

Phosphate Loading Prevention Qualities of Biodegradable Filters for Septic Use

Youd, Beatrice (School: F J Turner High School)

This study uses simulated septic effluent leaching into sandy soils similar in composition to those located in the Cape Cod area of Massachusetts to identify the orthophosphate (PO_4^{3-}) filtration abilities of biodegradable materials with phosphate filtration potential. Materials tested include: 1.) chitosan, 2.) pistachio shell, 3.) pine chip, 4.) hickory chip, and 5.) coconut fiber. These materials are tested against the control of a typical septic system leach field without any added filters. Research on these various materials states that they have filtration characteristics which may make them suitable for PO_4^{3-} absorption projects. This study employs a distilled water-sodium phosphate solution, which, when dissolved becomes an orthophosphate. The results of this experiment help determine whether the tested biodegradable materials are effective in filtering significant amounts of PO_4^{3-} out of water and contribute to defining the filtration properties of these various materials. Findings may be used to improve the ecology of populated, non-sewered coastal environments. This material analysis may also contribute to future engineering projects on leach field filters.

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