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# BRINGING THE CONSUMER TO THE TABLE:

PERCEPTIONS AND PRACTICE OF HOUSEHOLD  
WATER TREATMENT METHODS IN NEPAL

## EXECUTIVE SUMMARY



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# **BRINGING THE CONSUMER TO THE TABLE:**

PERCEPTIONS AND PRACTICE OF HOUSEHOLD WATER  
TREATMENT METHODS IN NEPAL

HYGIENE IMPROVEMENT PROJECT

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# EXECUTIVE SUMMARY

The objective of this Point-of-Use Product Trial is to contribute to the base of formative research available to develop the national Point-of-Use (POU) Marketing Strategy, and a hygiene improvement strategy and implementation workplan for POU treatment for four selected DACAW (Decentralized Action for Children and Women) districts in Nepal.

These four districts are the focus of the USAID-funded and UNICEF-supported pilot districts, namely Panchthar, Parsa, Kapilvastu and Dang, where the hygiene activities have continued since the mid-nineties. This specific formative research component aimed to provide a hands-on consumer perspective of the general concept of water disinfection, and explore consumer perception of using four types of water disinfection methods over time, to capture perceived benefits and obstacles of use.

The trial methods included those proven efficacious in lab conditions and currently or soon-to-be-available in Nepal – boiling, SODIS (solar disinfection), colloidal silver filters and chlorination. Twenty mothers in each district were asked to try one method which was supplied to them free of cost for a period of about one month; five mothers in each district tried each method. Trained qualitative researchers visited mothers in their home approximately 3 and 30 days after the initial visit to assess immediate reactions, and then reactions and continued practice over time.

Each method was evaluated by a group of mothers with small children according to particular characteristics:

- Taste
- Smell
- Appearance



- Temperature
- Acceptability to family members
- Effort, convenience, maintenance
- Perceived effectiveness
- Perceived value

After trying one method for a minimum of one month, respondents were shown water treatment options and asked to compare “their” method with the others along the delineated characteristics outlined above. A short baseline survey, essentially an abbreviated version of the larger UNICEF baseline survey, was applied in each household at first visit to assess sociodemographic

measures, current knowledge, perceptions and practice related to hygiene and sanitation.

A fifth treatment method, the Biosand filter, was considered for the product trial, but eventually was not included for both logistic and security reasons. The size and weight of the filter made transport difficult, and suspect to mobilize throughout the districts given the precarious security situation in Nepal and the possibility of the components being mistaken for home made bombs. As a solution, researchers re-visited households from a previous filter promotion project, and talked with a small sample of Biosand filter users and households that had discontinued use and interviewed them about the likes and dislikes about that treatment method. As in the other study households, Biosand users were shown the other four treatment methods and asked to compare Biosand to those other methods, commenting on the various criteria like smell, taste, effort, and so on.

### KEY FINDINGS

All mothers participating in the study were quite willing and needed little convincing to try the water treatment method assigned to them. This was particularly noteworthy because the general finding is that most households visited do not see their water as unfit for drinking. Other studies have shown that up to 56 percent of tube well water had fecal contamination (Arsenic Testing Study in the Terai, 2003) and the 2001 DHS survey documented hygiene and storage practices that guaranteed further contamination of water at the household level. Actual contamination at point of first contact was assessed, and many but not all water samples collected prior to method use were contaminated.

Households were overall successful in using the various techniques to treat water. On the second visit, the majority tested clean, indicating householders success at using the method. This was true for all methods but the CS filter, which actually showed a slight increase in disinfection. It is assumed but not proven that water still testing positive for coliform and e-coli after treatment was from secondary contamination, although researchers have no evidence that water was ever effectively treated.

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Respondents across all districts noted the following characteristics of water that was “good and fit to drink”:

- Clear
- Free of turbidity, visible dirt and/or sand and to a lesser extent:
- Free of bugs and insects
- Absent of (objectionable) smell
- Cool water was also a highly desired attribute, though not necessarily tied to water that was “fit” to drink.
- Virtually no one expressed any sense of “microbial” or bacterial contamination (not the words per se, rather the concept of matter in the water that might cause illness) when considering the need to treat water. Likewise, few attributed diseases in general or diarrhea in particular to unfit water; rather most to “stale” food. While some significant number responded that drinking clean water could help to avoid diarrhea, this was not a predominant concept for most participants.

The respondents were not able to comment and give their opinion on the attributes of drinking water easily especially concerning the water’s appearance and texture. The researchers had to probe with specific words and note respondent opinions after respondents were given descriptions such as slippery and oily texture.

After baseline measure, when researchers explained that the method left with them (and on the final visit when all methods were explained) would get rid of bacteria and invisible, disease-causing matter in the water, participants appeared to grasp this concept of ‘contamination’, and valued the benefit of making the water “healthier” for their

family. They repeated this benefit throughout the interviews, both at second and third visits.

Demonstration prior to assigning the method was enough to learn to adequately use the assigned method, and for the most part, proper use was maintained over the one-month study period. Most respondents anticipated on first visit that they would be able to use the method easily, and this opinion persisted over the monthlong trial. During the one month observation period, few adaptations or modifications of the treatment methods were seen among the respondents, despite the study methodology design, which invited problem-solving and method adjustment to increase desirability and ease of method use. This lack of barriers to use, perceived difficulties, or dislikes of methods was actually a surprising finding, as researchers had anticipated greater resistance to incorporating a routine of treating water. The few modifications made or observed are outlined in the last section of the summary.

Without considering the cost of purchase or use, the most popular method across all districts was the CS filter for its ease of use, followed by chlorinating water. The other two methods, SODIS and to a less extent boiling were satisfactory to consumers. Serious concerns arose, however, about the efficacy of the CS filter based on the level of contaminated water after treatment with the CS filter. Questions remain about the efficacy of the CS filters and it will be important to determine whether problems are with the filter systems themselves or with secondary contamination associated with improper filter maintenance.

Most common dislikes of the methods included the warm temperature rendered by boiling, SODIS, and to a much lesser degree, perceived to be from chlorination.

Some respondents found the smell of chlorination to be problematic, although none discontinued use because of the smell. Interestingly, smell rather than taste of chlorination was more commonly mentioned as disagreeable. Smell was mentioned to a lesser extent with other methods.

Other barriers included the receptacle size, or rather the limited amount of water that could be disinfected at one time, and the time needed to disinfect another “batch.” This was true for all methods except for SODIS, where households were given an adequate number of bottles to disinfect the household’s supply of water. The portability of the SODIS bottles was a perceived benefit of this treatment method.

While participants had little previous practice storing water and particularly storing water or “letting it sit” overnight, little resistance was encountered in storing SODIS or the CS filter treated water.

All respondents said that they had shared their one-month method use experience with their neighbors and were overall quite positive about the new water treatment methods introduced to them.

Discontinuation of treatment method was almost exclusively attributable to method malfunction or running out of supply. Method malfunction was observed more in the cases of SODIS (weather conditions) and the CS Filter (broken filter candle or candle nut).

While most all study participants continued their method use over the entire trial period<sup>1</sup>, anecdotal evidence suggests that they did not exclusively consume disinfected water over the study period, rather supplemented the treated water with their ‘regular’ water. Certainly, with the exception of solar disinfected water, which is disin-

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<sup>1</sup> In Panchthar, researchers were unable to return to most homes within 30 days due to the security situation. As a result, chlorine users had run out of their 30-day supply and therefore technically “discontinued” use, though for no reason other than lack of supply and unavailability of product in the commercial market.

fectured in its own portable container, no participants carried treated water to drink outside the home.

Researchers noted a lack of a second vessel for treating and storing water as an obstacle to easy treatment with all methods other than the CS filter. Lack of furniture or objects to lift the CS filter from the ground to access the tap was an initial obstacle that was easily resolved by householders (often with researcher assistance) by raising the filter on a platform of bricks or similar material.

Other findings include:

- Respondents perceived SODIS (solar disinfection) as a relatively easy method of water disinfection, but did not particularly “like” it as it was dependent upon sun, and couldn’t be used in all weather conditions. Many reported general lack of availability of bottles that could present a barrier to method use. The research team also reported unavailability of bottles at study locations. Even among the respondents, using bottles for drinking water was not a common practice. Many respondents using SODIS were eager to try a different water treatment method, preferably a method that could be used throughout the year and not be dependent on sunshine. No respondent expressed any reservations about drinking water that had stayed overnight, nor of the perceived effectiveness of “solar” disinfection even on a cloudy day.
- Respondents liked the ease and convenience of the CS filter, and their reported commitment to continue to use of the colloidal silver filter was high. The CS filter was the method most preferred among all the others across a range of attributes. It was also the least preferred with reference to the filter’s affordability. During the study period, however, participants found the filters themselves to be delicate and a number experienced problems with the candles. Households that stopped using the CS filters had all done so because their filters no longer ‘functioned.’ Problems included “shedding” clay from chips in the candles, color “bleeding” into the upper filtration bucket, leaking taps, and broken connector screw

knob or candle. Field workers observed inconsistent quality and flow rate of candles. Lastly, water from three-fourths of all filters tested positive for contamination. All filters were confirmed functional before being given to respondents, so we can assume high rates were due to either ‘fatal’ damage occurring somewhere after testing or secondary contamination due to some unidentified reason. These product issues are of concern, and must be resolved before this method can be widely promoted.

- Most mothers using chlorination accepted the method well. They reported the method to be easy to use. However, most respondents reported the smell of the disinfected water to be ‘not good.’ Most respondents said they are willing and able to pay for the method at its market price. Across the range of water attributes, chlorination was the second most preferred treatment method after the CS Filter. However the respondents were more comfortable with the price of chlorination to that of the CS filter.
- Most respondents reported boiling to be an easy process to disinfect water. It was, however, the least preferred water treatment method. Boiled water was said to be warm and not pleasant to consume, particularly during the hot summer months. It was found to be unappealing to family members. The respondents did not comment on the reduced time required for boiling water in this “new” recommended boiling technique, which instructed that water was disinfected at the sight of the first big bubble.

This is most probably attributable to the fact the householders adhered to the previous recommendation of bringing water to a hard boil for 3-10 minutes.

Among the BioSand filter current users and drop outs, the flow rate seemed to be a concern for all; and all were well aware of the filter’s benefits, but the effort and the patience needed to collect water was cited as the major reasons as to why some of them opted to discontinue use.

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