

Technology: The technology involved is not tremendously complicated; it is a perfectly natural process and requires no chemical additives.

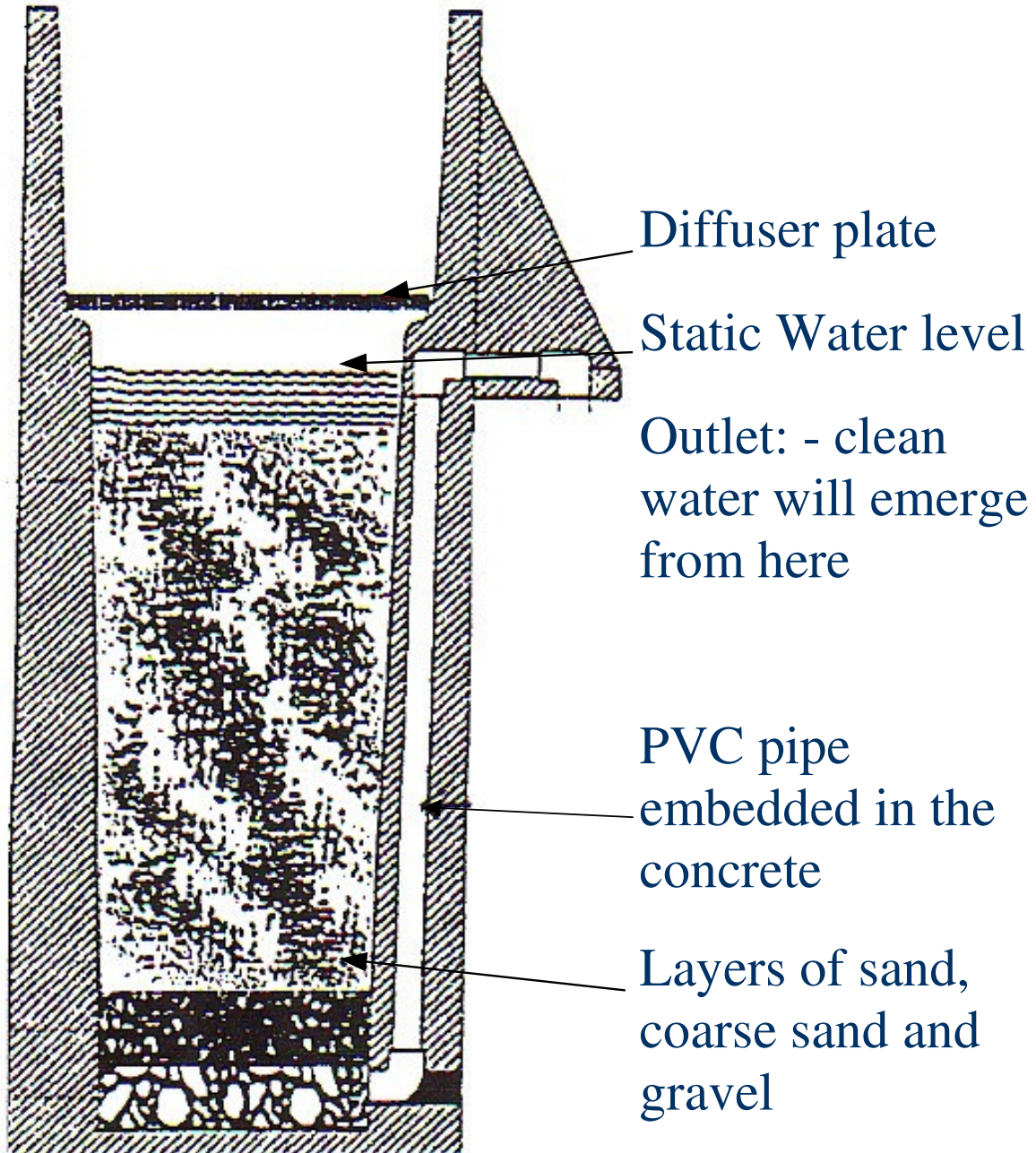
The sand filter consists of a concrete vessel approximately 90cms high x 30cms across. (Some are square in section but a cylinder is a more efficient shape). Inside the filter are 5cm layers of gravel and sharp sand and, a 48cm layer of finer sand.

Water from wells, dams and rivers in rural areas is very contaminated with bacteria which will cause diarrhea, cholera or typhoid if you don't boil it. The water however, also contains some beneficial bacteria which eat the harmful bacteria.

As water passes through the filter, all the bacteria becomes trapped in the sand and the good bacteria eat the bad bacteria. The longer you feed the sand filter with dirty water, the larger the colony of good bacteria will become until they form a "biological layer" of sufficient size to eat all the bad bacteria. This usually takes around three to four weeks, after which the water passing through the filter is clean enough to drink without any further treatment such as boiling.

The World Health Organisation have said: *"No other single treatment process can effect such an improvement in the physical, chemical and bacteriological quality of normal surface waters as that accomplished by biological (slow sand) filtration."*

Water Filter Section



Frequently Asked Questions:

1. Why is the outlet at the top and not the bottom of the filter?
 - Because the “biological layer” must be kept wet at all times or else the good bacteria will dry out and die.

2. What is the diffuser plate and what is it for?
 - The diffuser plate is a metal plate with dozens of small holes in it so that when you pour water into the filter, you don’t “bomb” the “biological layer” and kill the good bacteria.

3. What is the rate of flow through the filter?
 - Ideally, the flow should be approximately 1 litre per minute. If the sand becomes clogged up with silt and other fine material, this may reduce the flow, but allows more time for the filtration process to take place.

4. How long will a filter last?
 - The filter construction is very strong and the concrete section will last a lifetime. If the sand gets clogged up, it may eventually need to be replaced, but pouring water into the filter through a muslin cloth should prevent this for many years.

5. How much water can you put through a filter in a day?
 - The best way to use a filter is to put a consistent amount of water through each day so the balance between the good bacteria in the “biological layer” and the bad bacteria in the water is maintained; but this can be almost any amount – certainly enough for the needs of a large extended family.