Phosphate Loading Prevention Qualities of Biodegradable Filters for Septic Use

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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 (PO4 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 PO4 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 PO4 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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