

## Atmospheric Nanoparticles Impact Health, Weather Prof Says

February 28, 2010 | [Featured Topics, Research](#) | [No Comments](#)

Nanoparticles are atmospheric materials so small that they can't be seen with the naked eye, but they can very visibly affect both weather patterns and human health all over the world – and not in a good way, according to a study by a team of researchers at Texas A&M University.

Researchers Lin Wang, Renny Zhang, Alexei Khalizov, Jun Zheng, Wen Xu, Yan Ma and Vinita Lal in the Departments of Atmospheric Sciences and Chemistry say that nanoparticles appear to be growing in many parts of the world, but how they do so remains a mystery.

Their work is published in the current issue of "Nature Geoscience" and was funded by the National Science Foundation and The Welch Foundation.

The team looked at how nanoparticles are formed and their relationship with certain organic vapors responsible for additional growth.

"This is one of the most poorly understood of all atmospheric processes," Zhang says. "But we found that certain types of organics tend to grow very rapidly. When this happens, they scatter light back into space, and that definitely has a cooling effect – sort of a reverse 'greenhouse effect.' It can alter Earth's weather patterns and it also tends to have a negative effect on human health."

Persons with breathing problems, such as those who suffer from asthma, emphysema or other lung ailments, can be at risk, he notes.

Zhang says the team used new methods of measuring nanoparticles and formed new models to determine their impact on atmospheric conditions.

"These changes on our weather systems appear to be the most dramatic consequences of these nanoparticles," he adds.

"Once these form, they can change cloud formations, which in turn can affect weather all over the world, so this can become a global problem to deal with. We're trying to get a better understanding of these particles work and grow.

"They can form near areas that have petrochemical plants, such as Houston, which also has high amounts of aerosols from traffic emissions and other numerous factories. But we're still trying to learn how they form and interact with the atmosphere."

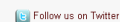
Many types of trees and plants also contribute to the formation of nanoparticles, which are natural processes, Zhang says, and certain forms of organic materials can also speed up the development of the particles. But all of these ultimately affect the atmosphere, and very often, cloud formation, where the aerosols scatter light and radiation back into space and provide the "seeds" of cloud droplets and development.

"These nanoparticles are very small – about one million times smaller than a typical raindrop," Zhang says. "But what they do can have a huge effect on our weather."

Contact: Renny Zhang at (979) 845-7656 or Keith Randall, News & Information Services, at (979) 845-4644

About research at Texas A&M University: As one of the world's leading research institutions, Texas A&M is in the vanguard in making significant contributions to the storehouse of knowledge, including that of science and technology. Research conducted at Texas A&M represents an annual investment of more than \$682 million, which ranks third nationally for universities without a medical school, and underwrites approximately 3,500 sponsored projects. That research creates new knowledge that provides basic, fundamental and applied contributions resulting in many cases in economic benefits to the state, nation and world.

**Share and Enjoy:**



### COMMENT ON THIS ARTICLE

Name

Email

Website