

College Campus News

[EXPERTS DATABASE](#)
[TOP NEWS](#)
[ON CAMPUS](#)
[ADDITIONAL RESOURCES](#)
[EDITORIALS & COMMENTARY](#)

What Happens to the Rubber That Wears Off a Car's Tires? Bucknell University Chemistry Professor Investigates Environmental, Health Impacts of Tire Wear Particles

LEWISBURG, Pa., Nov. 19 (AScribe Newswire) -- Alison J. Draper, an assistant professor of chemistry at Bucknell University, Lewisburg, Pa., is doing research where the rubber meets the road - literally.

She's investigating the environmental and health impacts of automobile tire wear particles. As automobile tires move along a road, tiny particles are worn off, and can end up in the air and in nearby waterways. Draper previously did research on diesel exhaust, but says that tire rubber is "much more interesting chemically," containing heavy metals like zinc and cadmium, hydrocarbons, latex, and sulfur-containing compounds.

Draper's research is not yet complete. But so far her findings include preliminary but solid evidence that tire wear particles may have negative impacts on small organisms in water habitats. Airborne tire particles may also aggravate respiratory problems in human beings (such as asthma or allergies).

Draper's method has been to make up clean samples of water like those inhabited by several kinds of aquatic organisms - algae, duckweed, daphnia (water fleas), fathead minnows, and snails - and under controlled laboratory conditions, put finely ground tire particles into the samples. By letting the particles remain in the water for 10 days and then filtering them out, she created a "leachate" that included substances in the tire rubber. All the organisms exposed to the leachate died, and the algae died fairly quickly.

Draper is also working on determining the levels of tire rubber chemicals in water that cause sub-lethal effects, such as reproductive problems in the snails and pre-cancerous lesions in the minnows. Draper's work so far has been performed in a lab, under controlled conditions, but she says there's "good evidence" that tire rubber may have similar effects on similar organisms living in real waterways along real roadways.

An environmental chemist with a doctorate in toxicology (University of Kansas Medical Center, 1996), Draper is also the Clare Boothe Luce Professor of Environmental Chemistry at Bucknell. She says there's good evidence from the chemistry of tire rubber that it also has the potential to cause asthmatic and/or allergic-type reactions. "We're only at the very beginning of that investigation. But, given the chemicals in tire rubber and given how readily they leach out, we can expect a respiratory response [in human beings]," she says. "It depends on the levels of the chemicals and the level of exposure - certain people will be more susceptible than others."

Draper's research started humbly, with an old tire that came from her father's 1981 Chevrolet Malibu and was already on the refuse heap. "My father was about to throw it out," Draper recalls, "and I said, 'Wait!' " Now she uses tire tread particles supplied by a company in Mississippi, already ground up, and consisting of mixed tire brands.

Contact Information: Alison J. Draper, 570-577-3676; adraper@bucknell.edu
ajanesch@bucknell.edu
 Bucknell University
Sending Institution:
Story Date: 2002-11-19T10:04:23
Keywords: Medicine, Science, Environment, Automobiles - Automotive, Epidemiology, Public Health, Chemistry, Research