**Global Challenges/Chemistry Solutions**

**Supplying Safe Drinking Water: “Miracle tree” substance produces clean drinking water inexpensively and sustainably**

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Today’s solution uses the seeds of the “miracle tree” to produce clean drinking water. The water-treatment process requiring only tree seeds and sand could purify and clarify water inexpensively and sustainably in the developing world, where more than 1 billion people lack access to clean drinking water, scientists report.

Removing the disease-causing microbes and sediment from drinking water requires technology not always available in rural areas of developing countries. For an alternative approach, scientists looked to *Moringa oleifera*, also called the “miracle tree,” a plant grown in equatorial regions for food, traditional medicine and biofuel. The research appears in ACS’ journal *Langmuir*.

Here’s the study’s lead author Stephanie B. Velegol, Ph.D., a researcher at Pennsylvania State University:

*“Past research showed that a protein in Moringa seeds can clean water. One approach creates water that could not be stored and the other approach* *is too expensive and complicated. We wanted to develop a simpler and less expensive way to utilize the seeds’ power.”*

To do that, they added an extract of the seed containing the positively charged Moringa protein, which binds to sediment and kills microbes, to negatively charged sand.

*“The resulting ‘functionalized,’ or ‘f-sand,’ proved effective in capturing lab-grown* E. coli *and damaging their membranes. The f-sand was also able to remove sediment from water samples. The results open the possibility that f-sand can provide a simple, locally sustainable process for producing storable drinking water.”*

**Smart Chemists/Innovative Thinking**

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