BioSand Filters in Thailand

In the mountainous region in the south east of Thailand the supply of clean drinking water is still a major challenge. The villages in this region are not connected to the existing water supply system.

Usually, the available water is contaminated with parasites, bacteria, germs and viruses. Above all, children are in danger to fall sick.

Currently, clean water is produced by BioSand Filters, of which around 1,000 have been installed in people's homes by the RainTree Foundation until December 2014. People do not have to boil water any more, the use of wood and the exposure to smoke has been reduced considerably.

The BioSand Filter is small (see image on the right), about 1 m tall, 0.3 m wide on each side. The fiter container is made of concrete, it is filled with layers of gravel and sand, starting at the bottom with a 12 mm layer of rough gravel, followed by a 6 mm layer of fine gravel, then a 0.7 m layer of filtration sand where micro-organisms treat the water. A diffuser protects the biolayer from being damaged when the water is poured into the filter. The water is cleaned and filtered by gravity only, water is poured into the filter in the top, flows through the sand and then the gravel and conducted through an outlet tube.

How will the germs be eliminated?
A biological community of bacteria and other microorganisms grows in the top 2 cm of the sand. These eat many of the pathogens in the water. Remaining pathogens will be removed by the filtration sand because of missing oxygen and nutritive material.
Single cell organisms, bacteria and fungi are almost removed, as well as virus. Moreover, suspended solids and iron is reduced.

About 12 to 18 liters of clean water can be obtained (maximum capacity 150 liters a day). Any kind of water can be used in the BioSand Filter, well water, borehole water, pond or river water, tap-stand water or rainwater.

One BioSand Filter can be installed and people instructed to use it for about 50 to 70 Euros.