

A Better Way to Clean Water

Removing Contaminants Using Wood Fiber Filters

The Problem—Through agricultural and other activities, runoff and surface water can become contaminated with phosphates, nutrients, and other contaminants. These contaminants can accumulate as runoff collects in larger bodies of water, causing problems in aquatic systems and possibly contaminating drinking water supplies.

A New Solution—Researchers at the USDA Forest Service, Forest Products Laboratory (FPL) have developed a filter system made from wood and wood-based fiber that is showing great promise in cleaning contaminants from water.



The filters are made from different types of readily available wood material and other agricultural materials. These filters are not only showing promise in cleaning phosphates and nutrients from agricultural runoff, they are also being tested in cleaning acidic heavy metals from acid mine discharge (AMD), pesticides and phosphates from cranberry production, and oils and other contaminants from nonpoint source pollution such as runoff from highways, parking lots, and urban areas. And, these filters are available, inexpensive, recyclable, biodegradable, and sustainable.

An Interesting Twist—In the Wayne National Forest in Ohio, rainwater runoff flowing over mine tailings from former mines is contaminating surface water with acidic heavy metals. FPL's wood fiber filters are being used to clean these contaminants from the AMD. In an interesting development, FPL researchers discovered that the filters removed from the AMD site contained highly acidic particles that can capture phosphates at other sites. The researchers are using the discarded filters from the mine sites to clean up agricultural runoff phosphates in the New York City watershed. The city's watershed is located in the Catskill region of New York State and is home to many farms.



Other Benefits—Not only are these filters promising for cleaning contaminated water, but there are other benefits as well. The wood fiber for the filters can be processed from material that needs to be cut to improve forest health. Also, juniper fiber appears to be one of the most effective at removing contaminants, and juniper needs to be cleared from the land in the West. Creating a marketable product for this fiber will increase the demand for juniper. Another benefit is that iron and aluminum oxide are created as by-products of the AMD cleanup. These products can also be used to clean phosphates from contaminated water and could have commercial value in this role.

