



Tribune/Eric Barker

Krista Kinsey, a University of Idaho senior from Wallace, Idaho, checks a gauge on a biological filter at the Potlatch Corp. pulp and paper mill in Lewiston. A group of seniors from the university's biological engineering department has been working with Potlatch and another company to develop a filter that uses micro-organisms to treat air pollution.

Bitsy bugs could be clean air's best bet; UI students work with Potlatch and a Portland firm to clean up the air

Eric Barker

Potlatch Corp., a Portland, Ore., company and a group of University of Idaho students are working on a pilot project that could result in the use of micro-organisms to control air pollution. The students, all seniors majoring in biological engineering, have been running a small plant tucked away in the labyrinth of pipes at the company's pulp and paper mill in Lewiston as part of a senior project.

The plant is basically a filter made by Bio Reactions Industries of Portland that is filled with various micro-organisms. A small portion of gases collected from the Potlatch pulping process is routed through the filter. The micro-organisms, or bugs, are supposed to eat the gas, in this case methanol, and convert it to carbon dioxide and water. The idea of using micro-organisms to treat pollution is not a new one, but their use at pulp mills is.

The company was looking to set up a pilot plant to see if it would work. It needed a company willing to let it set up a plant and also run the thing on its property. Potlatch had the space and the pollution, but not the manpower. That's where the students came in. For the past several months, Michael Koelsch of Idaho Falls, Robert Steadfeld of Boise, Trish Gardener of Moscow and Krista Kinsey of Wallace, Idaho, have traveled to Lewiston two to three times a week and donned hard hats, safety glasses and ear plugs to monitor the plant, take samples and send data to Bio Reactions in Portland. Environmental engineering officials at the mill and the students say the pilot plant is producing promising results. "So far we have had better than 90 percent removal in the samples," said Gardener.

The concept is similar to compost, and many of the same organisms that break down yard waste into compost are used to treat the gas stream. The filter is filled with several types of organisms. Those that like the food available in the waste gas thrive and multiply, those that don't, perish. "They acclimate to the environment," said Koelch.

Roy Kasper, senior environmental engineer at the mill, says if the process works it could save companies like Potlatch a considerable amount of money. The gasses are now incinerated. That process is expensive, takes natural gas to power and puts the mill on precarious footings. Since the waste gas stream is fed to the incinerator, the entire operation has to be shut down if the incinerator goes off line. A costly proposition for a plant that operates 24 hours a day. There is also the downside of additional pollution created in the process. "Whenever you burn anything, you are creating greenhouse gases," said Sue Somers, environmental engineering manager for the mill at Lewiston. Greenhouse gases created by human activity have been linked to global warming. The bugs produce water and carbon dioxide, also a green house gas but much less of it than the incinerating process.

According to Jim Boswell of Bio Reactions, the filter should last five to seven years and takes only a two small water pumps to operate. "It's a lot cheaper and from a biological ecosystem perspective it's a more sustainable technology," he said. The students say the experience had given them valuable insight on how industry works. "This suited us well in that it's a combination of engineering and microbiology and a bit of chemistry and that is a good description of our major," said Gardener. One of their professors says they have learned lessons that are difficult to teach in the classroom. At the mill they have to deal with safety precautions and be mindful of the bottom line. "It's really valuable to get students out with industry instead of in a lab," said Chuck Peterson, professor of Biological and Agricultural Engineering. "It's very difficult for us to produce industry circumstances."

The students are graduating this spring, but Kasper and Boswell hope to recruit others to continue the testing. Kasper said if the bio filtration system works, the company may be interested in purchasing a unit that could treat all of the gas. Beginning in 2006 federal regulations will take effect that require the Potlatch to capture more high-volume low-concentration gasses from its pulping process.

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