MedicalXpress

Exposure to air pollution particles at mountaintop mining sites may lead to cardiovascular dysfunction, study finds

October 10 2012

A published study by researchers at the West Virginia University School of Medicine and School of Public Health is the first of its kind to suggest that exposure to air pollution particles from mountaintop mining sites may impair the blood vessels' ability to dilate, which may lead to cardiovascular disease.

Air pollution particulate matter consisting largely of sulfur and silica was collected through a vacuum system within one mile of an active mountaintop mining site in southern West Virginia. Adult male rats were exposed to the air particles, and, 24 hours following the exposure, their blood vessels' ability to dilate and function normally was significantly reduced.

"This is the first study of this kind to directly associate mountaintop mining air pollution with a lack of vascular function. West Virginians who live near mountaintop mining sites are exposed to comparable levels of air pollution, and, with pre-existing health conditions in West Virginia, certain populations are pre-disposed to cardiac distress," Tim Nurkiewicz, Ph.D., associate professor in the WVU Department of Physiology and Pharmacology, said. "It is going to be foreseeably worse for those individuals who live near mountaintop mining sites."

This is the first of a series of translational studies, and the second phase of the study will be to examine specific bodily organs that are affected

or stressed by mountaintop mining air pollution exposure, Dr. Nurkiewicz said.

More information: Knuckles, T. et al. "Air pollution particulate matter collected from an Appalachian mountaintop mining site induces microvascular dysfunction". *Microcirculation*.

Provided by West Virginia University