



## Reining in Runoff

*Affordable treatment system uses wood by-products to filter pollution from stormwater runoff*

### Challenge

When stormwater runoff washes over the landscape, it collects a variety of pollutants and carries them into streams, rivers, and coastal waters, where they threaten the health of people and ecosystems. So great is the problem, the Clean Water Act now demands that communities with populations of 100,000 or less implement stormwater management plans that protect water quality.

Traditional stormwater treatments like swales and retention ponds remove some pollutants, particularly the sort that sticks to sediment. Yet, studies show that they don't do a good job of removing contaminants that remain dissolved in runoff. To stay afloat, municipalities need new stormwater management solutions that are sustainable, affordable, and effective.

### Response

CICEET-sponsored researchers at the University of Rhode Island are spinning "straw" into a low cost solution. The scientists are using wood straw, created from byproducts of timber processing, as a filter media for organic and inorganic pollution dissolved in stormwater runoff.



*The last straw for polluted runoff? This treatment uses wood straw to remove dissolved contaminants from stormwater.*

The straw is compressed into mats about four inches thick. These mats are arranged in stacks in a concrete casing that is 12 feet long, five feet wide and six feet deep. Once the casing is buried in the ground, runoff enters the system through a pipe, filters through the mats, and funnels out through a pipe at the other end. The wood fibers in the straw curl together in a way that allows water to pass through freely, without clogging and causing the system to overflow. In lab tests, the straw removed 90 percent of dissolved contaminants, particularly polycyclic aromatic hydrocarbons (PAHs). Recent tests in the field have yielded similar results.

The use of wood byproducts makes the technology affordable, and the filter system is designed to facilitate integration with conventional stormwater treatments. Researchers currently are testing the long-term effectiveness and maintenance needs of the system.



*Stormwater runoff carrying nonpoint source pollution is the single greatest threat to water quality nationwide.*

### Impact

This stormwater treatment can be installed underground, expanding its geographic range and usefulness. Researchers anticipate that it will be available by 2008, after conclusion of their current field demonstration and publication of the filter operating manual.

Researchers are collaborating with the USDA Forest Product Laboratory in Madison, Wisconsin, to test the system using other wood byproducts, such as the bark and branches left behind after logging operations.

They also are exploring the commercial potential of the technology through partnerships with two companies: American Excelsior, which manufactures the wood straw mats integrated into the system, and Contech Stormwater Solutions, a company that develops industrial and commercial stormwater treatment solutions.

### Learn more

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