Serving Our Neighbors International - Biosand Filter Project Evaluation

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CAWST Centre for Affordable Water and Sanitation Technology

AFRICA MANZI CENTRE
Bringing Life to Water Through Education

Index

1.0 Background

1.1 Collaborating organizations

The evaluation was carried out as capacity building for Serving Our Neighbors International (SON) by Africa Manzi Centre (AFMAC) which is a wing of Seeds of Hope International Partnership (SHIP) to ensure that SON in the future is able to carry out their own evaluations and analyze the results. The training is based on the Centre for Affordable Water and Sanitation Technology (CAWST) using their training manual for Monitoring and Evaluation. Below is a description of each of the involved organizations.

SON is a local NGO that carried out a developmental project in the peri-urban area of Kizudi in Tanzania. The NGO uses water as an entry point into a community. The NGO's strategy has been to act as the BSF Product Manufacturer and Training Agents and focusing on the Community Project Implementation. As a means of introducing the technology, SON implemented this project in Kizudi and other areas.

In addition, SON receives technical support directly from CAWST and at times through its partners AFMAC based in Zambia.

SHIP is an NGO working in Zambia with a vision to train and equip individuals and through strategic partnerships, transform impoverished communities in the developing world.[1]

AFMAC is a partnership between CAWST and SHIP to provide water expertise training to the southern region of Africa. AFMAC provides training in household water and sanitation and helps build the capacity of organizations in the southern region of Africa to meet their own local water, sanitation and hygiene needs. [2]

CAWST is a Canadian NGO and charity that focuses entirely on providing training and consulting services, and acting as a centre of expertise in water and sanitation for organizations that serve the poor in developing countries.[3]

1.2 Description of the project

Serving Our Neighbor International based in Dar-es-Salaam, Tanzania carried out a Biosand filter (BSF) project for the period of five years from 2005-2010. The aim of the project was to introduce the Biosand Filter Technology to 51 households in the targeted community. The BSF project was combined with sanitation and hygiene promotion.

Goba/Kizudi Area:

Goba and Kizudi village are part of the Dar es Salaam Region, the most populated region in Tanzania. However this area would certainly be considered rural by Western Standards. The people are for the most part very poor. The area was once populated mostly by the Wazaramo and Ndengueko Tribes. However, now these areas are considered multicultural due to the proximity to the city of Dar es Salaam. Most of the filters in this area have been placed through a partnership with a nursery school (kindergarten in western terms) called "Watu wa Thumani" or Blessed Children, operated by Steve & Gill Davies, (CMML) Missionaries from the U.K. There is a small church fellowship that meets at the school each Sunday and several of their members are teachers and workers at this church. The school has hosted 3 water filter seminars for the parents of the children that attend, resulting in many filters placed in homes around this village. The school, the church and the filters are working together to serve this community through providing practical help. There is very little piped water into this area. The water is trucked and sold, or comes from shallow wells. During the rainy season, rain water is used as much as possible. They also learned during the monitoring that there is a borehole well which produces very salty water.

A Biosand filter is a slow sand filter adapted for usage in people's homes. The container can be made out of concrete or plastic and it is filled with specially selected and prepared sand and gravel. The filter removes pathogens and suspended particles helped by the biolayer that is produced in the top layer of the sand.[4] A cross sectional image of the Biosand filter is presented below in *Figure 1.*

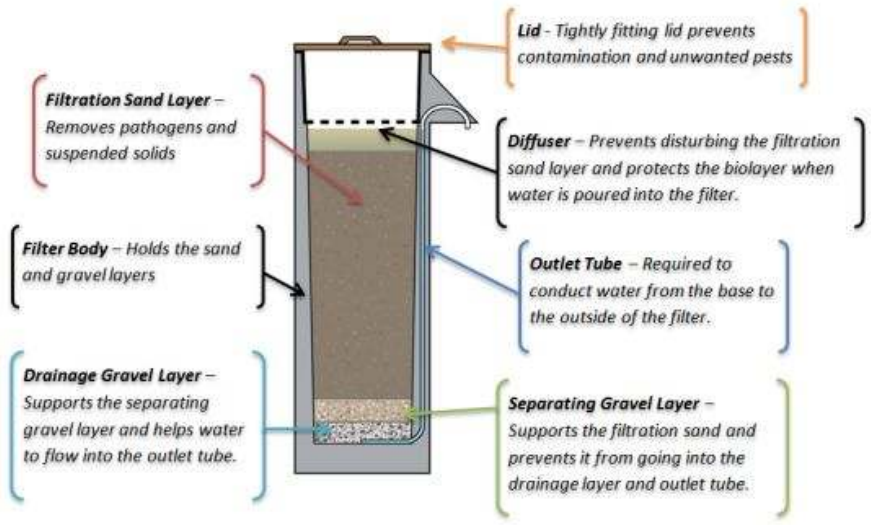

Figure 1, A cross- sectional image of the biosand filter[1]

The filters were constructed at Kunduchi workshop near Dar es Salaam and transported to the community. At the time of implementation leaders from the Kizudi Community were invited to participate in Hygiene and Sanitation training conducted by SON/MCD.

1.3 Evaluation objectives

i) To evaluate the effectiveness and sustained use of the BSF
ii) Transfer project evaluation knowledge skills to SON/MCD
Specific objectives;

a) Assess user perceptions and acceptance of the filter
b) Assess effectiveness of the filter in removing pathogens
c) Assess proper filter usage and maintenance and water storage
d) Assess the quality of the filter

1.4 The team

The team carrying out the evaluation composed of staff from CAWST, AFMAC/SHIP and SON/MCD.

The team members had following responsibilities:

Tal Woolsey, CAWST- Team Leader and Facilitator

Adele Woolsey, CAWST – Leader Water Quality Testing

Esther Banda, **AFMAC**– Water Quality Testing

Todd Ziems, SON/MCD – Logistics

Ann Ziems, SON/MCD - Logistics

1.5 Dates and activities

March, 2011 – Final planning and preparation for the evaluation, including: logistics, team assembly, determination of location for the evaluation and development of the survey questionnaire.

March 14th-17th, 2011 – Water Quality Testing of Biosand filters and household surveys were carried out. On the first day, filters were identified for inclusion in the microbiological assessment based on inspection of operating parameters and location. The first analysis of the water quality was carried out on the same day as the filters were inspected. At this time the pH and the turbidity were tested and water samples taken for microbiological assessment. Water samples were taken daily over a four day period to show any trends in physical or microbiological contamination.

2.0 Scope and method

2.1 Selection of households

The aim was to visit 100 percent of households in a community where the BSF were installed successfully. The number of houses to be visited was determined from the existing SON records of all filter owners in this community.

Before each survey the team presented themselves and explained the purpose of the visit and asked for permission to ask questions and inspect the filter. Once this permission was given, the questionnaire was followed through a series of questions and observations. The questionnaire used can be found as *Appendix A* and was used for all the visits.

2.2 Household surveys

2.2.1 Introduction

The questionnaire used in the survey was based on the one from the CAWST manual, this was then adapted to the current scenario and the specific objectives of SON/MCD. The adaptation was conducted in collaboration with SON/MCD to ensure that the questions were suitable for the targeted group. The questionnaire was translated into Ki-Swahili which is the local language in Kizudi. The questionnaire was also designed to take somewhere between 30-45 minutes to complete, this was to ensure that the informants are kept active throughout the process.

2.2.2 Questions

The questionnaire includes a total of 49 questions with 8 questions on operating conditions, 8 on the current scenario, 16 on household practices, 12 on user perception and 5 on observations. This spread of questions was to ensure that all aspects of the filter were investigated based on the objectives.

2.2.3 Observations and measurements

What was observed and measured were the key operating conditions, aspects of the storage containers and on the filters installation and usage as well as on the quality of the filters construction. The observations and measurements are investigated to ensure that the answers given are consistent with the actual situation.

2.3 Water analysis

Water quality testing (WQT) was carried out on seven of the surveyed filters. The filters were selected by SON/MCD in conjunction with the Water Quality Testing team. The system employed was to select filters by the geographic selection method which insured the filters were close enough to one another for easier logistics in sample collection. Filters were further selected based on meeting most of the 8 operating parameters. After identifying appropriate filters, the water samples were collected from sources, transport water, filtered water and stored water. The same filters were then tested daily over the next four days to identify any trends. The tests carried out were for three indicators, pH, Turbidity and Microbiological indicators (E.Coli) with results compared to WHO guidelines. The different indicators are explained below with their specific standards.

Turbidity is the cloudiness of a liquid, caused by suspended solids and can be visible to the eye, turbidity can also be an indicator of other contaminations such as fecal coliforms. A turbidity level of less than 5 NTU (Nephelometric Turbidity Units) for the WHO guidelines is considered as acceptable for the consumer but below 0.1 NTU for effective disinfection.

pH is a measurement of how acidic or basic a liquid is, where 7 is neutral. There are no health based guidelines for pH as this does not have an impact on the consumer's health; however, it is still an important water quality parameter. For example, the pH should preferably be lower than eight to ensure effective disinfection with chlorine. Water with low pH is likely to be corrosive. An optimum pH is in the range of 6.5-8.

Escherichia coli or E-Coli is present in large numbers in both human and animal intestine and is accepted as the world standard indicator for fecal contamination. The WHO guidelines for E-Coli is zero colony forming units per 100mL of a water sample (0 cfu/100mL), as any contamination can be harmful for the health of the consumer. The E.Coli testing was conducted using the membrane filtration method using Wagtech equipment.

2.4 Analysis of the data

After all the interviews were carried out the data from each questionnaire was input into a spreadsheet in excel for analysis. Some of the pertinent results are presented in the section below and all the WQT results are available as a spreadsheet upon request. The results are discussed and conclusions drawn in this report.

3. 0 Results

43 households were visited out of the total of 51 installed filters. The names of the 51 owners were provided through SON installation records and the installation technicians who made up the team that assisted in this evaluation. The surveyed households represent approximately 84% of the total installed filters. The different sections of the survey are presented below.

3.1 Operating parameters

The results show that 88% of the filters were matured and were used regularly (Figure 2). 97% of the diffusers were in good condition while 70% of the sand surfaces were level. 100% of the filters were not leaking. 100% of the inlet turbidity was below 50NTU.

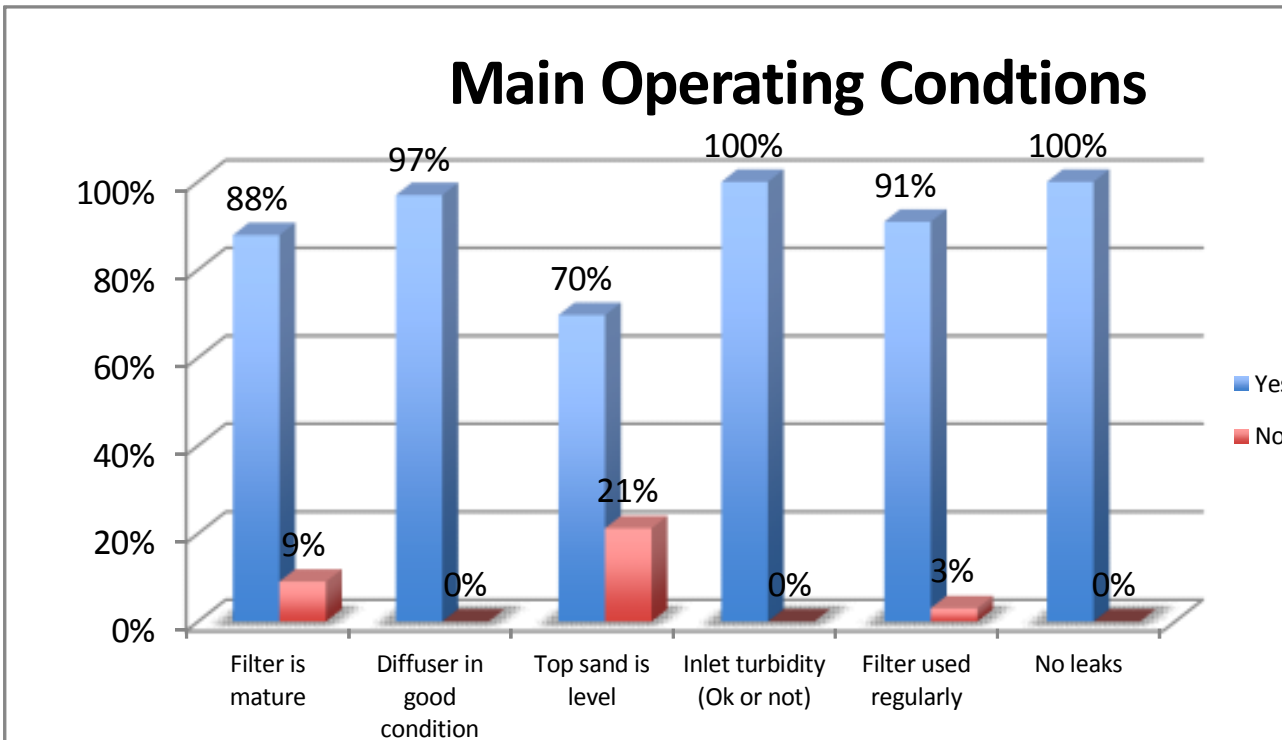

Figure 2; Observations regarding the main operating conditions of the filter

48% of the flow rates were below 0.5L/min, another 21% were between 0.5L/min and 0.6L/min and 24% *between 0.6 and .75 L/min (Figure 3)*

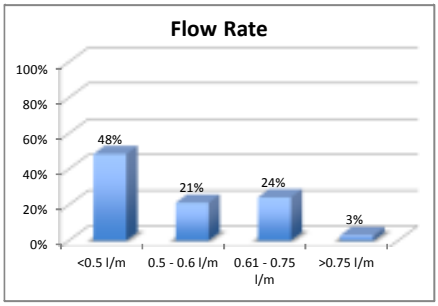

Figure 3; The performance of the filters in terms of flow rates

24% of water level above sand met the standard operating parameter of 5cm. (Figure 4) while 45% had water levels exceeding standard operating parameters.

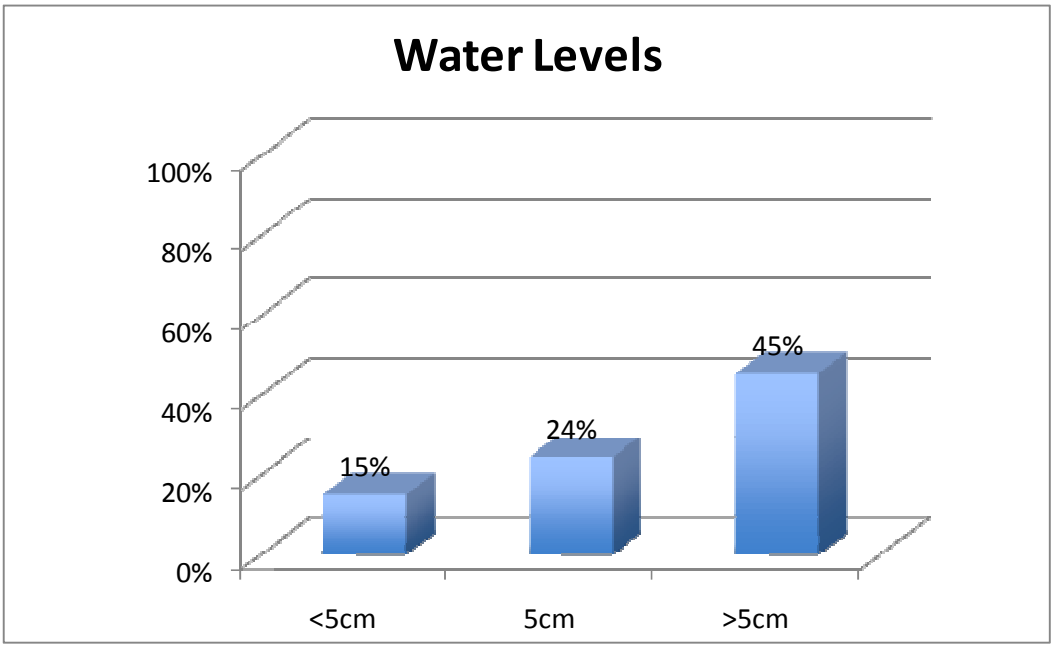

Figure 4; Diagram showing levels of standing water above sand

3.2 Current scenario

The total numbers of people using the filters visited were 249 and out of those 54 were children under 5 years old. On average, each filter serves 8 people, out of which 2 are children, the minimum number of users per filter is 2 people and the maximum is 55 people including 26 children.

The survey shows that the main water sources are tanker trucks at 85% followed by rainwater at 18%.

Results show that on average 2 jerry cans are put through the filter every day. This is about 40L of water.

Out of the informants, 76% state that they have attended the hygiene and sanitation training provided by SON/MCD.

91% of the households use different containers for collection and storage of water.

3.3 Household perspectives

100% of the informants state that they use the filtered water for drinking; they also use the water for other purposes as shown in *Figure 5* below.

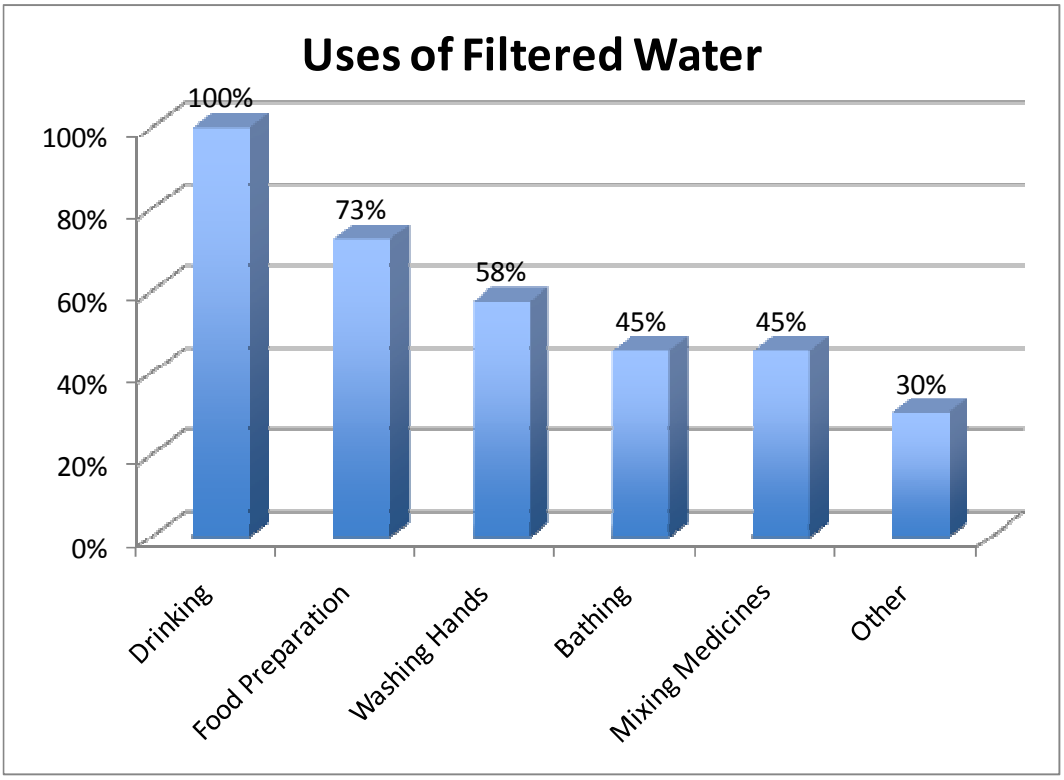

Figure5; Showing how filtered water is used in the households

36% of the informants are not treating water before putting the water through the filter; however 64% allow the water to settle before they pour the water through the filter. About 88% of the households do not do post-filtration disinfection to the water they are drinking.

In 94% of the informant's households everyone drinks the filtered water, and 91% state that they only drink filtered water.

100% of the households state that the filter produces enough water for the entire household.

97% state that they have not experienced problems with the filters.

67% have cleaned the surface of the sand.

The survey shows that 36% of the households state that their children over 10 years know how to use the filter, however only 6% of the children have received hygiene and sanitation training.

94% of the households state that they store water inside the house. To get water from the storage container, 64% use dip method, while 12% use pour method and 21% use both dip and pour methods.

3.4 User perception

The perception of most of the informants was that the filtered water has a better taste (82%) but 3% said that it tested worse. Smell (64%) and appearance (97%) was better than the unfiltered water. 85% of the informants also stated that the filtered water is perceived to have improved the family's health. In 61% of the cases they have perceived a decrease in the prevalence of diarrhea in children under the age of 5. The diagrams below summarize the statements above (Figure 6, 7 & 8).

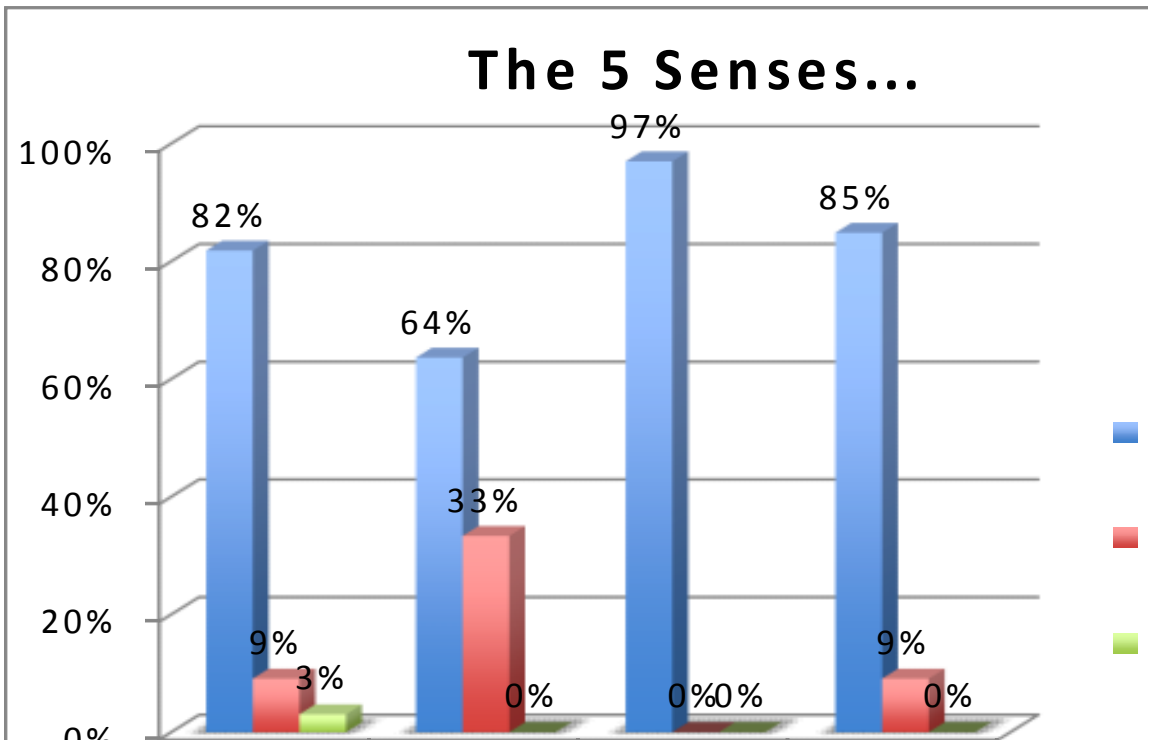

Figure 6; The diagram showing perceptions on taste, smell, look and family health.

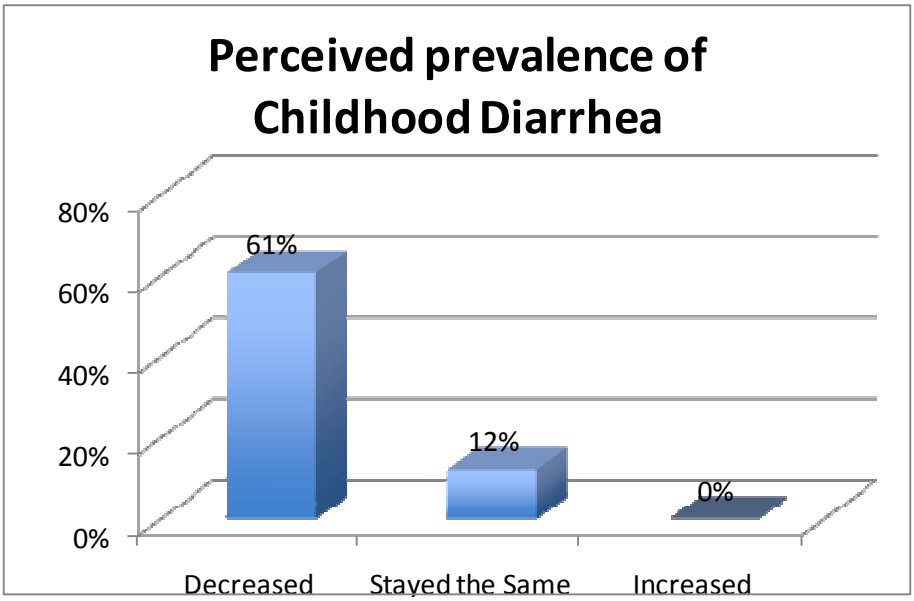

Figure 7; Diagram showing perceived prevalence of childhood diarrhea

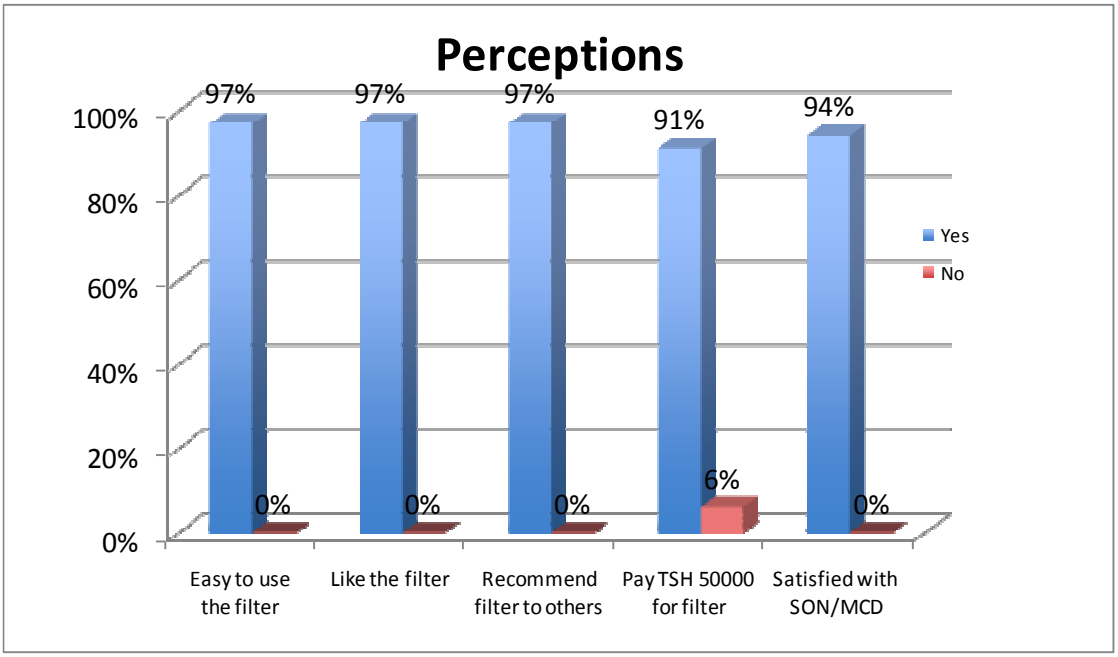

Figure 8; Diagram showing people's perceptions of the Biosand Filter.

Furthermore 97% of the informants stated that they like the filter and that it's easy to use, some of the statements were; *"It provides us with clean and safe water", "It cools water".*

97% would also recommend the filter to others and stated for example*; "It helped me", "So that they can have safe and clean water"* and *"Because I have seen the difference between shallow well water and filtered water".* There are some statements of what other people have said to them like; *"were did you find it, I would like to have one", "the water is cool".*

They are overall happy with the work of SON/MCD but when asked what they could have done better some statements are; *"More sensitization of the people", "SON/MCD has done well but should continue to impart knowledge to those that are still behind", "can do better in follow- ups".*

91% state that they would be willing to pay TSH 50000 for the filter.

3.5 Observations and measurements

In 97% of the households a storage container is present and 27% of the households use a jerry can for storage and 97% use a bucket meaning that some use both a bucket and a jerry can while others just use one of them. In 82% of the cases the container had a cover or lid. In 79% of the cases the observations showed that the containers were clean inside. 88% of the filters were located inside the house and 88% of the filters were located in good sanitary environments and none of the observations showed any food stored in the filters. 100% of the filters had no cracks or leaks and all the filters in use were covered.

3.6 Water Quality testing

The diagram below (Figure 9) is the average removal of E.Coli by the filter within the four-day testing period. The graph shows that all 7 filters are able to remove E.Coli effectively with the lowest at 82% removal efficiency.

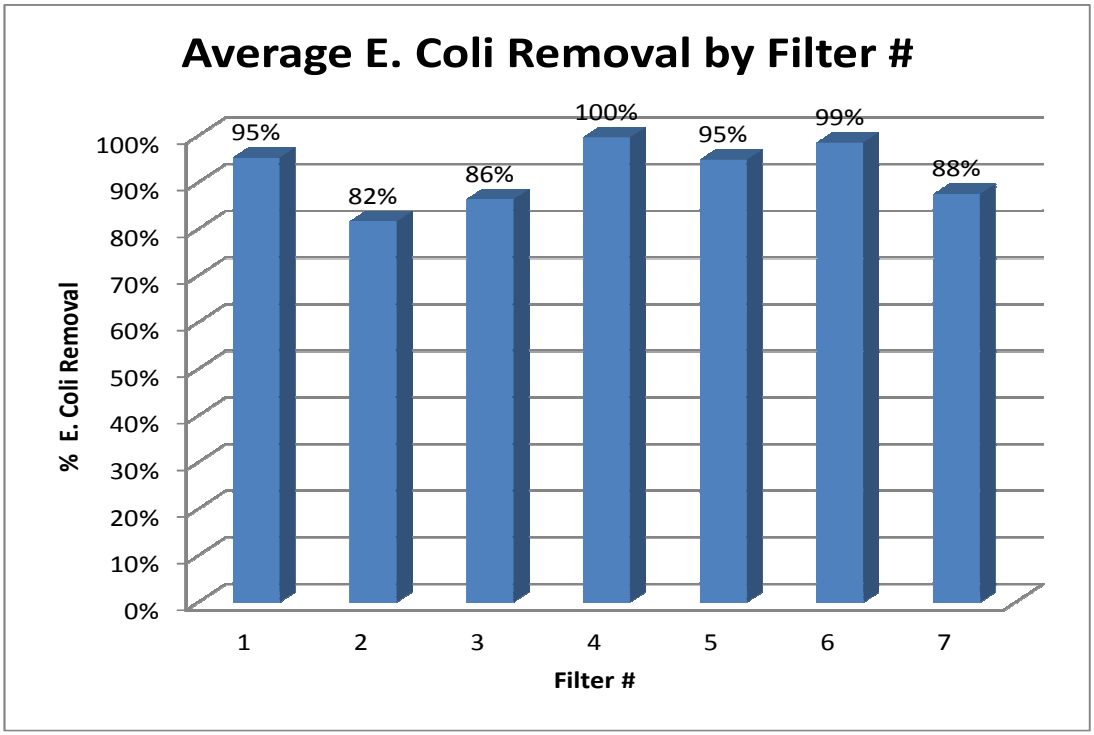

Figure 9; The average E.Coli removal efficiency of the 7 filters.

From the diagram below (Figure 10), it clearly indicates the drastic recontamination of filtered water during storage. This is likely a result of poor cleaning and handling of storage containers and the method used to retrieve water from the container, of which the survey results shows 64% of the households use the dip method and 97% use buckets for storing drinking water.

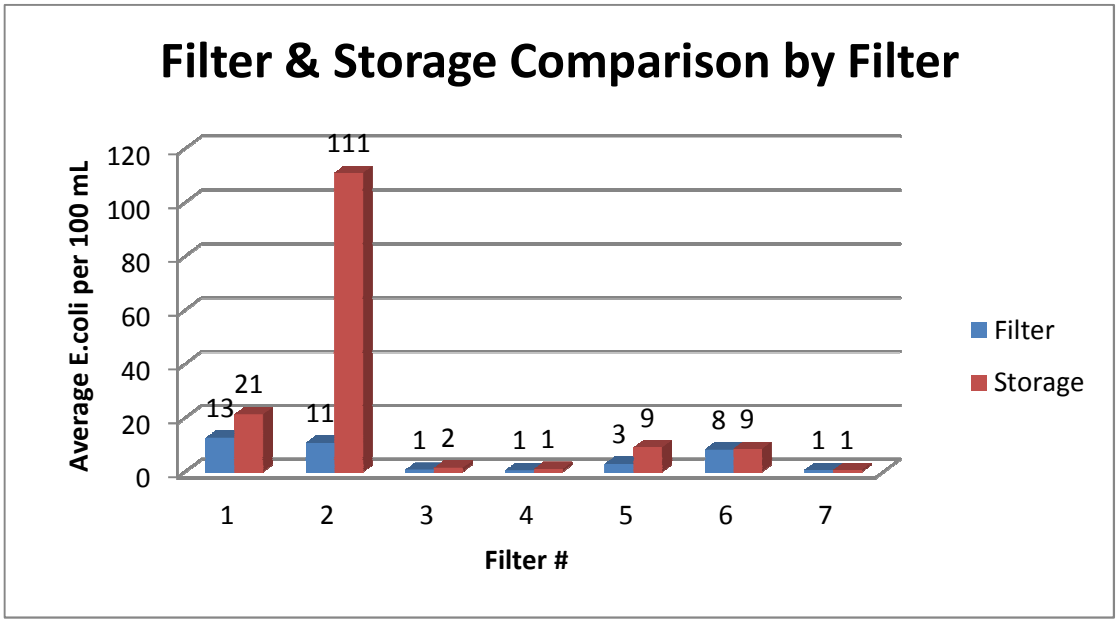

Figure 10; Comparison of E. Coli contamination in Filtered vs. Storage water

There was an overall E. Coli removal efficiency of 96% when averaging the microbiological data from all 7 filters assessed in the evaluation. The diagram below (Figure 11) shows the effective removal of E. Coli contamination and the subsequent recontamination of water in storage.

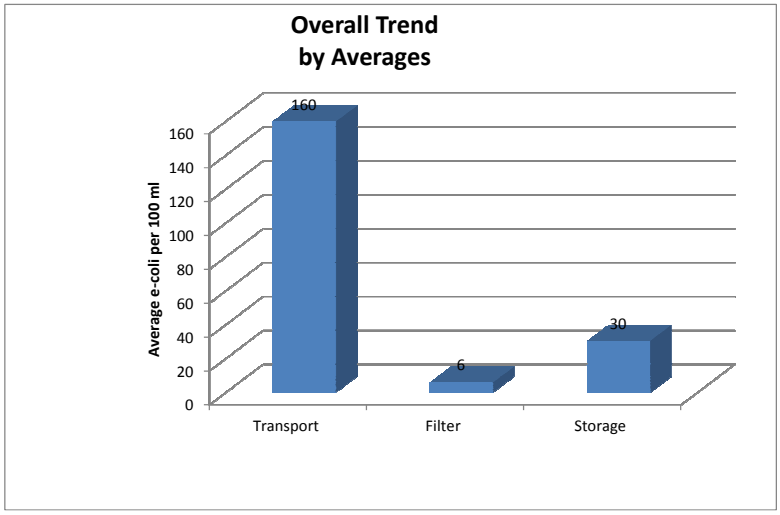

Figure 11; Overall average E. Coli contamination in all 7 filters during the 4 day test period

4.0 Discussion

- The overall perception of the filters is positive; the informants are happy with the filters and are using them.

- The laboratory test results show that the filters are effective in removing E.Coli from water. All the filters are above 82% removal efficiency which is quite encouraging and shows the importance of the filters in decreasing microbiological contamination.

- There is drastic recontamination among households due to lack of safe storage containers, i.e. clean and covered with narrow openings (jerry cans) and use of proper methods of water retrieval from these containers. Most households practice the dip method (64%) instead of the recommended pour method. This causes households to drink water with higher counts of E.Coli, thereby potentially exposing themselves to diarrheal diseases.

- Most people collect water from tanker trucks which may not be safe. This puts them at high risk of contracting diarrheal diseases as outlined above unless the water is treated.

- Most households do not treat the water after filtration perhaps because they do not have knowledge or they think it unnecessary.

- Because of the satisfaction people expressed toward the filters, 91% agreed that they would willingly pay TSH 50000 for a filter and would recommend it to others. A number of reasons were given, some of them being: "*the filter provides safe water", "the water from the filter is clear and taste good", "would like anyone to be safe from diarrhea", "the water is cool", "the water is different from the one which is not filtered", "it is very clean and good", "I used to spend a lot of money on charcoal to boil water but now it does not cost me anything to filter", "filter water comes out naturally", "the filter has changed the health of my family".*

- According to the records, 51 filters were installed; however, only 43 filters were surveyed and out of these, only 33 filters were in use, the rest were not being used. This indicates that about 15.7% of the filters could not be accessed, at least 19.6% of the filters were not in use and only 65% of the installed filters were being used consistently.

- Households stated they have been doing swirl and dump cleaning especially when the flow rate drops. Some reported doing this twice in twelve months.

- People expressed the need for SON/MCD to conduct more training on the BSF so that more can gain knowledge about the filter. People need to learn how to use the filter well when they have one at home including those with filters who have not yet been trained. This can be done better by reviewing the trainings and operation of the filter more frequently.

- Quite a number of filters had sand level problems with only 70% of the surveyed filters demonstrating a level sand surface. In addition, 45% of the filters had standing water depth above the sand at greater than 5cm, which over time could result in poor filter performance or even loss of the Biolayer.

- Those who said they encountered some problems with the filters, together with those who did not, mentioned that they would always call on SON/MCD to work on the filters. This shows that

SON/MCD has done a good job in informing households where to go when they have problems with the filters. However, there are a few who do not have contacts and do not know who to call.

- Others recommended that SON/MCD could also use the media (Television, Newspaper, Radio etc) to sensitize people in Tanzania on how important the filter is and how it purifies water. The reason is that, SON/MCD would capture a large number of people within a short time.

- There are some highlights like for filter # N-132 for Thabriel Joshua who is said to be taking good care of the filter and has compassion for the rest of Tanzanians who do not have access to safe drinking water and wishes for everyone to have a filter so they can have access to safe drinking water. This filter owner could be groomed as a filter champion within the community.

- Another highlight was a school with 50 students, 3 teachers and a cook. They all use the filter at this school and the owner of the school encourages everyone to continue using the filter and educate others on the importance of the filter.

- There were incidents where some households use storage containers for preparing food and washing dishes. This resulted in the buckets being found dirty by the enumerators.

- Others said that they are satisfied with SON/MCD after seeing that the water is safe, clean and that they have stopped getting sick.

- There was a request to make filters lighter so that it can be easy to carry them around when people in villages are moving from place to place (not a recommended practice).

- There were complaints on the inconsistency of the water supply, thereby sometimes making it difficult to get water for filtering. This is because most households rely on tanker truck supply. Hence, some resort to using water from wells though it is reported that this water is quite dirty.

- Among the households there are those who are keeping livestock like cows, chickens, pigs etc. this may be a concern for contamination especially if livestock is not penned and the storage containers are not covered or protected.

5.0 Conclusions

- 43 filters out of the 51 installed were surveyed or about 84.3% of the total number installed. 19.6% of the filters were not being used by respective households.
- 64.7% of the installed filters in the community are still in use and used according to instructions.
- Water quality test results show that the BSF's are effective in removing E.Coli from the source water; the lowest at 82% and the highest at 100% with an average removal efficiency of 96%.
- There is recontamination in storage containers despite the fact that the surveys show most households use different containers for collecting and storing the water. This demonstrates that the level of post filtration container (Safe Storage) maintenance is inadequate and more training is needed.
- Approximately 70% of the installed filters had a level sand surface.
- 45% Standing water levels were greater than 5cm and should be addressed by topping up the sand. This will also address the 30% of filters with uneven sand surfaces.
- 93% of the flow rates were less than 0.75 L/minute, the targeted level for the filter version used by SON.
- The condition of the concrete body is generally good.

5.1 Recommendations

- For future projects a baseline study should be conducted to identify the most suitable technology for the specific circumstances and ensuring that the project is starting from the community itself.
- During the construction and installation process, extensive supervision is needed to be able to problem solve issues that arise.
- Follow -up trainings should be conducted to ensure the filters will continue being used and ensuring improved hygiene regarding water storage and the value of the filter.
- Continuous monitoring should be conducted to identify issues threatening the project.
- The project should have a longer cycle to ensure that all the phases of the project will have sufficient time for implementation.

- Households should be encouraged to treat their water post filtration by some method of disinfection before drinking. This will help ensure that the water they are drinking is 100% safe.

- Champions from within the community must be identified and trained to do regular visits to households. However, they need to be empowered with resources for them to operate effectively, such as air time, phone, bicycle etc. The ideal candidates would be community volunteers who are already on the ground.

- Champions and beneficiaries should be trained on the operations of the filters; this will reduce pressure on the technicians as they will have people on the ground to assist with the work.

- Installations should be carried out by Serving Our Neighbors International and the trained champions.

- A more coordinated effort is needed to employ the best practices in the community

- There is need to involve local governing bodies and community leaders in the continuing implementation of the projects.

- For communities, it is important that ward chairpersons (or other responsible community leaders) are involved to decide who gets the filter and in developing the criteria for the selection.

- A more stringent and targeted beneficiary selection criteria should be established to avoid providing filters to tenants who are likely to move from their existing tenancy and abandoning or destroying the filter.

- There is a need to develop a follow-up schedule. This can be a month, three months and six months respectively

- All the filters with sand levels out of specifications need to be fixed. This includes standing water above and below 5cm.

- Also, all filters with flow rates which are too fast need to be addressed.

- About 70% of children under the age of 10 who are putting water through the filters have not been trained; hence the need to make sure that they are trained in order for them to filter water with knowledge about what they are doing.

- It is important to make sure that filters have been checked before leaving the factory and they are not leaking to avoid incidents of filters leaking in homes. Leaking filters discourage people from using them and reflects badly on the project. It is the duty of the technicians to make sure that this is avoided.

- It is important to conduct a follow-up on those filters which are not being used and find out from those households the reasons why they are not using these filters. If they need training, it is better that they are trained so that they may start using them. Or if for any other reasons, they just don't

want to use them, the filters should be withdrawn so they can be given to those who want to use them.

- SON should establish and document; project implementation protocols, quality assurance protocols and best practices for BSF project implementation which they can disseminate to any of the partner implementers they work with and /or provide training to.

- The process for record keeping should ensure that there are several copies of the documentation helping for an effective follow-up program.

- All the operating parameters must be checked more frequently to ensure proper functionality and efficacy.

- There is a need to develop a regimented follow-up schedule. These follow up visits should be carried out after 30 days, 90 days, and six months after installation to ensure the beneficiaries are receiving maximum benefit from the intervention.

6.0 References

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Appendix A - Questionnaire

Filter #	Installation Date:
Date of Visit:	Time of Interview:
Enumerators:	Informant's Name:
GPS Location of House:	
Community	

The following eight operating conditions of the filter must be checked before doing a water test:

Operating condition	Y/N	Measurement
1. Filter should be mature (must be more than a month).		
2. Diffuser should be in good condition and placed properly.		
3. Filter water flow rate should not be more than 0.6 litres per minute.		
4. Water level should be 5 cm (2") above the sand level.		
5. Top sand layer should be level.		
6. Inlet water turbidity level should be reasonable (less than 50 NTU)		
7. Filter should be in use and water must be added regularly (at least daily)		
8. No leaks on the concrete filter body		

A. Current Scenario

Ask For the Person Responsible for the Filter to Answer the Survey Questionnaire

1. How many households use this filter?_____

HOUSEHOLD	1	2	3	4	5	6
How many people live in this house?						
# of children under 5 yrs						

2. Have you attended the Sanitation and Hygiene Training? (the person responsible for the filter)

Yes	
No	

3. Where do you get water for filtering?

Protected Shallow Well	
Semi Protected Shallow Well	
Unprotected Shallow Well	
Canal, river or stream	
Borehole with Handpump	
Rain water	
Tanker Truck	
Other (specify)	

4. Who collects the water for your family?

	1	2	3	4	5
Girl/Age					
Boy/Age					
Female/Adult					
Male/Adult					

5. How many jerry cans of water are put through this filter every day? (from **ALL** households)

Quantity (show units, i.e. jerry cans, buckets etc):

6. Does your family use different containers for collection and storage of water?

If No Explain:

7. How many containers do you have for water collection and storage

8. how long does it take to get water?

Time to go, get water and return(# minutes for each trip)

B. Household Practices

1. How long have you had this filter?

2. What are all the purposes you use filtered water for?

Drinking	
Food preparation	
Washing Hands	
Bathing	
Mixing medicines (e.g. salves, oral rehydration)	
Other (specify)	

3. Do you do anything with the water before you put in into the filter?

Let it settle	
Coagulant (e.g. Maringa)	
Pour it through a cloth	
No	

4. How many people in this household use/drink filtered water?

5. Do family members drink only filtered water? Y/N

6. Does the filter have a rest period after each bucket has run through the filter?Y/N

7. Have you ever cleaned the surface of the sand?

No	
Yes / How Often	

8. Does the filter produce enough clean water for the entire household?

Yes	
No/Why	

9. Do the children (more than 10 years) know how to use the filter?

Yes	
No	
No children in house	

10. Have the children (more than 10 years) received sanitation and hygiene training?

Yes/How Many?	
No	
No children in house	

11. Have you had any problems with the filter?

Yes, Specify: *(What did you do?):*	
No (If you had a problem who would you contact?)	

12. Do you treat the water after filtering it?

Yes	
No	
If Yes, what treatment do you use?	

13. Do you store water in the household?

Yes	
No	

14. Do you have a safe water storage container?

Yes	
No	
If No explain	

15. Do you ever use your safe water storage container for anything else?

No	
If Yes explain?	

16. What method do you use to take the water out of the containers?

Tap	
Dip	
Pour	
Both dip and pour	

C. User's Perception

1. Tell us about the taste of filtered water – is it better, worse or the same as before you filter it?

Taste	Better	
	Worse	
	About the same	

2. What about the smell of the filtered water?

Smell	Better	
	Worse	
	About the same	

3. How does the water look after filtration?

Appearance	Better	

	Worse	
	About the same	

4. Since you started using the filter, do you think your family's health has improved, stayed the same, or become worse?

Better	
Worse	
About the same	

5. Has the number of times the children under 5 had diarrhea increased or decreased or stayed the same?

Increased	
Decreased	
Stayed the Same	

6. Is it easy to use the filter?

Yes	
No/Why? Please Explain	

7. Do you like the filter?

Yes, because:	
No, because:	

8. Would you recommend the filter to others?

Yes/Why?	
No/Why?	

9. If you had to purchase the filter, would you pay TSH50000 for it?

Yes
No

10. What have other people said to you about the filter?

11. Are you satisfied with SON/MCD regarding services and information about the filter?

Yes	
If No/Explain	

12. how could SON/MCD have done better at implementing the project?

D. Observations and Measurements (water storage, filter)

1 Storage containers present?

Yes	
No	

2. What type of containers are these?

Jerry Cans	
Buckets/Size	
Clay pot	
Sauce Pan	
Other	

3. Are the containers covered?

All
None
Some

4. Do the containers appear clean inside?

Yes	
No/ Explain	

5. BSF Filter observation

	Yes	No
Located inside the house		
Good sanitary environment where the filter is located		
Food is stored in filter		
Cracks or leaks in filter		
Other		

Other comments or observations

_____

_____

_____

_____

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Thank the Responders