

**LOW COST DEFLUORIDATION OF WATER
USING SERPENTINITE FILTER MEDIUM**

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By

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Abstract

The presence of excess fluoride in ground water has become serious problem in Sri Lanka and other countries. Thus purification of fluoride polluted water is paramount importance. Serpentine has been recommended for use in the defluoridation of drinking water in developing countries.

Parameters relating to fluoride (F) sorption characteristics in filtering medium are unclear. This study assesses the suitability of Sri Lankan serpentine rock as an inexpensive defluoridator using kinetic batch experiment and reveal the chemical structure of serpentine mineral under the HCl treated fluoride medium and untreated fluoride medium using molecular dynamic simulation. Study of the serpentine rock based on Indikolapeelassa area.

Based on batch tests, the rate and capacity of F uptake were highest with the 4mm to 3.3 mm particle size range. Based on batch tests, the rate of F uptake were highest with lowest particle size, rate parameter was $0.000062 \text{ L/mgh}^{0.5}$. Capacity of the serpentine was measured by using Langmuir isotherm best value 9.014 mg/g . for the 4mm-3.3mm size range. Its initial sorption kinetics was dependent on particle size, and the lowest sorption rate was observed with particle 4mm-4.5mm sizes range. These findings suggest that the lower size of Serpentine was the most efficacious for use in defluoridation of drinking water.