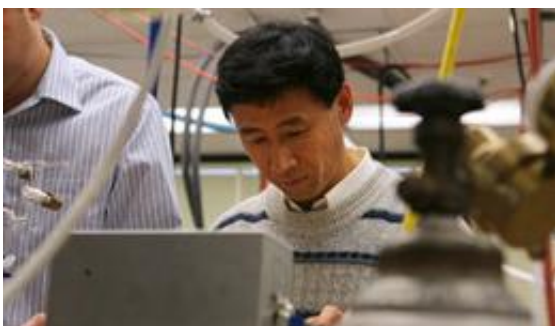


Atmospheric Nanoparticles Impact Health, Weather Prof Says

March 1 2010



(PhysOrg.com) -- 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 Renyi 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."

Provided by Texas A&M University

Citation: Atmospheric Nanoparticles Impact Health, Weather Prof Says (2010, March 1)
retrieved 25 April 2024 from
<https://phys.org/news/2010-03-atmospheric-nanoparticles-impact-health-weather.html>

This document is subject to copyright. Apart from any fair dealing for the purpose of private study or research, no part may be reproduced without the written permission. The content is provided for information purposes only.