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New water filter: Nanomembranes can keep bacteria out

By Boonsri Dickinson | Feb 22, 2011 | **2** Comments

Water filters on the market today can't always stop bacteria from passing through. The problem is a structural one. It's hard to get the pore sizes to align properly, leaving room for the pathogens to slip right on through.

But researchers at the University at Buffalo have developed a method that might get around the issue: the membrane that is made out of pores that are 55 nanometers in diameter.

Water molecules are smaller than bacteria, so water molecules go through the filter while the harmful bacteria are kept out.

The pores self-assemble into a uniform membrane. The two polymers would normally repel each other. But when they are mixed together, they can form an alternating pattern.

Buffalo's professor Javid Rzayev said in a statement:

> These materials present new opportunities for use as filtration membranes. Commercial membranes have limitations as far as pore density or uniformity of the pore size. The membranes prepared from block copolymers have a very dense distribution of pores, and the pores are uniform.

To date, it's the largest nanomembrane made this way... perfect for letting water molecules fall through the filter.

Separately, researchers at Stanford University have tried to filter bacteria out of water too. Unlike the filter above that relies on structures, this filter doesn't attack the bacteria

physically. It actually lets the bacteria pass through, killing it as it slips through its electrical field.

“This really provides a new water treatment method to kill pathogens,” Stanford engineering professor Yi Cui said in a statement. “It can easily be used in remote areas where people don’t have access to chemical treatments such as chlorine.”

Other scientists don’t think a filter is necessary, hoping a hydrodynamic separation system can do the dirty work.

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