Crustacean Filtration: Removal of Radionuclides using Chitosan Filtration from Different Sources

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Numerous locations throughout the United States are reporting the presence of radon and uranium in their drinking water, particularly in households with well water drinking sources. Areas in aquifers are beginning to deteriorate, releasing elemental solids into the drinking water that can lead to dangerous presences of radioactive substances. The focus of this research is to produce a filter out of multiple sources of chitosan to remove radionuclides from drinking water. To conduct this experiment chitosan was produced from crab, shrimp and crayfish sources, and tested in a square bottomed filter. Water with known radionuclide contamination was filtered through the chitosan and then the filtrate was tested through a spectrophotometer with a dye that illuminates' radionuclides, and was then tested for pH change, reduction in Total Dissolved Solids and general visual reduction in particulates. The crab chitosan was most efficient in reducing particulate matter and radionuclides followed by shrimp, while the crayfish was not as efficient. The filter design needs to be reworked to work in conjunction with the chitosan to be implemented in household well inputs.

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