Researcher looking for nano environmental footprint

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Greg Goss

(PhysOrg.com) -- University of Alberta biological sciences professor Gregg Goss is on the front line of a new effort to monitor the effects of nanomaterials on the environment.

Goss will help lead a team of 19 researchers from across the country in a three-year study of the toxicity of nanomaterials in aquatic environments.

Nanomaterials are the microscopic bits of material that help strengthen products or make them more efficient. Silver nanoparticles, woven into sweat socks to kill bacteria, are a nanotechonology product on the

market right now. But no one knows what effect those silver nanoparticles will have on the water system when they come out in the wash.

"Everything winds up in the water eventually," said Goss.

Goss explains that nanomaterials are very different from mainstream technology. "Today, if a company releases a chemical, we can go out there and measure it," said Goss. "But with nanomaterials, once they're released, we can't measure it."

To get out in front of the analysis of nanomaterials Goss says the research team will work with companies as they produce new products. "The problem with nanomaterials is that classic toxicity tests may not be appropriate," he said. "We have to figure out what existing tests work, and develop some new tests."

Goss expects government regulatory agencies will be adjusting their rules as the nanomaterials industry grows and he sees a role for his research group as communicators.

"We'd like to see a co-ordinated response where one set of toxicity tests can be shared by Canada, the United States, Europe and other producing nations."

Goss shares the leadership role in the program with researcher Geoffrey Sunahara at the National Research Council's biotechnology lab in Montreal. The $3.39 million program is funded by the U of A, NRC, Natural Sciences and Engineering Research Council of Canada, the National Institute for Nanotechnology and Environment Canada. Private sector companies involved include VIVE Nano, Golder Associates and HydroQual Laboratories.

Goss says it's difficult to imagine what nanotechnology won't be used for. He uses an old television commercial produced by a multinational chemical company to describe the future of nanomaterials. "Remember those BSAF ads that said, 'We don't make things. We make things better,'" said Goss. "That's essentially what nanotechnology is going to do."

Goss predicts many areas of daily life will benefit from nanomaterials, which includes more sustainable world travel. "It's going to make stronger steel so commercial aircraft are lighter and fly further on less fuel."

Fortunately Goss believes 99.9 per cent of nanomaterial products will be found to be completely benign. Finding the downside will be the challenge. "We're set to identify problem nanomaterials and prevent them from getting out into the market. That's our job."

Provided by University of Alberta (news : web)

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