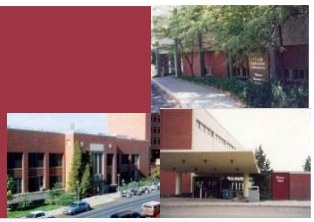
Civil & Environmental Engineering

Washington State University



AIR AND WATER RESOURCES SEMINAR

DR. VINEY P. ANEJA

Department of Marine, Earth and Atmospheric Sciences
North Carolina State University

Dr. Viney Aneja is Professor and Co-Director for Graduate Programs in the Department of Marine, Earth, and Atmospheric Sciences at North Carolina State University, where he has developed one of the nation's leading agricultural air quality and climate research programs. He serves on the US EPA Board of Scientific Counselors (BOSC) Executive Committee, and as Chair of the BOSC Subcommittee for Air, Climate, and Energy research. He is a past member of the U.S. Agricultural Air Quality Task Force; the US Environmental Protection Agency's Science Advisory Board Environmental Engineering Committee; the Integrated Nitrogen Committee; the Committee on Hydraulic Fracturing; the EPA's Science Advisory Board Panel on Estimating Air Emissions from Animal Feeding Operations; and the North Carolina Governor- appointed Task Force on Hazardous Materials. He has also served as a Director of the Air and Waste Management Association, and Chair of the AWMA Education Council. He is a Fellow of the Air and Waste Management Association and recipient of the Frank A. Chambers Award; the Lyman A. Ripperton Award; the 2007 North Carolina Award in Science; and the Distinguished Alumnus Award from the IIT in Kanpur, India. Dr. Aneja has published over 175 scientific papers, 127 book chapters and conference proceedings scientific papers, 47 technical reports, 5 US patents, and two books on his research. He has directed 8 post-doctoral fellows, 14 doctoral dissertations, and 41 masters' theses.

IS NITROGEN THE NEXT CARBON?
The Role of Agriculture on Air Quality and Climate

Agricultural air emissions produce significant local, regional and global impacts, such as odor, particulate matter (PM) exposure, eutrophication, acidification, climate effects, exposure to toxics, and pathogens. Excess reactive nitrogen threatens the quality of air, soil, and water, with implications for human health and the environment. Most important in the US are ammonia (where agriculture accounts for ~90% of total emissions), reduced sulfur (unquantified), $PM_{2.5}$ (~16%), PM_{10} (~18%), methane (29%), nitrous oxide (72%); and odor and emissions of pathogens (both unquantified). Reactive nitrogen inputs in the US and the world have been increasing, largely due to human activities associated with food production and fossil fuel combustion. Despite the obvious benefits of a plentiful supply of food and energy, the adverse consequences associated with the accumulation of reactive nitrogen in the environment are large. Nitrogen pollution poses an even greater challenge than carbon, because once a new reactive nitrogen molecule is created, it can, in sequence, travel throughout the environment contributing to major environmental problems, i.e., the nitrogen cascade. There is a need for an integrated nitrogen management strategy and new policies that cover these concerns, while simultaneously challenging the scientific community to continue quantifying the benefits of nitrogen mitigation.

Date: Monday April 3, 2017
Place: PACCAR 202
Time: 4:10 p.m.—5:00 p.m.