Low cost fluoride removal filters [Discussion paper]

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Low cost fluoride removal filters


The top of the filter media is covered with 5 cm thick layer of coconut shell charcoal.

A reasonably good removal of fluoride can be obtained in 4-5 hours time retention in the filter. This time suits our cultural pattern in the rural society where they could use this water for cooking activities. The best results could be obtained if water is fed and withdrawn in 24 hour intervals.

During this 60 days period of operation about 640 litres of high fluoride water was fed and withdrawn. The fluoride level of defluoridated water at end of 60 days was 2.0 mg/1. The chemistry of burnt clay is in the form of Silicates Aluminates and Hematite. When this is soaked in water for several hours it could turn to oxyhydroxides of iron, aluminium and silica. At this stage hydroxyl ions exchanges with the fluoride ions in water. This filter provides a very appropriate cost effective medium to remove fluoride from groundwater thus achieving VLOM status.
Figure 2. Defluoridation Vs time for low temperature burnt clay - retention time 8 hrs