :

All the participants visited the water reservoir for Kodaikanal city. The following were some of the main observations of the visit.

- How to protect a reservoir by totally fencing, keeping free from human interference, ban to use plastic etc..
- Filters : Aeration filter, bio sand filter
- Operations and maintenance of pump house

After the visit all the participants were given an exposure to the Berijam lake, located in reserved forest area for water quality testing. Three types field water testing kits namely TWAD board, Jal Dara and Orlab kits functions were briefly introduced by the Mr. K.Y.Babu. Few water testing methods were demonstrated by use of each kit. All the participants were divided in to four groups and each group tested by use of different type of field water testing kits. After analysing three types of kits, the participants felt that TWAD board kits was more easy to handle.



Figure 6: Participants on field visit to a water treatment plant in Kodaikanal

Evaluation of the Training

During the valedictory function an evaluation was also conducted to know the feedback about the training. All the participants' views are given below in a graphical presentation. The feedback was very positive.

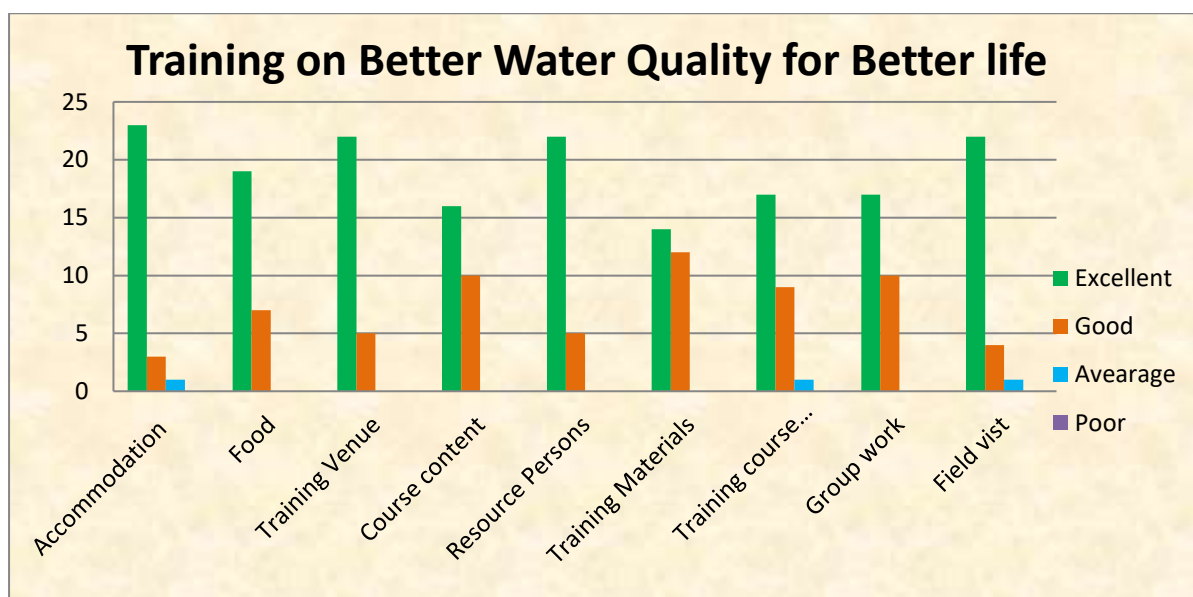


Figure 7 : Training Evaluation feedback from the participants.

The course completion certificate, group photo were given to all the participants. The three days training ended with the vote of thanks by Mr. S. Rajendra Kumar, Training instructor, WASH Institute.



Figure 8: Participants of the programme and WASH Institute resource team members

Better Water Quality for Better Health 30th June to 2nd July 2011

Puducherry Training Venue: Kodaikanal List of Participants

S.No	Name
1	C. Sadhasivan

2	R. Devadassou
3	D. Sambasivam
4	M.D.Shanmugam
5	T. Gandhi
6	Nallam Mani
7	M. Balasubramanian
8	S. Thiruvengadame
9	M. Sambath
10	K.S.Santhamurthy
11	G. Bhaskaran
12	L. Natarajan
13	S. Muruganantham
14	R. Sivachandran
15	K. Radha Krishnan
16	A. Konczynski
17	K. Suresh Kumar
18	N. Sundari
19	M.D. Jayasree
20	C. Victoria
21	L. Anitha Ben
22	M.K. Sheela
23	Vimala Venkatachalam
24	L. Ragunathan
25	P. Pandiyan
26	P. Angalan
27	K. Kalidass

Annexure 2

3-day training on Better Water Quality for Better Health for the Orissa team: 7th to 9th September 2011 – Venue: Kodaikanal, Tamil Nadu

A three day program on “**Better Water Quality for Better Health**” with special focus on water quality issues and mitigation measures was organized on 7th to 9th September 2011 at JC Residency, Kodaikanal for Orissa for 30 engineers from the PHED. The training program included theoretical and practical knowledge sessions with participatory games and films on the subjects for two days, and the third day was spent in the field to demonstrate water quality testing by using various water testing kits.

The training program is presented in following heads

1. Day wise activities
2. Pre – Post test analysis
3. Action plan of Orissa (Developed by participants)

Day 1:- 7 Sep 2011

This training program began with a welcome address by Mr. K.Y.Babu, followed by the inaugural address by Mr. Arumugam Kalimuthu who also presented the training methodology and basic rules to be followed during the training. The methodology was a participatory mode, which means learning by interaction, group discussion and games and films on the subjects.

The following are the topics covered on day one.

- Sector Overview, Government policies and Millennium Development Goal (MDG)
- Government Policy - Water Quality monitoring and surveillance and sustainability of drinking water sources as per the revised policy.
- Water purification technologies and equipments for physical, chemical and biological contaminations.
- A detailed session was held on water quality issues and guidelines

The Introductory session was conducted through games and the training expectation was determined group work followed by a pre-test questionnaire used at the start of the training to assess the knowledge level.

The first session began by Mr. Arumugam Kalimuthu with the definition of Safe water. Safe water must be free from bacteriological and chemical contamination and should be odourless, palatable and good for housekeeping. Standard for drinking water prescribed by Govt of India and World Health Organization was presented and differences on permissible limit between two standards were discussed elaborately. Also, details about MDG, National Water Policy, water quality monitoring surveillance, key components on surveillance were described. This was followed by the other topics on water and sanitation related diseases and disease types and mode of transmission were explained to participants.

Community based water quality monitoring and surveillance system using the facility /programme available from the Govt. was stressed. Following this the topics on water contamination due to presence of fluoride, iron, nitrates, arsenic etc. and the health hazards and the way to mitigate those problems through some household filters were covered. The treatment methods like Activated Alumina filter, Nalagonda technique, Ferro cement Iron removal plant and AMAL filter functions, advantages and disadvantages were explained by Mr. Arumugam Kalimuthu.



Figure 9: Dr. Mariappan from TWAD Board talking on various technologies

Dr. Mariappan from TWAD Board made a presentation on basics about water, the role of water and composition of human body. He explained about bottled water, and the different types of bottled water. In the water purification, Aeration, Coagulation, Clariflocculation, Conventional Settling and tube settlers, Sludge Blanket Clarifier and Filtration process and other technical options were explained in details. A special attention to “Nitrate Removal System” and few

house hold water treatment method were described.

Day 2:- 8 Sep 2011

The various technical sessions conducted on day two are as follows:

- Importance of Sanitation in Maintaining Water Quality; Role of Community/ CBOs in Water Quality Monitoring and Surveillance
- Overview of Government policies/ Laws regarding water (An advocate & Water activist point of view)
- Sharing flow online Water System Monitoring – A New Technology
- Efficiency to Effectiveness on WQ for Engineers; Special focus on Change management in Water Quality activist point of view
- Action for Orissa by Group Presentation

Ms. Kavitha, Lawyer of Madurai Bench of Chennai High Court, dealt on the topic legislations related to Water. The Water prevention and control of pollution act 1974 discussed in detail. The National Water Policy 1987 & 2002 were also discussed with the important objectives related to ground water pollution, irrigation and so on.

In the State water policy-2004 the salient points like establishing a management information system for water resource, promoting research and training facilities, establishing and allocation of priorities for water use by different sectors were dealt.

Mr. Manoharan discussed about how the efficiency of water quality can be transformed to effectiveness. He also explained on change management principles and how engineers could become social engineers by various



Figure 10 Mr. Manoharan explaining a topic on Change Management

examples and live examples. He also emphasised that the change should come from the individual.

Day 3:- 9 Sep 2011

Demonstration of field Water testing kits and (Visit to water reservoir :

The exposure to the Berijam lake, located in reserved forest area of Kodaikanal to carry out water quality testing was conducted by use of three types of field kits viz. TWAD board, Jal Dara and Orlab kits and its functions were explained.

Different types of water sampling methods were also demonstrated. The participants were divided in to three groups and each group tested by use of different type of field water testing kits and they analysed different types of water quality parameters.

At the end of the field visit, to conclude the training a post test and feedback forms were circulated and filled by participants.

Pre test & Post test analysis:

A multidisciplinary questionnaire (objective type) from the above mentioned technical sessions were developed, circulated and tested with participants before and after training. The results of the test, is given below. The knowledge level of participants on water quality before the training was found to be at 42%, while after training it improved into 73%.



Figure 11 : The participants of the Orissa team and the WASH Institute resource members seen

Action Plan of Orissa by Participants

As the end of the training the participants were divided in different groups for developing the action plan of for Orissa state. The ideas given by participants are tabulated below:

GROUP A

1. Formation of village water & sanitation committee given impress on drinking water & Sanitation monitory
2. Monitoring water quality for sustainable use
3. Uses of field level operations water (flow monitoring system - using of mobile service)

GROUP B

1. Mobilize the community to develop the community related project (sharing participation)
2. Horizontal roughing filter can be used in small scale to remove the suspended solids.
3. Planning and implementation through people's ownership.

GROUP C

1. Formation of village water and sanitation committee
2. Regular monitoring of water qualities of each sources
3. To change the habits of open defecation by door to door campaigning & motivating the people to construct and use toilets

GROUP D

1. Water quality of monitoring and surveillance testing of every drinking water sources.
2. Formation of village water and sanitation committee in every villages for smooth O & M of drinking water sources
3. Giving priority on making ECOSAN toilets in water logged areas.

GROUP E

1. *Bacteriological conformation:*

Bacteriological test of water is very essential to ensure its safety.

2. *ECOSAN:*
 - a. An efforts to conserve recourses on management or sanitation a waste water
 - b. Recycling and reuse or waste water
 - c. Pollution of prevention
3. *Soak pit :*
 - a. Developed under ground water service
 - b. Reuse waste water
 - c. Minimum 10mt fist from drinking water sources

GROUP F

1. Periodical monitoring of water quality in all water sources and check permissible limits.
2. Installation of Iron removal plant (Ferro-cement plant) in iron affected hand pump tube wells as well as PHs shear.
3. Formation of village water sanitation committee in each village of its participation actively in management of water & sanitation use.

Better Water Quality for Better Health (7th to 9th Sep 2011)

Orissa

Venue: Kodaikanal, Tamil Nadu

List of Participants

S.No	Name
1	Arun Kumar Nayak
2	Ashok Kumar Mishra
3	Bikash Kumar Dass

4	Bikramditya Pradhan
5	Biranchi Dhiria
6	Chitta Rajnan Mohapatra
7	Chittaranjan Jena
8	Dayanidhi Sahu
9	Dillip Kumar Behera
10	Dinakrushna Mohanty
11	Gouri Charan Behera
12	Iswar Chandra Dhamudia
13	Janmejaya Nayakae
14	Mahendra Kumar Pradhan
15	Malaya Kumar Mishra
16	Narash Chandra Dash
17	Nilamdhhab Mahasethy
18	P.C. Deo
19	Prabir Kumar Bal
20	Rabinarayan Mohapatra
21	Rajnikant Panigrahi
22	Ramakanta Panigrahi
23	Romancha Kishan
24	Sachida Nanda Dalai
25	Sarat Chandra Sahoo
26	Satyadra Mohan Pattanaik
27	Shiba Prasad Panda
28	Shivadarishi Dash
29	Suryamani Karan,
30	Susanta Kumar Sethy

Annexure 3

3-day training on Better Water Quality for Better Health for the Bihar team: 19-21 September 2011 – Venue: Patna, Bihar

A three day program on “**Better Water Quality for Better Health**” with special focus on water quality issues and mitigation measures was organized from 19th to 21st September 2011 at Hotel Chankya Inn, Patna for 37 engineers and chemists from the PHED, Bihar. The training program included theoretical and practical knowledge sessions with participatory games and films on the subjects for three days.

The training report is presented in following heads

1. Day wise activities
2. Pre – Post test analysis
3. Action plan of Bihar (Developed by participants)

Day 1:- 19 Sep 2011



Figure 12: (from left) Mr. Arumugam Kalimuthu, Country Director of Water for People, Mr. Prakash Kumar, CEO of WASH Institute and Mr DP Singh, SE, from PHED during the inaugural session

This training program began with a welcome address by Mr. K.Y. Babu, followed by the inaugural address by Mr. D.P. Singh, Superintendent Engineer, PHED, Bihar in which he discussed about the need and purpose of such training programmes. Mr Prakash Kumar CEO, WASHi briefed about the background of WASH Institute training objectives and basic rules to be followed during the training and

The methodology followed was of participatory mode, which means learning by interaction, group discussion and games and films on

the subjects.

The following are the topics covered on day one.

- ☞ Sector Overview, Government policies, guidelines and Millennium Development Goal (MDG)
- ☞ Water Quality monitoring and surveillance and sustainability of drinking water sources as per the revised policy.
- ☞ Water treatment technologies and equipments for physical, chemical and biological contamination
- ☞ Iron removal technologies at home and community level

The Introductory session was conducted through games and group work on relevant water quality issues followed by a pre-test questionnaire used at the start of the training to assess the knowledge level of participants.

The first session began by Mr. Arumugam Kalimuthu with the definition of Safe water. Safe water must be free from bacteriological and chemical contamination and should be odourless, palatable and good for housekeeping. Standard for drinking water prescribed by Govt of India and World Health Organization was presented and differences on permissible limit between two standards were discussed in detail and MDG, National Water Policy, Government guidelines water quality monitoring surveillance, key components on surveillance were also discussed. During the discussion participants

asked how to resolve the issue of monitoring and test private water sources used by majority of population in Bihar. This was followed by the other topics on water and sanitation related diseases and disease types and mode of transmission were explained to participants.



Figure 13: Participants from Bihar keenly taking notes during the training

Dr. Mariappan from TWAD Board made a presentation on basics about water, the role of water and composition of human body. He explained about bottled water, and the different types of bottled water. In the water purification, Aeration, Coagulation, Clariflocculation, Conventional Settling and tube settlers, Sludge Blanket Clarifier and Filtration process and other technical options were explained in details and slides and films were shown. The special feature of this presentation appreciated by all the participants was a plant installed by TWAD Board at a village Ramanathapuram where one can get 10 litres of safe drinking water by inserting an one rupee coin.

The last session of the day was conducted by Mr A Kalimuthu in which community based water quality monitoring and surveillance system using the facilities /programmes available from the Govt. Were discussed. Following this the topics on water contamination due to presence of fluoride, iron, nitrates, arsenic etc. and the health hazards and ways to mitigate those problems through some household and community level filters were covered. The treatment methods like Activated Alumina filter, Nalagonda technique, Ferro cement Iron removal plant and AMAL filter functions, advantages and disadvantages were explained by Mr. Arumugam Kalimuthu.

Day 2:- 20 Sep 2011

The various technical sessions conducted on day two are as follows:

- ☞ Horizontal Roughing Filter and different types of Hand Pumps
- ☞ Efficiency to Effectiveness on WQ for Engineers; Special focus on Change management in Water Quality activist point of view
- ☞ Arsenic contamination – cause, ingestion routes, diseases and its management
- ☞ Global warming and its causes and implications
- ☞ Visit to State Water Testing Laboratory and practical demonstration of various field water testing kits.



Figure 14 Dr. Ashok Ghosh discussing a point on Arsenic Issues in Bihar

The second day session started with ball game through which recap of first day training was done afterwards a film on disaster management was shown. Mr. A Kalimuthu gave presentation on Horizontal Roughing Filter with details of design then he explained about different types of Hand Pumps used in India with specifications in details. Dr Marriappan discussed about how the efficiency of water quality can be transformed into effectiveness. He also explained on change management principles and how engineers could become social engineers by various examples and live examples. He also emphasised

that the change should come from the individual.

Dr. Ashok Ghosh, Professor A N College, Patna who has done extensive research in Arsenic contamination in Bihar conducted a very informative and interactive session on this subject, he dealt with its geogenic cause, its ingestion routes, diseases including physical and mental caused by consumption of Arsenic contaminated water. He also explained methods to Arsenic management and suggested different options like dug well, using deep aquifers, test of water quality before installing new bore wells and increasing use of surface water. During the session Mr B P Ojha, Director Water Quality, PHED informed that all new bore well installation were being done after water quality tested Mr. Ghosh also screened some very interesting and informative slides which depicted how Global Warming is happening and is major cause of this alarming situation is water depletion.



Figure 15 Water Quality Testing in Progress using the WQ Testing kits

The second half of the session completed with a visit to State Level Water Testing Laboratory, Chajjubagh, Patna where all the participants were exposed to latest electronic water quality testing equipments. Dr. A K Upadhyay Lab Incharge explained functions of all the lab equipments. Afterward Mr K Y Babu demonstrated how to use different field water testing kits like JAL TARA and TWAD and participants conducted tests using those kits

Day 3:- 21 Sep 2011

The various technical sessions conducted on day three are as follows:

- ☞ Status of Water Quality Monitoring and Surveillance in Bihar
- ☞ Integrated Approach for Fluoride Management
- ☞ Action plans by participants
- ☞ Valedictory and Certificate distribution

The third day session began with presentation on Status of Water Quality Monitoring and Surveillance



Figure 16: Participants receiving certificates

in Bihar by Mr. B P Ojha Director, Water Quality, PHED, Bihar. In his presentation Mr.Ojha gave a picture of areas and community affected by Arsenic, Fluoride and Iron in Bihar he also informed about the measures being taken to tackle the issues like establishing labs in all the districts of Bihar, field test kit distribution in Blocks and Panchayats, identification of contaminated water sources and marking them with red colour and marking safe sources with blue colour. While talking about supply of safe drinking water in villages where water source are contaminated by Arsenic in 39 such villages already safe drinking water is being supplied and in rest of the villages work is in progress. During the course of

his presentation Mr. Ojha informed that for long term PHED is planning to shift from ground water to surface water sources for drinking water supply and for short

term Hand Pumps attached treatment units and dug well with solar based pumps are being installed. Swachata month which going to start from 2nd Oct 11 PHED has set a target of water testing in 200 schools of each district of the State of Bihar.

Mr Prakash Kumar while giving his presentation on Integrated Approach for Fluoride Management said that Fluorosis is not treatable but preventable and by early detection and by use of safe drinking water the disease can be arrested and in cases of children it can be almost cured. During his presentation he informed that Bihar is way ahead in policy and implementation since 200 Solar based treatment units are already working and installation of 1000 such units are in progress but major challenge is operation and maintenance of these units.

During the valedictory function, Shri . Srivastava Chief Engineer has participated. In the presence of CE all the three groups presented their action plan for Fluoride affected areas, Flood and Iron affected area and Arsenic affected areas. The findings are in Annexe- 1

The Chief Engineer PHED Mr A K Srivastava distributed certificates among participants Mr D P Singh, Superintendent Engineer PHED, Mr A Kalimuthu and Mr Prakash Kumar was also present on the occasion.

Pre test & Post test analysis:

Pre and Post tests were held consisting a multidisciplinary questionnaire (objective type) developed, based on relevant matters to test the level of knowledge participants before was 61 %and after training 80 %.

Action Plan for Fluoride affected areas			
Group	Short Term Plan	Medium Term Plan	Long Term Plan
A	a. Survey 1. Schools : DF/SF identification 2. Habitations : Vulnerable habitation identification b. Implementation	a. Blanket Testing : Identified Habitation sources should be tested thoroughly b. Categorization : 1. Less than 10% 2. Less than 25%	a. Mitigation 1. Temporary mitigation → 1. Fluoride attachment t unit 2. Solar Based

Action Plan for Fluoride affected areas			
Group	Short Term Plan	Medium Term Plan	Long Term Plan
	<ol style="list-style-type: none"> 1. Water Testing : Testing of water sources of schools and vulnerable habitations 2. Sign Posting : for Safe & unsafe water sources 3. Awareness Programmes: At district level, Block level & Panchyats level. 	<ol style="list-style-type: none"> 3. Less than 50% c. Mitigation : 1. More than 50% → Fluoride Attachment Unit 2. More than 25% → Alternative source or fluoride attachment Unit 3. More than 10% → Alternate source d. Testing of all new sources before pump installations. (Mandatory) e. Project preparation for long term mitigation. 	<p>Treatment unit</p> <ol style="list-style-type: none"> 2. Permanent Mitigation → 1. Water supply scheme from surface water sources like river reservoirs etc. 2. Multi villages scheme b. Improving of lab establishment (4% block level) c. surveillance – Health Education Agriculture & Panchyats Co-ordinations.
Action Plan for Flood Effectuated area & Iron effected area			
Group	Iron Effectuated	Flood Effectuated	
B	<ul style="list-style-type: none"> • Using 'Swachhata Mahotsaw' with IEC & BCC Activities aware people about hard washing to use Toilets/ ICP. • By testing of sources at panchyats level by grass root level workers through F.T.K • Using surface water Treatment plant • At regular interval IEC & BCC activities should be performed • To turn people to filter the water by local sand filter also • Passable permuted 	<ul style="list-style-type: none"> • Diagnosis of effected area. • Disinfection of different sources / area / course. Act my bleaching powder and boiling of water • To use chino tables • Aware about pressers after flood • Raising platform and provide toilets at upper area. 	
Action plan for arsenic affected areas			
Group	Short Term Plan	Medium Term Plan	Long Term Plan
C	<ol style="list-style-type: none"> 1. Edification of AS affected habitations and ranked Red Colour (As affected T/W) 2. Awareness programme like district level, Block level and GP level. regarding sanitation 3. At primary stage, how to 	<ol style="list-style-type: none"> 1. Focus on rain water harvesting 2. Renovation of Dig well like as sanitary well 3. Promote to use slow sand filter 4. Promote pond and river water for agriculture 	<ol style="list-style-type: none"> 1. Theory & practical of WQ & sanitation should be included in pri/middle/higher education syllabus. 2. Multi village schemes (Piped

Action Plan for Fluoride affected areas			
Group	Short Term Plan	Medium Term Plan	Long Term Plan
	take as free water from dell or T/W 4. Identify local resource persons for WQ & Sanitation as lok swasth mitra 5. Force or Agayladi Kendra / PHC/ Schools/ Panchyats Bhavay / Government institution to educated about WQ& sanitation. 6. Time to time a sanitary fair should be celebrated	purpose 5. As removal attachment unit	scheme), solar based river water supply avoid be implemented. 3. To promote deep boarding T/Q 4. To promote (earth) ground water recharge.

Better Water Quality for Better Health (19th to 21st Sep 2011)

Bihar

Venue: Patna, Bihar

List of Participants

S.No	Name
1	Ajit Kumar
2	Amit Kumar
3	Anil Kumar
4	Anish Atral
5	B.P. Ojha
6	Chandra Bhushan
7	Dineshwar Prasad singh
8	Jitental Kumar
9	Lata Choudhary
10	Manish Kumar
11	Pravin Kumar Singh
12	Raj Shekhr
13	Rajendra Kumar
14	Rajesh Kumar
15	Rajesh Kumar Singh
16	Rajeshwar Ram
17	Rajive Ranjan Lal
18	Rama Shankar Singh
19	Ravi Shankar
20	Renu Kumari
21	Sandeep KR Bharti
22	Sanjay KR. Paswan
23	Sanjay Kumar
24	Sanjay Kumar Mishra
25	Sanjay Kumar Sinha
26	Sanjiv Kumar

27	Shailesh Kumar
28	Shailendra Kumar
29	Shobha Kumari
30	Shrivastava. K
31	Shyam Haudau Singh
32	Stish Chandra Mishra
33	Subodh Shankar
34	Sunil Kumar Deepak
35	Susil Kumar Darshan
36	Vijoy Kumar
37	Vipul Kumar Nandan

Annexure 4

3-day training on Better Water Quality for Better Health for the Uttar Pradesh team: 11-13 October 2011 – Venue: Lucknow, Uttar Pradesh

A three day program on “**Better Water Quality for Better Health**” with special focus on water quality issues and mitigation measures was organized from 11th to 13th October 2011 at Hotel Comfort Inn, Lucknow for 27 participants, the Engineers of Jal Nigam, U P and District Development Officers, Government of U P. The training program included theoretical and practical knowledge sessions with participatory games and films on the subjects for three days.

The training program is presented in following heads

1. Day wise activities
2. Pre – Post test analysis
3. Action plan of U P (Developed by participants)
4. Participants feed back

Day wise activities

Day 1: - 11th Oct 2011

This training program began with a welcome address by Mr. K.Y.Babu, Dean WASH Institute followed by a brief by Mr A. Kalimuthu about the introduction of WASH Institute and the need for such training programmes. The Training Programme was formally inaugurated by Ms. Meena Agarwal, Director, Water and Sanitation Support Organization (WSSO) U.P. During her inaugural address Ms. Agarwal informed that State of U P does not have water scarcity but water quality is a major concern since many parts of the State have been identified contaminated with Arsenic, Fluoride and nitrate that is why Engineers and DDO of affected areas have been invited to participate in the training programme and she expressed her hope that participants would be benefited from the training programme. The methodology followed was of participatory mode, which means learning by interaction, group discussion and games and films on the subjects.



Figure 17: Ms. Meena Agarwal, Director, WSSO, UP inaugurating the training programme

The following are the topics covered on day one.

- Sector Overview, Government policies, guidelines and Millennium Development Goal (MDG)
- Water Quality monitoring and surveillance and sustainability of drinking water sources as per the revised policy.
- Water Quality scenario in U P
- Water treatment technologies and equipments for physical, chemical and biological contamination
- Iron removal technologies at home and community level
- Horizontal Roughing Filter and different types of Hand Pumps
- Fluoride ,Arsenic contamination – cause, mitigation, diseases and its management



Figure 18: Mr. Arumugam Kalimuthu

The introductory session was conducted through games and group work on relevant water quality issues followed by a pre-test questionnaire used at the start of the training to assess the knowledge level of participants.

The first session began by Mr. Arumugam Kalimuthu with the definition of safe water, and the standards for drinking water prescribed by Government of India and World Health Organization was presented and differences on permissible limit between two standards were discussed in detail. He also covered the topics MDG, National Water Policy, Government

guidelines on water quality monitoring surveillance, key components on surveillance. This was followed by the other topics on water and sanitation related diseases and disease types and mode of transmission were explained to participants.

Mr R M Tripathy, Joint Director, Jal Nigam gave his presentation on Water Quality scenario in U P and measures being taken to tackle W Q issues. During his presentation Mr Tripathy sited that over



Figure 19: A view of the participants from UP

extraction of ground water was main cause of contamination and depletion of ground water, he informed that 2.2 million hand pumps had been installed in U P and 20 districts are affected with arsenic, fluoride and nitrate contamination.

In the noon session Mr A Kalimuthu began his presentation with a film on hand pumps and discussing about different types of hand pumps he also dealt on community based water Quality Monitoring and Surveillance system using the facilities/programmes available from

the Govt. were discussed. Following this the topics on water contamination due to presence of fluoride, iron, nitrates, arsenic etc. and the health hazards and ways to mitigate those problems through some household and community level filters were covered. The treatment methods like Activated Alumina filter, Nalagonda technique, Ferro cement Iron removal plant and AMAL filter functions, advantages and disadvantages were explained with the help films and slides by Mr. Arumugam Kalimuthu.

The last session of the day Mr Vivek Singh, Research Scholar, IIT, Kanpur gave his presentation on Water treatment technologies and equipments for physical, chemical and biological contamination. During his presentation he explained how arsenic contamination happens and what measures should be taken to arrest further contamination like protecting water sources, filtration, disinfection and safe water storage.



Figure 20: Mr. Vivek Singh, Research Scholar, IIT, Kanpur delivering his presentation

Day 2:- 12 Oct 2011

The various technical sessions conducted on day two are as follows:

- Background of drinking water programme and current scenario in U P
- Integrated approach for fluoride management
- Water quality linkage with sanitation and convergence of concerned department while addressing the water quality issues

The second day session started with recap of first day training afterwards Ms Meena Agarwal, Director, WSSO, UP gave her presentation on background of drinking water programme and current scenario. During her presentation she said that drinking water coverage is satisfactory but water quality was still a major issue and at the same time sustainability and maintenance of installed units were major areas of concern. She informed that 200 blocks out of 810 blocks of the State were facing the situation of over water extraction, she stressed on the need of conjunctive use of surface and ground water.

Dr A B Shukla, Consultant, WSSO, U P gave his presentation on Integrated Approach for Fluoride Management in which he explained the main cause of Fluoride contamination and how to manage the issue for that he suggested water security plan for all affected villages and social engineering while dealing with Fluorosis management he stressed on the need of early detection and increased dose of calcium. During his presentation he screened UNICEF produced films on Use of Activated Alumina Filter and Bore Blasting Technology.



Figure 21: Dr. A.B. Shukla



Figure 22: Mr. K.Y. Babu of WASH Institute explains a point

Mr K Y Babu gave the last presentation of the day on Water Quality Linkage with Sanitation and Convergence of concerned departments. During his presentation Mr Babu explained how Water Quality issues had linkage with sanitation and why any water quality project could not succeed without addressing the issues of sanitation, he also spoke about the convergence of water and sanitation department with Health and Education Department while implementing any

project to achieve optimum result.

The day session ended with group discussion among participants on Water Quality challenges in U P and how to resolve them. Most of the participants felt that community mobilization was the main challenge during implementation of projects as well as maintenance of the units by the communities after installation. Capacity building of implementing personnel and community was the common suggestion to resolve the issue.

Day 3:- 13 Oct 2011

The various technical sessions conducted on day two are as follows:

- Water quality test sampling methods and analysis
- Importance of Water quality test in periodical intervals.
- Demonstration of various field water testing kit
- Visit to State Water Testing Laboratory
- Post test and feedback of participants
- Action plans by participants
- Valedictory and Certificate distribution



Figure 23: Dr. A.K. Upadhyay explaining the various aspects of water quality testing methodologies

The third day session began with presentation by Dr A K Upadhyay, Lab Incharge, State Lab, Bihar on Water quality test sampling and analysis. During his presentation he dealt on how to collect water for sampling from different sources, precautions, transportation, preservation and storage. He also explained guidelines requirements for specific water types. Dr Upadhyay also spoke about traditional practices of hygiene and maintaining water quality which was quite interesting part of the session and was well appreciated by the participants.

The participants visited Central Water Quality Lab, Jal Nigam, Lucknow for practical session where Dr Upadhyay and Mr Babu demonstrated how to use different Water Testing Kits like Jal Dhara, Orlab and TWAD to test water quality. All participants divided into groups and did the practical with different kits to find out the water quality regarding the chemical parameters. Majority if the participants feel that TWAD field water testing kit produced by Government of Tamil Nadu was easy to do the test in the field level.

The concluding session of training programme included presentation of action plans by three groups of all the participants, post test of the participants and their feedback on training programme and certificate distribution by Mr J M Tripathy, Joint Director, Jal Nigam, U P.



Figure 24: Field training using water testing kits

Pre test & Post test analysis:

Pre and Post tests were held consisting a multidisciplinary questionnaire (objective type) developed, based on relevant matters to test the level of knowledge of participants. It was found that their knowledge level of the participants on the test before the training was 35% and on testing the knowledge after training was found to be at 69%.

Assessment of the Quality of Training Conducted

The feedback from the participants was quite encouraging as most them showed their eagerness for such training programmes with longer duration and also requested for exposure visits on water treatment and filter plants installed in Tamil Nadu. The highlight of the training programme was the active participation of trainees and their enthusiasm to know solutions of the challenges they are facing in their area. The personnel of WSSO and Mr J M Tripathy, Joint Director, Jal Nigam, UP were quite impressed with the training programme conducted by WASH Institute and they expressed their desire to engage WASH Institute for conducting such training programmes at District and Block level.

04. Better Water Quality for Better Health 11th to 13th Oct 2011

Uttar Pradesh

Venue: Lucknow, Uttar Pradesh

List of Participants

S.No	Name
1	Mahendra Ram
2	Satendra Kumar
3	Vikas Kureel
4	Ugra senpandey

5	Abhay Kauf Gufrts
6	Dharmadra verne
7	Prahlad Singh
8	Dr. Abhay Kumar
9	Pankaj K Yadau
10	Pradip Kumar Chaurasia
11	B.M. Gupta
12	Dr. Shyam Kumar Singh
13	Ram Kishun
14	B.B. Singh
15	Dr. A. B. Shukla
16	Shriniwas Mishrd
17	Ravindra Banadur
18	Avadhesh Bamador Sing
19	Anil Kumar Singh
20	P.K. Swami
21	R.M. Tripathi
22	Munesh Kumar
23	Bhuvnen Jain
24	S.N. Dvggal
25	D.P. Singh
26	Lal Ji Yadau
27	Jagdish Prasad

Annexure 5

National Workshop cum Exhibition on Drinking Water Quality 15 & 16 November 2011 – Venue: New Delhi

A two- day workshop cum exhibition on “Drinking Water Quality” was held on 15th to 16th November 2011. The workshop jointly organized by Ministry of Drinking Water and Sanitation, Plan India, WASH Institute, Confederation of Indian Industry and UNICEF. WASHi is a co-organizer for the logistic arrangement of Conference Hall (India Habitat Centre).

Over 400 persons participated in the two day workshop. The welcome address was given by Mrs. Vilashini Ramachandran, Secretary of MDWS. The conference was inaugurated by the Shri. Jairam Ramesh, Honourable Minister of Rural Development.



Figure 25: Inaugural Session by Shri Jairam Ramesh, Minister for Rural Development and other dignitaries on the Dais

The exhibition was sponsored by the Confederation of Indian Industry, and was inaugurated by the Minister Shri. Jairam Ramesh. He made a tour of all the stalls and on visiting the display by Plan India and WASHi, he was presented a copy of the Evaluation study by ORG MARG. He also commented that organisations as Plan and WASH should be used for capacity building. More than 250 participants who visited the stall were interested to know about the Plan/WASHi activities.

The main agenda of this workshop is on “Drinking Water Quality”. The paper presenters from leading research organizations in India and nearby countries presented the issues on water quality. Many new innovations in technology were presented and deliberated during the workshop. A special focus was given for topics namely Arsenic, Fluoride, Nitrate, Salinity and bacteriological contamination’s impacts, treatments and mitigation measures. Some of the papers presented related to community mobilization, community involvement and change management. Some papers dealt with school water treatment technology without using the energy. Finally the two day workshop ended well with all the agenda being covered.



Figure 26: Minister Shri Jairam Ramesh looking at the Plan India / WASH Institute stalls at the exhibition hall

The declaration of the workshop was on improving the surface water sources and dependence is more on surface water, and advising on reducing usage of ground water. The two day National workshop ended with a Vote of Thanks given by Shri T.M. Vijay Bhaskar, JS, MDWS.

WASHi Role in the Workshop

WASHi was sanctioned a budget of Rs.500,000 for conducting of a National conference on Water technology. As the MDWS had also planned for such a conference on the same theme, it was instructed by the then Secretary Mr. JS Mathur that WASHi should jointly organise this with MDWS and Mr. Rajsekhar Deputy Adviser in MDWS as the contact person for follow up. This was decided in the Meeting



Figure 27: A view of materials displayed at the Plan India / WASH Institute stall

at MDWS on June 6th 2011. Hence as per the decision of MDWS in further meetings it was decided that the money should be spent on arrangement of logistics along with Plan India. Accordingly along with Plan India, represented by Mr. Srinivasan and WASHi personnel all logistic arrangements were made at India Habitat centre. An amount of Rs.4,04,308 was spent on behalf of WASHi towards the logistic arrangement for the conference which was well appreciated by Mr. Rajsekhar and others at the conference. WASHi is thankful to Plan for all the support and involvement in organising the MDWS programs especially for this conference.

Annexure 6

Training on Construction and Maintenance of Iron Removal Plant for Orissa team 18-22 November 2011 - Venue: Bhubaneswar, Orissa

A five day training program on “**Construction and Maintenance of Iron Removal Plant**” was organized from 18th-22nd November 2011 at Hotel Suryansh, Bhubaneswar for 34 rural water supply engineers from the PHED, Orissa.



Figure 28: A view of the participants of the training held at Bhubaneswar and TERA filter kept on display

The training program included theoretical and practical knowledge sessions with demonstration on construction of Iron removal plant, and a visit to the TERA filter manufacturing lab, participatory games and films on the subjects for five days.

Day -1 (18.11.2011)

This training program began with a welcome address by Mr. K.Y. Babu, followed by the inaugural address by Chief Engineer Shri. C.B. Mohapatra. The Director RD cum additional Secretary H K Dash of Water Supply Sanitation Organisation (WSSO) and the principal of PHED training centre also given facilitation address. The introduction about WASH Institute and the need and purpose of such training programmes was presented by Mr. K.Y. Babu. Mr. B.N. Das state consultant gave the vote of thanks.

Technical sessions

The first session began by Mr. K.Y. Babu with the definition of Safe Water. Safe Water must be free from bacteriological and chemical contamination and should be odourless, palatable and good for housekeeping. Along this the following aspects were also presented.

The standard prescribed by Govt of India and World Health Organization for water was presented and the differences on permissible limit between two standards were discussed in detail.



Figure 29: Dr. R.P. Mishra presenting a session on the Water Quality Scenario of Orissa

- The MDG goals, the linkage with the water and sanitation was explained.

- The National drinking water policy, Government guidelines water quality monitoring surveillance, key components on surveillance was explained.

After the lunch break Dr. R.P. Mishra, state water quality analyst, Orissa elaborately discussed on state water quality scenario with a special reference to Iron affected areas. He stated that almost all the districts of Orissa were

affected by the Iron in various concentrations.

He has presented the implementation experience on Iron removal plant constructed in Astaranga village of Puri District. The Iron content in groundwater of Astaranga was more than 5.5 mg/litre. To remove this excess Iron, the Iron removal filter has been installed in Astaranga. The principal of this filter is aeration and filtration. For removing the Iron from water the TERA Water Filter and Stand Alone Water Purification System under 'JALMANI' Programme was implemented in 1755 Schools out of 3460 targeted Schools. During the session all the queries related to Water Quality mitigation measures were highlighted by participants were discussed. Day one ended with the wrap up.

Day-2 (19.12.2011)

Day two started with the recap of day one. Mr. R. Sukumaran, Consultant from Water for People explained about the step by step construction of Iron removal plant. Using visual images the various steps like Foundation, Perforated slab (filter unit), Aeration chamber, Pipe connection was also explained. The questions asked by participants related to construction techniques were also answered.

The second session covered the topic on Water Quality Issues and Impacts. The impacts of fluoride, iron, nitrates, arsenic and hardness were discussed, health hazards and the way to mitigate those problems through household techniques were highlighted. All the water and sanitation related diseases belonging to five broad categories namely on subjects namely, water borne diseases (diseases transmitted by water), water washed Diseases (disease due to lack of water), water based disease (disease caused by infecting agents when contact with water), water related insect vector diseases (diseases transmitted by insects which live close to water) and soil based diseases.

In the sessions, the house hold and community based water treatment methods like Activated Alumina filter, Nalagonda technique, Ferro cement - Iron removal plant and its advantages and disadvantages were explained by Mr. K.Y. Babu.

Field Visit to the demonstration site

All the participants were taken to the demonstration site where the model Iron removal plant was constructed. Mr. R. Sukumaran explained the various prefabricated components and how it should be made in RCC. All the participants got oriented about the construction process and different units.

After the lunch Mr. Shanti, Scientist from Institute of Minerals and Materials Technology explained about the functions of TERA filter, and the filtration process and technology of TERAFIL, Filtration disc, Construction of TERAFIL disc. were covered. The other topics covered in detail were, various types of TERAFIL water treatment systems like domestic filter, ferro- cement low cost filter, online filter (pressure filtration with OHT). Community level water filter system installed in various places and its function was also explained. At the end of the session a short film on TERAFIL documented in Karnataka was also screened for better understanding.

Day-3 : (20.11.2011)

Day-3 session started with the recap of day 2. The role of sanitation in maintaining water quality has discussed. The importance of sanitation in maintaining water quality starts with the various facts and figures related to open defecation. The Individual House Hold Latrine coverage (IHHL) state wise was discussed. The various ill effects of open defecation like diarrhoea and other issues related to women were explained. "The Kitten" Short film about safe defecation by a cat was screened to create awareness about defecation.



The topics covered were: The characteristic features of human faeces, faecal oral transmission route, the minimum safe distance between water source and toilet horizontally (9 times from the water body) and vertically (three times from the water table) and the various sanitations options

– Project Completion Report

like onsite and offsite sanitation discussed with how it contaminates the water quality. The participants asked more questions on the ecological sanitation onsite sanitation option. All the queries related to sanitation and maintaining water quality were answered by the resource person.

Dr. Khuntia, Chief scientist, Council for Industrial and Scientific Research presented about the overall water quality problems in Orissa and the role of TERA FIL in improving the water quality.

Day-4 (21.11.2011)

All the participants were taken into the demonstration site where the Iron removal plant construction was completed. The participants learnt about the various prefabricated components and how it was made of RCC and also about construction of Iron removal plant by use of brick, filter slab, plumbing works. The queries related to the construction techniques and measurements, mixing of cement and so on was explained by the resource person Mr. R. Sukumaran.

The various components of Iron Removal Plant



Figure 31: Filtration bed of iron removal plant



Figure 30: Aeration chamber of Iron Removal Plant

TERAFIL lab and Iron removal Plant construction site

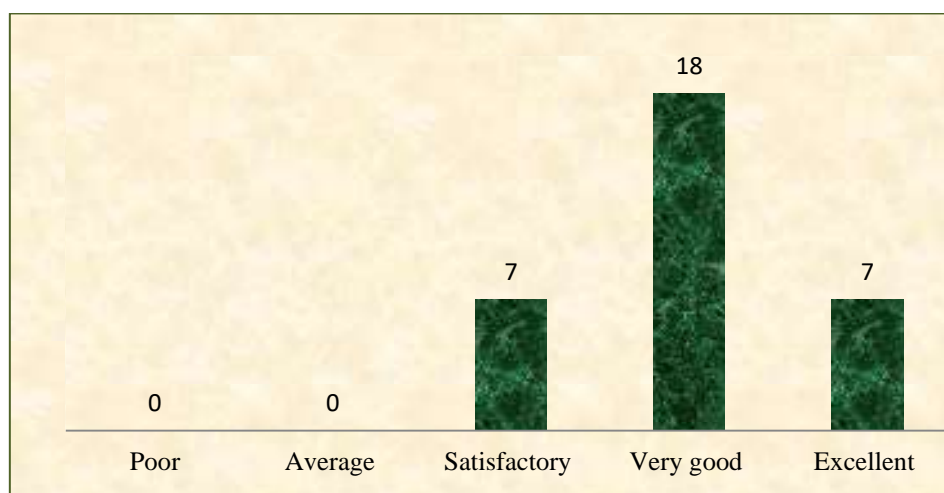
The same day all the participants visited the TERA FIL lab located in the Council of Industrial and Scientific Research campus. Dr. Khuntia and his subordinates Mr. S.K. Shanthi, Mr. R.K. Mandal explained about TERA filter manufacturing process. A practical test was done in the lab on how TERA filter performing to improve the water quality.



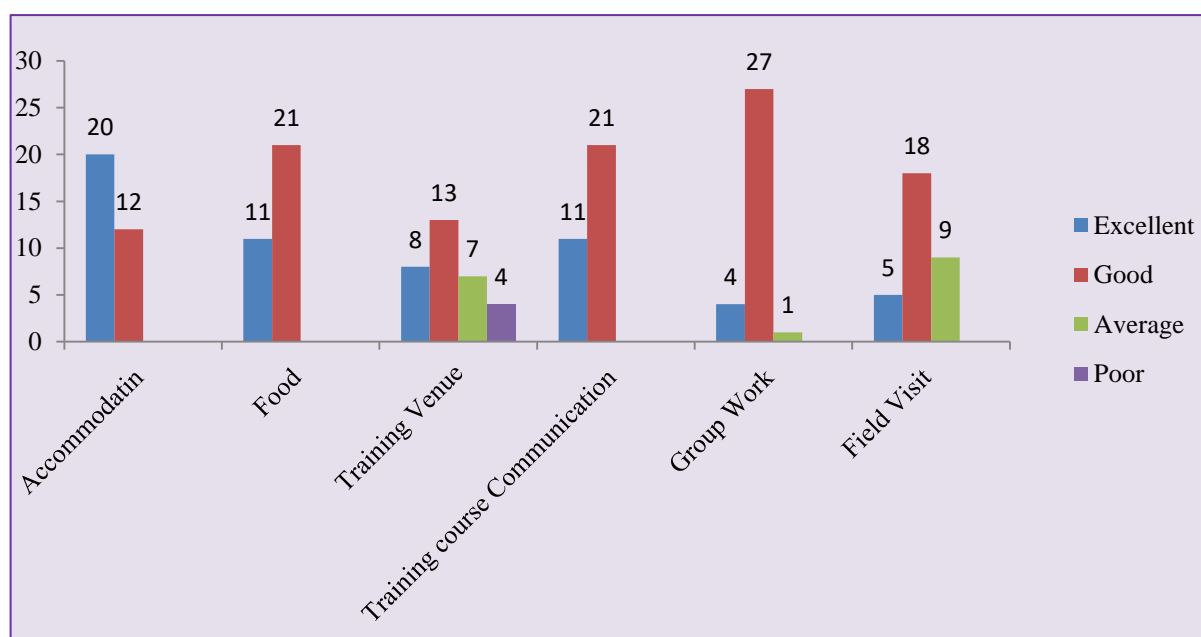
Figure 32: A view of structure being given finishing touch

Day-5 (22.11.2011)

The trainees visited the Iron removal plant site and given feedback. They feel that the construction process is very simple and easy to replicate in the rural areas. Now they are confident on construction using other locally available materials other than bricks. After completion of field visit, the feedback forms were circulated. The majority of the participants expressed that the training was very useful in terms of enhancing their technical skills on water quality especially on Iron removal plant construction and maintenance. The graphical presentations of the feedback is given below:



Overall Rating of the Training Course



Training feedback from Participants

Construction and Maintenance of Iron Removal Plant - 18th to 22nd Nov 2011
Orissa

Venue: Bhubaneswar, Orissa

List of Participants

S.No	Name
1	Harerfarnath Pradhan
2	Dharmendra Sethzi
3	Ramesh Ch. Swain
4	Subash Ch. Senafati
5	Tuhina Roy
6	Ashok Kumar Tripathy
7	Ajay Kumar Mishra
8	Ravi Nanayan
9	Biswarath Mellur
10	Bhagirathi Dash
11	Suresh Ch. Patel
12	Dinabandhu Patel
13	Sisir Ku Choohouray
14	Sasi Bhusan Mohanty
15	Susmite Tripathy
16	Ashok Kumar Mishra
17	S.B. Mahpatra
18	D.U. Bariu
19	Balaram Naick
20	Shishira Kumar Kar

21	Bibhuti Bhusan Samul
22	Dillip Ku Kiran
23	Susen Kumar Heth
24	Karan Soren
25	Deepak Ku.Prohan
26	P.K. Gethe
27	Himansu Sekhar Sa
28	Rashmi Rarjan Das
29	Robert Pradhan
30	Anil Kumar Das
31	Dhirendra Ku Patra
32	Krishnan Chandre Behra
33	H.K. Dash
34	B. Mohapatra
35	Nitanchala Panda
36	Rabit Narangam Das
37	Shyam Sundar Beshra
38	Ashimanya Bendra

Annexure 7

3-day training on Better Water Quality for Better Health for the Chhattisgarh team: 28-30 November 2011 – Venue: Raipur, Chhattisgarh

A three day training programme on “Better water Quality for Better Health” with special focus on water quality issues and mitigation measures was planned during 28th to 30th November 2011 at Hotel Celebration, Raipur. In the training programme an overall 40 participants, which includes engineers from P.H.E.D and officials from CCDU were participated.

The program is fully coordinated by CCDU, Raipur. This program successfully completed because of CCDU, Raipur through series of efforts taken with state departments, participants and helping in boarding and lodging arrangement at Raipur. Further, training aids and field arrangements also done with help of CCDU Raipur.

Three day training included theoretical and practical knowledge sessions with participatory games and films on the subjects for two days, while the third day was spent in visiting field to test water quality using various water testing kits.

Day-1: 28.11.2011.

During the inaugural session, Mr. K.Y. Babu WASH Institute gave the welcome address. P.H.E.D - Engineer in Chief Er. T.G. Koshariya chief guest of the function inaugurates the training session and gave the inaugural addresses. Also Er. M.A. Khan WSSO, Director also facilitated during the function. Finally the oath of thanks given by Mr. S. Rajendra Kumar.



(Er. T.G. Koshariya, Engineer in Chief, Inaugurating the training)

Introductory game (ice breaking) & Training Expectation:

A signature sheet was given to all participants, to get the relevant signature on few quarries. Then all the participants introduced themselves about their name, designation and experience. An interactive ice breaking exercises a sticker pasted with different issues related to water on the forehead of the participants. They were asked to find out their counterparts with similar type of issues. Thus groups were formed and member from each group put their sticker on a chart paper and wrote about those issues as per their knowledge. The pre test questionnaires were filled by the participants to assess the knowledge level.

Technical Sessions:

Sessions – 1: Water purification technology and equipment for removal of Physical, Chemical and Biological pollutants present in Water.



Dr. Samir Bajpai, Associate Professor, NIT Raipur presented on water treatment technology. He explained about the concept and principle of purification methods different purification methods like, Aeration, Coagulation, Clariflocculation, Filtration and Chlorination

All the above technologies were explained in details manner and pollutant can we reduce /remove using above technology.

Sessions -2: Sector overview, Government policies and Millennium Development Goal (MDG) and Linkages with safe drinking water

The session began with Sector Overview, Government Policy & Millennium Development Goal and Linkages with safe drinking water by Mr. K.Y. Babu. With a bar chart he presented how the earth would suffer from acute scarcity of water in near future since then the supply would become less than 1000 cubic meter per capita per annum. For moderately developed countries like ours the fresh water

Availability Standards are as follows:

Satisfactory : 1700 cu.m /capita / annum

Stressed : > 1000 cu.m and <1700 cu.m /capita/ annum

Scarcity : <1000 cu.m /capita/annum

He also presented the Millennium Development Goal consists of 8 broad goals aimed at reducing global poverty by 2015. Each goal contains a series of target that to be reached in order for that goal to be considered achieved. Goal number seven deals with Environmental Sanitation with a target to halve by 2015 from 1990 levels, the proportion of people without sustainable access to safe drinking water and basic sanitation. Though other goals are addressing different issues like poverty, hunger, child and maternal mortality but most of them have a connotation with Goal seven. Though MDG is telling about halving the people but govt. of India has set a different target of achieving 100% by the year 2012.

Day -2: 29.11.2011

Session – 1: Water Quality Issues and Guidelines

Day two started with the recap of day one. The first session began with the definition of Safe water. Safe water will not cause any health problem of the consumer. Safe water must be free from bacteriological and chemical contamination and should be odourless, palatable and good for housekeeping.

Standard for drinking water prescribed by Govt of India and World Health Organization was presented and differences on permissible limit between two standards were discussed elaborately. Following discussion was on water contamination due to presence of fluoride, iron, nitrates, arsenic and hardness. It covered the health hazards and the way to mitigate those problems through some household filters.



Generally all the water and sanitation related diseases belong to five broad categories

Water Borne Diseases – diseases transmitted by water

Water Washed Diseases – disease due to lack of water

Water Based Disease - disease caused by infecting agents when contact with water

Water Related Insect Vector Diseases – diseases transmitted by insects which live close to water and Soil Based Disease

In this session the water quality issues related to Fluoride, Iron, Hardness, Nitrate, Arsenic, TDS, E-coli were elaborately discussed. The treatment methods like Activated Alumina filter, Nalagonda technique, Ferrocement - Iron removal plant and AMAL filter functions, advantages and disadvantages are explained by the resource person.

Session - 2: Fluoride Issues and Mitigation

Dr. Ajay K. Upadhyay, Environmental Consultant & Lab in Charge, PHED, Patna started his sessions with basis of water and briefly explained about fluoride issues and mitigation measures. He addressed dental and skeletal fluorosis, impacts and treatment methods. Diet and nutrition education is prevention for all the problem arrives due to fluoride. While he also compared traditional and present way of food practises. The traditional food system, with a combination of antioxidants is an importance factor, reduces the impact of fluoride.



Session – 3: Importance of Sanitation in Maintaining Water Quality

Third session on day two was an “Importance of Sanitation in Maintaining Water quality”. The session starts with the various facts and figures related to open defecation Globally, Asia and Indian statistics. The Individual House Hold Latrine coverage (IHHL) state wise also discussed. The various ill effects of open defecation like diarrhoea and other issues related to women are explained. “The Kitten” Short film about safe defecation by a cat was screened to create awareness about defecation. The characteristic features of human faeces, faecal oral transmission route also discussed in detail. The minimum safe distance between water source and toilet horizontally and vertically also explained. The various sanitation options like onsite and offsite sanitation discussed with how it contaminate the water quality linkages.

Session – 4: Arsenic Issues and Mitigation

It is basically a case study; the research has been carried out at Ghargara River (part of Ganga river) where the ground water contaminated by arsenic. The study covers 13 district of Bihar, around 27,061 hand pumps was tested. A result showed that the arsenic concentration was above 10 µg/l. Also pectoral evidence of arsenic effect were displayed and discussed.

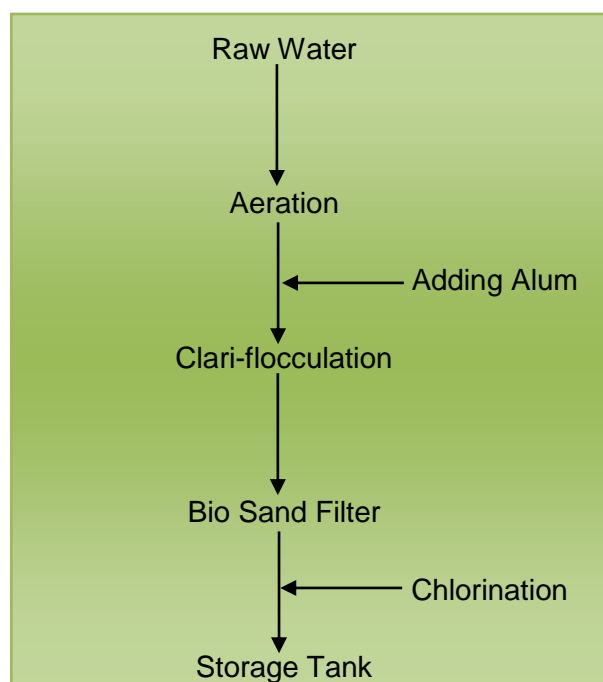
Day-3: 02.07.2011:

Day three was planned for field work. Before the field work, Dr. Ajay .K. Upadhyay explained about water sampling methods, procedure to follow for sampling, precautionary measure for handling water sample etc. The special focus was given bacteriological sampling and preserving methods.

After the technical sessions, all the participants have visited the drinking water treatment plant of Raipur. The treatment plant was controlled by Municipal Corporation of Raipur, where they have established laboratory for testing the water, before it reaches to consumer end. The lab assistants demonstrated water analysis for the parameter of Hardness and bacteriological estimation. In additions, precautionary measure has to be followed in lab were explained.



Later the participants have visited drinking water treatment plant and explained about the water treatment system. The system followed by Raipur Municipal Corporation as follow as



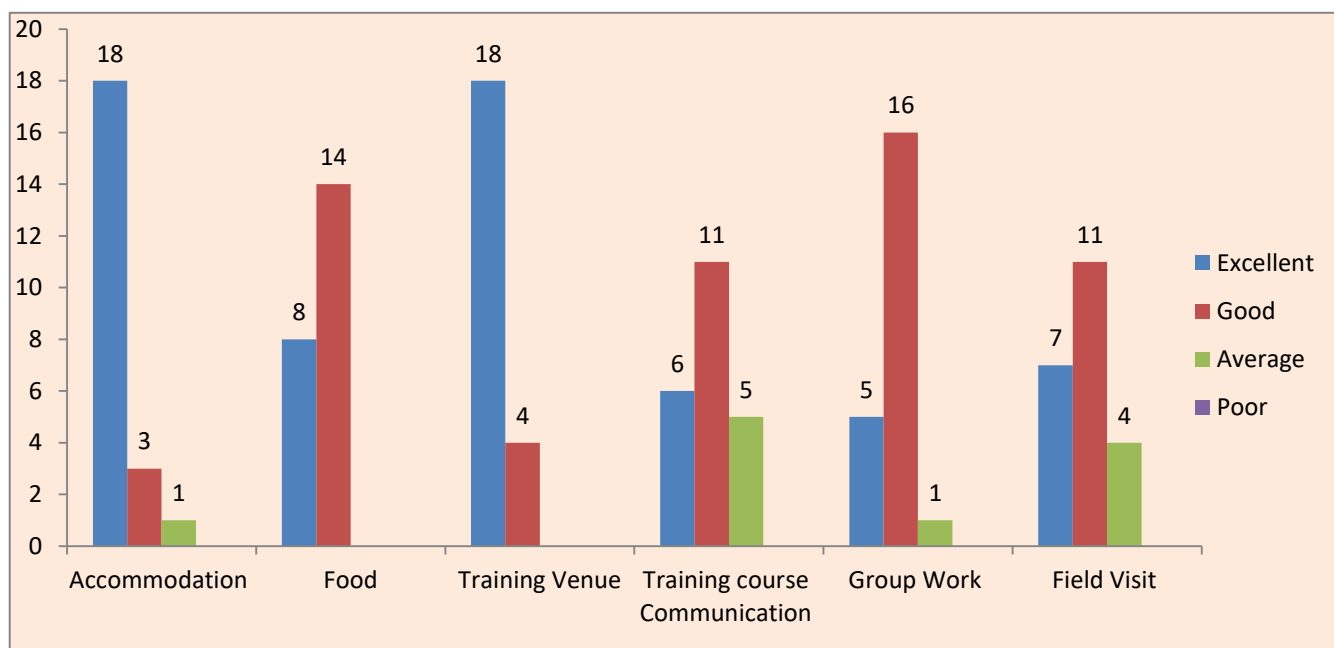
After the visit, the field water kits have been demonstrated by Dr. Ajay K. Upadhyay and Mr. K.Y. Babu. Two types of field water testing kits namely TWAD board and Jal Dara were briefly introduced by the resource persons. Few water testing methods were demonstrated in each kit.

Training Evaluation:

During the valedictory functions an evaluation form given to all the participants to know the feedback about the training. The entire participant's views given in graphical representation.

Based on the pre-post test, the knowledge level of the participant before training was 36% and post test training results showed that was 62%.

Figure 33 : Training Evaluation feedback from the participants



Better Water Quality for Better Health
28th 30th November 2011

S.No	Participants
1	Rau Ram Banjare
2	Sarotansingh Paikra
3	R.N. Gangah
4	S.R. Thakar
5	Amit Mishra
6	Anju Sahu
7	Mrituiray Chandra
8	Shalabh Katare
9	rupesh Kumar Rattere
10	Ashok Kumar Raj
11	K.P. Sharma
12	Kishna Kumar Sai
13	Tekendra Kumar Chundnaker
14	Vikar Prasnat Singh
15	Rejesh Kumar
16	Parimal Liwari
17	Vivke Sekar
18	Chaghey .M.L
19	G.B. Jodeja
20	Narveen Kumar Sank
21	Revendra Mahobia
22	Shrpendra Kumar verma
23	Gande SL
24	Rajesh Patap Mirba
25	Mukesh Ras Baskar
26	Ravi Prakash Joshi
27	Demam Lal Deshmilas
28	Paikra PPS
29	Khan MA
30	Jain UC
31	Kosariya TG
32	Dr. S. Bajpai
33	Dinesh Prthou

Annexure 8

3-day training on Community Water Security Plan for the Bihar team: 22-24 December 2011 – Venue: Patna, Bihar

A three days training program on “**Community Water Security Plan**” was organized from 22nd -24th December 2011 at Hotel Chanakya Inn. In this training **31** water supply engineers from the PHED, all over the state of Bihar has participated.

Day-1 (22.12.2011)

The three days training programme started with the inagural session. All the participants and dignitaries were welcomed by the course coordinator Mr. K.Y. Babu. The introduction to WASH Institute and the training course objectives were discussed by Mr. Prakash Kumar, CEO of WASH Institute. He briefly gave introduction about water security and the water scenario about Bihar and the need for community water security plan.



The chief guest of the inagural session was Mr. A K Srivastava, chief Engineer, PHED, Bihar. In his inagural address he mentioned about the previous WASH Institute's training course which was well appreciated by the participants. He explained about the current water scenario of the water in Bihar state and the need for water security

training. He wished all the participants to learn from the expert resource persons and requested them to implement it in the field.

Technical Sessions :

The following technical topics were covered in the training

1. Sector Over view, Government policies & MDGs and Linkages with Safe Drinking Water
2. Introduction to Water Security
3. Group Work on Demand calculation for multiple use of water
4. Water governance Issues
5. Interactive project cycles on Water security
6. Change Management; Efficiency to Effectiveness on Water Security
7. Sustainability of drinking water sources
8. Community Mobilization tools

The Introductory session was conducted through games and group work on relevant water issues at the start of the training to assess the knowledge level of participants.



The first session began by Mr. K.Y. Babu with the definition of Safe water. Safe water must be free from bacteriological and chemical contamination and should be odourless, palatable and good for housekeeping. Various statistical data related to infant mortality, under five mortality, below poverty line data, Individual household level toilet coverage data related to India and

the Bihar state in particular was discussed. Standard for drinking water prescribed by Govt of India and World Health Organization was presented and differences on permissible limit between two standards were discussed in detail and MDG, National Water Policy was also discussed. The linkage between provision of safe drinking water and the MDG Goals was discussed in detail. During the discussion participants asked how to do water security planning in village level, they were told that through various participatory tools like PRA (Participatory Rural Appraisal), Village Mapping, Transit walk and so on. All the participants were informed that there was an exclusive session on day two regarding community mobilization tools by the time they would have better understanding of the subject.



Dr.Ashok Ghosh, Professor from Environment Department of A.N.College Patna elaborately discussed about what is water security, the status of fresh water scenario in global as well as in India. During his presentation he discussed about the water scarcity in Bihar and at the same time every year Bihar faces the flood situation as well. Dr.Ghosh explained about the key steps involved in water security planning. The retrieval of traditional water bodies, catchment areas and importance of rain water harvesting systems also discussed. The challenges in achieving water security villages were also elaborately discussed.

After the presentation all the participants were divided in five groups and given the task of demand calculation for domestic use, drinking, cattle needs, cottage industries and Agriculture. As an outcome of the group work, the participants learned about how to calculate the needs of the various categories at the village level. Some participants for their group work had taken a village as a sample with the population and other details and worked out the demand calculations. Through the group work they felt that the present water supply for rural areas is not sufficient, hence there is a great need for water security planning.



Day -2: (23.12.2011)

After the recap of day one training first session of the day was conducted through a participatory game by Mr.K.Y.Babu. Er. K. M. Namboodri, free lance consultant who is having more than three decades of implementing water projects with leading INGOs was discussed on the topic of Water Governance issues and concept Iterative Project Cycles on Water Security. The session was conducted in a very interactive and participatory manner has been well received by the participants. During the session Mr.Namboodri coined a term de-learning which according to him was needed before learning new ideas. He has pointed out the following as limitations of current water governance systems;



practices.

- The current practices of natural resource development are inherited from the colonial rule.
- These practices were suited to the exploitative nature of colonial interest
- Western economic development and political philosophy which believed to gain maximum economical benefit from the available resources.
- These governance models totally lacked the long term vision of sustainable natural resource management enshrined in our traditional wisdom and

Mr.Namboodri has pointed out the following may be the solutions for better governance in water.

- Ancient Water Governance and Management Systems were Superior. Hence it should be adopted for better water security in village level.
- Current Water Governance system is inherited from colonial rule and based on western economic/development philosophy and as such inappropriate to Indian conditions.
- Future governance system should use holistic/contextual knowledge, principle of subsidiary, rooted in indigenous knowledge and iterative process
- Institutionally it should be rooted in the PRI system but facilitated by competent team of professionals

All the Engineers were agreed the above points and they were accepted to incorporate during the village water security plan.

The after lunch session was conducted by Mr. Prabhakar, DFID,Patna on community mobilization. The session conducted by Mr. Prabhakar was quite intense and all the participants appreciated it very much. Mr. Prabhakar discussed in details about different tools of community mobilization which could be used during implementation of projects by PHED Engineers. He discussed different tools such as Participatory Rural Appraisal (PRA), 3 pile charting, Joharis window, open ended stories, Force field analysis, which was used in different water projects and CLTS (community Led Total sanitation) successfully used in Himachal Pradesh, Maharashtra and Gujarat and explained how it could be used in the context of Bihar.



Day-3 (24.12.2011)



After the recap of day two, the 1st session of the day was conducted by Mr.Manoharan,TWARD Boar ,Tamilnadu, on the topic of “Change Management on Efficiency to Effectiveness on Water Security”. During the session Mr.Manoharan discussed about social engineering and how engineers could enhance their efficiency by social engineering for better results. He has coated examples from Tamil Nadu and discussed about how the efficiency of PHED Engineers of Bihar can be effective to implement water security plan in the community level.

The second session of the day was conducted by Mr.Tushar,DHAN Foundation in which he explained how to involve the community for successful implementation of a project. He also explained how DHAN Foundation was working in some villages of Gaya district of Bihar for tanks restoration project. The Orrani restoration experience of Tamil Nadu was shared by Mr. Tushar. The concept of Orani and how the rain water is restored has explained with the help of a short film.





The wrap up session of training programme was conducted by Mr. Prakash Kumar, CEO, WASHi, in which he answered queries put by the participants and informed about different schemes being implemented by PHED, Bihar with the support of DFID. During the valedictory session Superintending Engineer Mr. D.P. Singh, Mr. K. Srivastava, Chief engineer, PHED has participated. They have interacted with the participants about their learning, feedback of the training and so on. After this session PHED CD distributed certificates, Group photos to the participants.

Community Water Security Plan 22nd to 24th December 2011	
S.No	Participants
1	Bishwajit Kumar Singh
2	Ram Chandra Pandey
3	Umanath Eah
4	Suyeet Kumar
5	Ramesh Kumar Singh
6	Pramad Kumar
7	Shailendra Kumar
8	Anis Afzal
9	Prathad
10	Subodh Shankare
11	Shankar Kumar
12	Rajesh Kumar Singh
13	Santosh Kumar
14	Abhaya Kumar Singh
15	Poonam
16	Urmila
17	Dr. Alok Bhushan
18	Rajeev Ranjan Lal
19	Prakash Chandra Prabhak
20	Bimal Kumar
21	Rama Shankar Sings
22	Anil Kumar
23	Rahman M

24	Hare Ram
25	Rumanut Singh
26	Marish Kumar
27	Bishura Nath Tha
28	Virek Slukla
29	Chandra Pratap Pathak

Annexure 9

5-day training on Community Water Security Plan for the Jharkhand team: 13-17 March 2012 – Venue: Ranchi, Jharkhand

A five day training programme on “Community Water Security Plan” with special focus on water quality issues, low cost watershed management, water budgeting, demand calculation, village mapping was planned and conducted during 13th to 17th March 2012 at ViSWA training centre, Ranchi. In this training programme 27 PRI members (Mukiyas) participated from various districts of Jharkhand. The Five day training included three days of theoretical sessions and two days of field visits to water security projects implemented by the PHED department and NGOs with community participation.

Course Details

Duration	: 13.03.2012 to 17.03.2012
Venue	: ViSWA training centre, Ranchi
Total Number of Participants	: 27 Mukiyas
Course Conducted By	: WASH Institute, Kodaikanal
Course Coordinated By	: State Water and Sanitation Mission, Jharkhand
Course Sponsored By	: Ministry of Drinking Water and Sanitation (MDWS), Gol,

Day 1: 13th March 2012.

The inaugural session began with welcome address by Mr. K.Y. Babu from WASHi along with a brief introduction about WASH Institute and the core activities under the MoDWS/Plan India trainings. Mr. P.C. Choudhary, Director, TSC (PMU) the chief guest of the function inaugurated the training and explained about the present water scenario of Jharkhand and the need for water security. Also, Mr. Manoj Kumar Choudhary Deputy Director and Dr. Nitish Priyadashi, Environmentalist facilitated the inaugural function. Finally the vote of thanks given by Mr. K.K. Ghosh, Director, ViSWA training centre, Ranchi.



Chief Guest *Mr. P.C. Choudhary, Director, TSC (PMU)* 1st from right at the Inaugural Function

Session- I MDG goals

Topics conducted on sector overview, government policies and millennium Development Goal (MDG) and Linkages with safe drinking water. Linkages with safe drinking water presented by Dr. Nitish Priyadashi who with the help of a bar chart presented how the earth would suffer from acute water scarcity in the near future since then the supply would become less than 1000 cubic meter per capita per annum. Further he explained water availability standards as given below.

Satisfactory : 1700 cu.m /capita / annum
 Stressed : > 1000 cu.m and <1700 cu.m /capita/ annum
 Scarcity : <1000 cu.m /capita/annum



Dr. Nitish Priyadashi presenting the Sector overview and MDGs

Dr. Nitish explained that the Millennium Development goals consisted of 8 broad goals aimed at reducing global poverty by 2015. Each goal contains a series of target to be reached in order to achieve the MDGs. Goal number seven deals with Environmental Sustainability with the target to be halved by 2015 from 1990 levels, the proportion of people without sustainable access to safe drinking water and basic sanitation. Though other goals are addressing different issues like poverty, hunger, child and maternal mortality but most of them have a connotation with Goal seven. Though MDG is telling about halving the people but govt. of India has set a target of achieving 100% by the year 2015.

Session II: Freshwater Situation and Water Crisis in India

This session was also handled by Dr. Nitish Priyadashi. He started with the information on traditional water conservation strategies, how the system was constructed, and its operation and maintenance. The water conservation techniques has resulted in surplus water availability during ancient days. But present increasing population overexploitation of surface and ground water, industrial growth, increased agricultural activities is reducing the fresh water sources. Moreover the increasing wastewater (WW) and improper disposal pollutes the fresh water reserve. Many of the habitations particularly in north India are severely affected by the contamination of Arsenic, Fluoride, Iron, and Nitrate. In addition he added data on fresh water demand and freshwater availability. Water Crisis is a major problem all over India. Thus it has resulted in water conflicts among states and even at the panchayat level. The community water security is the need of the hour and the role of Mukiyas is imperative to achieve water secure villages. If we work on this direction with community we can avoid many future problems regarding water.

Day 2: 14th March 2012.

Day 2 started with Recap of Day 1 done by Mr. K. Y. Babu. During the recap many participants reveals that the day one sessions were useful. They have learned important statistics data related to water in India and Jharkhand in particular which will be very useful during their Panee committee meetings in future.

Session III: Arsenic, Flouride and Nitrate in the Water of Jharkhand

This session was handled by Dr. Nitish Priyadashi, a detailed research study report on water contamination in Jharkhand state was presented. Earlier he gave the detailed picture on Jharkhand

water scenario, fresh water availability, usage statistics etc. He elaborately discussed about the Arsenic, Flouride, Nitrate and Iron problems in Jharkhand. He explained the source of heavy metals, contamination process, illness due to contaminations, symptoms and treatment methods due to water quality impacts. It followed various water and its security related films produced by Unicef were showed and discussed with participants.

1. WES in emergency – This gives about community response during the emergency time, immediate action need to be taken during the relief time, which deals on supply of quality water, provide adequate sanitation facility and disease control process
2. Story of Water – This deals on proper usage of hand pump, maintenance, repairing process, cleanness of its surrounding, disposal of wastewater etc to maintain the drinking water security in the village.

Session IV: Demand calculation and Village Mapping in CWS Plan

Mr. Mohd. Shehfar, from Centre for Science and Environment, New Delhi elaborately discussed about the demand calculation and village mapping in a participatory way. This session included lots of group work, discussion and practical exercise for the participants. First he explained all the mathematical units and how it related with each other. All the participants were divided into five groups and they done the demand calculation according to their local needs. The Participants were actively involved and carried out the exercise on rain water calculation per sq.meter and the demand calculation per family. The second technical part was on village mapping, where he used chart paper, to draw three villages and asked the participants to evolve the water source plan, safety plan etc.



Mohd. Shehfar explaining the Demand Calculation



Mohd. Shefar –On Village Mapping

Day 3: 15th March 2012

Day 3 started with recap of Day 2 by Mr. K.Y. Babu, during which many participants revealed that they were well aware of the key water quality issues of Jharkhand. Majority of the participants knew known about rain water calculation and demand calculation and its importance in maintaining village water security.



Mrs. Birsmani Beck on water Problems

Session V: Experience sharing on Water Security

Community related water problems and diseases were handled by Mrs. Birsmani Beck. She discussed on water related problems, government schemes, fund availability and so on. The sessions

were on a discussion mode, participants were actively involved and cleared their doubts regarding the government schemes related to water.

Session VI: Rain Water Harvesting

One of the water conservation measures, rain water harvesting was introduced to participants; this session was handled by Dr. Nitish Priyadashi and Mr.K.Y.Babu.. They discussed on water availability, water usage importance for rain water harvesting and different methods of rainwater conservation. This was followed by a film on rainwater harvesting screened and discussed with participants. Also video clips on Oorani – a type of rain water harvesting method was introduced to the participants with discussions. The ancient rain water harvesting structures, various types of gutters, rain water collection tanks, filter methods and low cost rain water harvesting methods were presented with photos. The rain water harvesting project implementation experience of Tamil Nadu was also shared.

Session VII: Experience sharing on Community Water Security Project.



Mr. Satyabrata Acharya, Program Director, PRADAN, Jharkhand shared his experience on water security project. He explained about the process of community mobilization and the role of Panee community in implementing the watershed development project in Gada district. The role of mukiyas in different stages in implementation like site selection, quality construction with community participation, resource mobilization were discussed.

Mr. Satyabrata Acharya talks on

Community Water Security Project

Session VIII: Overview of CWS Plan – Special preference to Water Budgeting.

This session was handled by Dr. S. Rajendra Kumar, from WASH Institute. He explained the steps involved in Community Water Security Planning. Initially he explained about importance of planning process, the major steps in planning starts with calling of Gram Sabha, formation of village water and sanitation committee, involvement of stake holders, community mapping, field survey, data collection, parameters to be looked in the field, data analysis and proposal development.

The second topic was on water budgeting. His presentation started with hydrological cycle, and different components in cycle viz. evaporation, eva-transpiration, condensation and precipitation and run off. These components were useful in demand calculation and water budgeting. Finally he used simple table formats for explaining the water budgeting.

Day 4: 16th March 2012

All the participants went for a field visit to Urmangi to get practical exposure on community water security measures done by the PHED Department. In Urmanji Block PHED had constructed a check dam in a river and the water pumped to the filter house for distribution. Mr. Sanjay Kumar, Executive Engineer has helped WASH Institute to organize the field visit. In Urmanji all the participants visited the check dam constructed in the river.



Participants visiting Urmangi watershed Programme and Pumping Station

The Director TSC and the AE of Urmangi division explained about the functions of the river and how it secures the drinking water supply for the block. Then all the participants went to the filter house where the pumped water is under various filtration processes like oxidation, disinfection techniques by adding alum, bleaching powder and so on. As an outcome of this visit the Mukiyas known about the local schemes available with department regarding water shed development, mini schemes etc.

Day 5: 17th March 2012

During the class room sessions all the participants learnt about how to implement the water shed development in a village with low cost and maximum utilisation of community mobilisation and participation through Mr.Acharya from PRADHAN NGO. To get the practical exposure and to discuss with the Panee committee members a field visit was organised with the help of TAYMA NGO working in Goda area of Ramkhar district.



Meeting with Panee Committee and observing the Watershed Programme

A meeting was organised with the Panee committee members and the NGO staff who involved in this novel project. Mr.Ganesh from TAYMA NGO explained about the project concept, community participation and a brief note about the project area. After that all the participants went to the project area to see the rain water catchment system. The various models of runoff water catchment systems, water shed development in the hilly areas were explained by Mr.Ganesh who was involved in the project as a Panee committee member. He explained that as a result of the water security measures, now the irrigation well has adequate water availability in the summer also, which enhances the agricultural production.

During the field visit Mr.P.C.Chowdary Director TSC, PHED had a discussion with the participants and cleared their doubts regarding the government fund available for panchayats and so on.

Valedictory

During the valedictory function all the participants thanked PHED, MoDWS, Plan-India/WASH Institute for organising this useful training programme. The course completion certificate, group photo and the course materials were distributed to all the participants.

Observations about the Training

Participants: Though the Jharkhand PHED had communicated to about 35 persons to participate in the program, however finally only 27/30 members attended the programme.

Expenditure: The expenditure towards this training has been less than the provided budget as the training was conducted in the government centre ViSWA at Ranchi the boarding and lodging facilities are given in the government fixed rates hence the expenses had been considerably reduced.

Community Water Security Plan 13-17 March 2012	
S.No	Participants
1	Prakash Oraon
2	Biswanath Baraik
3	Manoranjan Kumar Dubey
4	Rajendra Nayak
5	Sita Devi
6	Amresh Kumar Mahato
7	Santhosh Kumar Gond
8	Jiteshwar Munda
9	Bimla Hasda
10	Rajesh Rajan
11	Rathu Oraon
12	Rajkishok Kotwar
13	Sarbat Murmu
14	Jagnarayan Singh
15	John Topho
16	Nilmohan Pahan
17	Madan Singh Hansad
18	Dindayal Sen
19	Khudiram Mohali
20	Arun Modi
21	Jahangir Alam
22	Lakhan Birua
23	Kailash Ram
24	Mahadeo Ram
25	Srikant Dubay
26	Sandip Kumar Majumdar
27	Jaggu Koda
28	Sabnam Parvin
29	Sanjay Mahato
30	Lakhi Ram Munda

31	Junab Ansari
32	Damodar Singh