

Process to make Bio-Sand Nadi filter at house hold level

1. Introduction & Background:

Water is an essential ingredient to support life on Earth. A primary concern for the people living in the developing countries like Pakistan has always been of having good quality water for domestic use. On one hand, the availability of water is becoming scarce to meet the demands of rapidly growing population and on the other; the quality of water is deteriorating rapidly due to the contamination of available natural water resources by municipal, industrial and agricultural pollutants. A safe and reliable year round drinking water supply remains a problem as effective filtration and disinfection are beyond the financial means of the community.

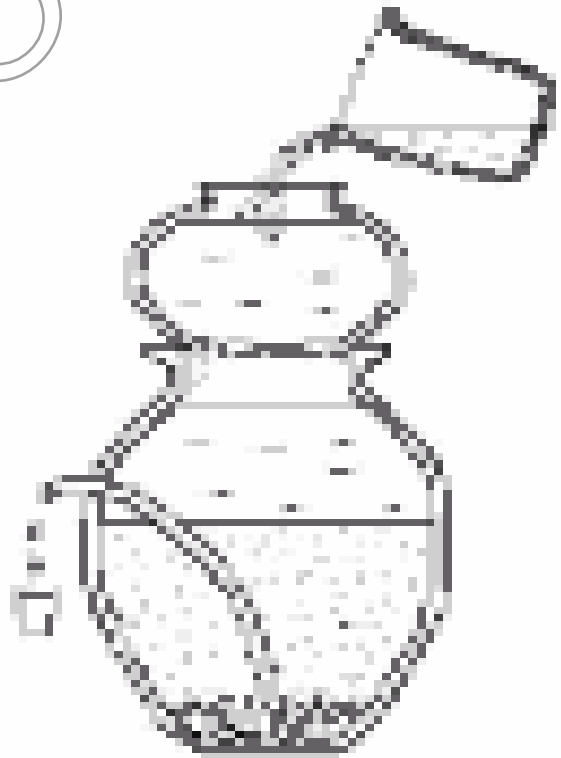
Nadi Bio-sand Filters presented by the Association for Humanitarian Development (AHD) is a cheap and easy to use filter, primarily intended for household use. The filter consist of Nadi Mutca, Sand, Cement, Mesh in three sizes, Plastic pipe. The design of the filter is simple and the materials reburied to construct the filters are easily available. These filters can be maintained easily. A schematic design of the filter is shown in the figure.

2. Material required / procurement

1.	32- 34 inch Nadi	150Rs - 200Rs
2.	*20 inch Nadi	80Rs - 120Rs
3.	Mutca	40Rs - 50Rs
4.	Sand	20Rs - 50Rs
5.	Pipe	45RS - 65Rs
6.	Cement	20Rs - 30Rs
7.	String	25Rs - 30Rs
8.	*Bricks	20Rs - 25Rs

Total 400Rs - 570Rs

Typically 500Rs * Non-essential Costs



3. How it is made Steps to make Nadi filter at village level

Nadi & mattaka procurement



Making hole in Nadi & Mattaka



Viewing, cleaning 40 kg of sand for filter



Washing sand with water till it is clean



Putting big stones first and then small ones and in the last sand



The sand is placed 4 inches below the plastic pipe



Nadi filter ready/prepared by family



The high quality safe & clean water available at household for whole family



4. Effectiveness & High Quality Drinking water

The filter provides an ideal home for the following helpful biology:

- Threadlike algae
- Plankton
- Protozoa
- Bacteria

“Good Microbes”

They effectively remove **Viruses** including

- Faecal coliform
- Cholera
- Typhoid fever
- Amoebic dysentery

“Good Microbes”

They effectively remove **Parasites** including:

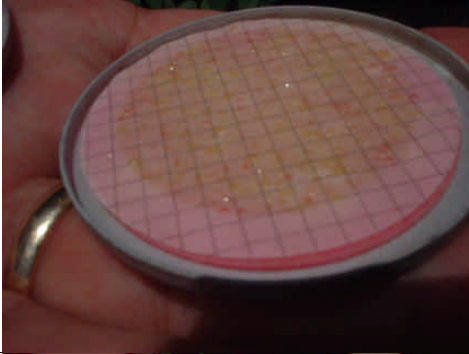
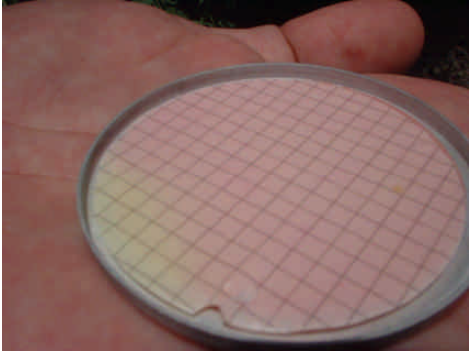
- Giardia
- Cryptosporidium

“Good Microbes”

They effectively remove **Chemicals** including:

- Iron
- Manganese
- Hydrogen Sulphide
- Toxins
- Pesticides
- Herbicides
- Heavy metals
- Bacteria
- iron/sulphur bacteria (slimy deposits)
- Silt and Sediments
- Algae

“Good Microbes”

	Lab tests on local canal water show 320 Thermo-tolerant Faecal Coliform (T.F.C) per 100ml
	Tests on the same water after passing through a Nadi Filter show typically only 1 T.F.C per 100ml

5. Sustainability

Only with the foundation of Primary Health Education will people make changes that last. This foundation can only be seen to be in place when the filters are made by the people themselves. When people act upon information it reinforces it.

When people do the right things for the right reasons then development is meaningful and sustainable.

Those who make their own filters are much more likely to fix them if they break or stop working

Those who are helped from outside will look to outsiders for help.



6. Cheap & Locally available every where

One mound of sand is required (40Kg) which must be sieved into 4 sizes and washed in a bucket of water. Three pieces of mesh of different gauges are used to sieve the sand into the 4 sizes. When the filter slows up and needs cleaning simply take out and wash the top 2 or 3 inches of sand in a bucket and replace it to the previous level.



Women are enjoying the safe drinking water through Nadi filter units installed at their household level which also improve their health through prevention from the dangerous waterborne diseases of their family as whole.

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