

# NEWS RELEASE

Media Contacts: Dr. Viney P. Aneja, 919/515-7808 or viney\_aneja@ncsu.edu  
Paul K. Mueller, News Services, 919/515-3470 or  
paul\_k\_mueller@ncsu.edu

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## **First-of-Kind Study to Analyze Air Quality of Animal Farms**

### FOR IMMEDIATE RELEASE

Atmospheric scientists will soon help clear the air around the complex issue of large animal farms in North Carolina and their effects on their neighbors.

A U.S. Department of Agriculture (USDA) grant for nearly \$500,000 was awarded last week to a team led by Dr. Viney Aneja, professor of air quality at North Carolina State University, to study ammonia and hydrogen sulfide emissions from animal farms in North Carolina – the first USDA grant to investigate air-quality issues associated with the animal-feeding operations.

USDA Undersecretary Rodney J. Brown presented the grant to Aneja and his NC State colleagues at the Environmental Protection Agency (EPA) offices in Research Triangle Park. The \$479,818 grant is part of \$5.1 million in competitive grants being awarded to 11 institutions to study air- and water-quality issues.

USDA representation and the EPA location of the award underscore the importance of this research, which builds on NC State's ongoing efforts to make animal-feeding operations both environmentally responsible and economically viable.

According to Aneja, who will serve as principal investigator and project scientist, previous studies of the contained animal feeding operations (CAFOs) have focused on soil and water contamination. "The levels of ammonia and hydrogen sulfide linked to CAFOs don't, by themselves, violate current EPA standards, so scientific scrutiny has been elsewhere," he said. "But we believe that these gases may combine to form a regulated substance called fine particulate matter, or PM<sub>fine</sub>, and that's what we'll be studying."

The team will work directly with the N.C. Environmental Management Commission, which is responsible for implementing regulations to protect air quality.

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As CAFOs have become increasingly subject to state and federal regulations, said Aneja, both industry groups and scientists see the need to develop improved emission inventories and to better understand emissions related to gases, odor and particulate matter.

“Using on-site chemical and physical measuring devices, we’ll quantify the atmospheric sources and sinks of ammonia, ammonium, hydrogen sulfide and PMfine compounds,” Aneja said. “Our findings will be incorporated into a comprehensive regional air-quality model, and we’ll disseminate our results to agribusiness, regulators and concerned citizens through a series of local meetings, workshops, fact sheets, news articles and links to Web sites.”

Dr. John C. Fountain, head of the Department of Marine, Earth and Atmospheric Sciences (MEAS) in the College of Physical and Mathematical Sciences (PAMS) at NC State and co-principal investigator for the study, said that the three-year project has research, extension and education goals.

“This is a multi-institutional, multidisciplinary team of air-quality, agricultural and environmental scientists,” Fountain said. “In addition to our scientific findings, which may help modify regulations and policies, we’ll also use the research for new undergraduate and graduate courses in agricultural air quality and the transport, dispersion and diffusion of air pollutants. Short-course versions will be offered to stakeholder communities, as well.”

NC State, through PAMS, the College of Agriculture and Life Sciences (CALs) and other campus groups, plays a leading role in North Carolina’s efforts to make CAFOs both profitable and “green.” The university received a \$15 million grant in 2000 to coordinate the identification and development of better technologies for hog-waste treatment – an agreement involving the state, Smithfield Foods and NC State – and another \$2.5 million from a similar agreement with the state and Premium Standard Farms. That work continues.

In addition, the Air Quality Research Group in MEAS, headed by Aneja, has conducted research funded by the EPA, the N.C. Department of Environment and Natural Resources (DENR) and other state and federal agencies.

Aneja and his colleagues have reported on ammonia emissions from swine-waste lagoons in the *Journal of Geophysical Research* (May 2002); and described the relationships among ammonia, acid gases and fine particles for the *Journal of the Air & Waste Management Association* (May 2004), among numerous other projects and publications. Aneja has also analyzed ambient air quality in national parks for the National Park Service.

The atmospheric scientist, whose department is based in PAMS, will work with Fountain and with Greg Jennings, the associate director of the N.C. Water Resources Research Institute in CALs.

The team also includes Dr. Rohit Mathur, of UNC-Chapel Hill’s Carolina Environmental Program, and Drs. S. Pal Arya, Dev Niyogi and William Showers, all of MEAS;

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Dr. Wendell Gilliam, from NC State's Department of Soil Sciences; and Dr. Philip Westerman, from the Department of Biological and Agricultural Engineering at NC State.

As the citizens of North Carolina have learned, the tantalizing aroma of frying bacon necessarily involves other, less appetizing aromas, and both animal farmers and their neighbors downwind deserve to have air- and water-quality policy based on sound, painstaking science. This most recent USDA award to NC State should help clarify those prevailing winds of change.

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