Biosand Filter - Version 10
Evaluation Test Results

June, 2009

Results of Interviews

India – DHAN Foundation

First Monitoring Visit – May, 2009

Total Filters Tested = 12

1. Sources of water?

   River and boreholes via public taps & pipe connections

2. Source water clean?

   Yes = 9; No = 2; Don't know = 1

3. Quantity Used?

   Average = 42 L/day (12 gal.);

   Range = 10 - 72 L/day (3 - 20 gal.)

   (Family size averaged 4 people)

4. Time to fetch?

   0 -15 minutes

5. Number of times filter is used each day?

   Average = 2 times per day;

   Range = 1 to 3 times per day

6. Problems with filter?

   No problems = 10/12;

   Yes, problem = 2/12 (minor blockage)

7. Users know when to clean filter?

   Yes = 5/12; No = 7/12

8. Users know how to clean filter?

   Yes = 9/12; No = 3/12

Results of Interviews

India – DHAN Foundation

Second Monitoring Visit – June, 2009

Total Filters Monitored = 7*

*Filters 1 and 2 are in operation daily, but the filtered water is not yet used for drinking /cooking. Users of filter 7, 8 and 11 were not available for interview on the day of my visit.

1. Taste of Water?

   100% (7/7) reported 'Better' taste

2. Smell?

   100% (7/7) reported 'Better' smell

3. Appearance?

   86% (6/7) reported 'Better' appearance

   14% (1/7) reported 'About the Same'

4. Is it easy to use the Filter?

   Yes = 100%

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

   Yes = 100%

5. Problems with filter?

   No problems = 10/12;

   Yes, problem = 2/12 (minor blockage)

6. Did you ever require help to fix the filter?

   Yes = 2/7**; No = 5/7

   **rectified by blowing from outlet

7. How often have you had to clean the filter using the swirl and dump method?

   All reported N/A; not applicable

Results of Interviews

India – DHAN Foundation

Second Monitoring Visit – June, 2009

9. Did you like the filter?

- ✓ Yes because filtered water tastes good and appearance is very clear
- ✓ Yes, because filter water taste is better than source water
- ✓ Taste of water improved, food tastes better
- ✓ Water tasted better food cooked with filtered water is white in color, water is cool
- ✓ Filtered water is lighter than the source water, quality of water from the filter is good and rice cooked with treated water is better in colour and taste. There is no throat infection after started using filtered water.
- ✓ It gives clean water - incidence of cold has comedown
- ✓ Yes

10. Would you recommend the filter to others?

- ✓ Yes because filtered water tastes better
- ✓ Yes, because of the improvement in taste color
- ✓ Yes because No maintenance cost, tastes better
- ✓ Yes because No maintenance cost, tastes better
- ✓ Water taste better and and food cooked with the filtered water is having more self life
- ✓ We get clear water and removes germs
- ✓ Rice Cooked with filtered water is white in color

Observations of Filter

Responses for both India and Zambia (n = 21)

Is filter level?	Yes = 100%
Diffuser Plate?	Yes = 100%
Lid in place?	Yes = 100%
Is spigot attached to spout?	No = 100%
Water level below diffuser?	1 filter had water above diffuser plate
Top of sand is level?	A total of 8 / 21 filters had disturbed sand
Any cracks or leaks?	1 filter had a minor crack
Filter is working properly?	Yes = 100%

Results of Interviews

Zambia – Seeds of Hope (SHIP)

Total Filters Tested = 9

1. Taste of Water?

   6 = 'Better'; 2 = 'Good'; 1 = 'OK'

2. Smell?

   4 = 'None'; 1 = 'Good'; 3 = 'Slight smell'

3. Appearance?

   6 = 'Clear or clean'; 2 = 'Better; 1 = "Good'

4. Is it easy to use the Filter?

   Yes = 100%

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

   Yes = 100%

6. Problems with filter?

   No problems = 100%

7. Did you ever require help to fix the filter?

   No = 100%

8. How often have you had to clean the filter using the swirl and dump method?

   0x = 3; 1x = 1; 2x = 2; 3x = 2; 4x = 1

9. Why did you clean?

   4 = n/a; 2x = 'Routine'; 1x = 'Slow Flow'; 1x = 'Dirty'; 1x = 'Diffuser only'

10. Do you like the filter?

    Yes = 100%

11. Would you recommend the filter?

    Yes = 100%

Observations & User Knowledge

Zambia – Seeds of Hope (SHIP)

10 Filters Tested		
Functioning Properly?	**Operational Issues?**	**User Knowledge regarding: When and how to clean the filter**
Yes: 80%	No issues whatsoever: 30%	Yes, knows: 50%
Rather Slow: 10%	Sand disturbed: 30%	Some Knowledge: 10%
Leaking & Slow: 10%	Diffuser plate problem: 20%	No: 30%
	Water above diffuser plate: 10%	Not Available: 10%
	Filter was left dry: 10%	

Measurements:

Responses for both India and Zambia (n = 21)

Summary of all Measurements		Zambia SHIP 10 Filters	India DHAN 12 filters
Height of water:	Average = Range =	5.9 cm 5 to 7.5 cm	5.3 cm 4.5 to 7 cm
Flow rate:	Average = Range =	0.44 L/min 0.3 to 0.5 L/min	0.50 L/min 0.3 to 0.6 L/min
Turbidity - *Source Water:*	Average = Range =	5.8 NTU 0.3 to 13 NTU	Turbidity meter malfunctioned. Both source and filtered water <5 NTU
Turbidity – *Filtered Water:*	Average = Range =	0.8 NTU 0.2 to 3.0 NTU	

Conclusions

- Both the Zambia and India filters performed similarly.
- No serious flow problems were encountered with design version 10 although flow rates were lower than typical for CAWST's current design.
- Operational problems were primarily with sand disturbance/ diffuser plates (no difference with current design).
- User Knowledge regarding when and how to clean the filter was about 50% in both evaluations.
- All users (100%) in both evaluations stated they liked the filter and would recommend it – perceptions appeared to be very good in all other aspects as well.