FRESNO STATE
California State University, Fresno

Environmental Seminar Series Presents:

The Air We Breathe: Ozone, Particles, Radicals, Molecules from Trees and Molecules from People

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Date & Time: Thursday, March 6, 2003, 5:00 PM
Location: Smittcamp Alumni House

(Reception: 5:00PM – Lecture: 5:15 PM)

This program is open to all members of the professional, educational, and research communities. It is sponsored by: the Department of Earth and Environmental Sciences, with a grant from the College of Science and Mathematics. For additional information, please contact the Earth & Environmental Sciences Department office at (559) 278-3086 or email vengieb@csufresno.edu.

Parking restrictions will be relaxed in Lot V (at Shaw and Woodrow Avenues) between 4:30 and 7:00 PM for seminar participants. An online campus parking map is located at: http://www.csufresno.edu/univrelations/map/Default.html.

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ABSTRACT

After an introduction to air pollution its effects on human health, we will discuss several studies of the chemistry of unsaturated hydrocarbons. These reactions are responsible for generating radicals during day and night, and for generating particles. Formation of smog requires three ingredients: sunlight, oxides of nitrogen, and hydrocarbons. Smog forms where the meteorology is right--or wrong, you could say--in that pollutants are trapped and react before they can be diluted. Free radicals are the vehicles--or intermediates-- needed to make smog form. Some reactions produce large quantities of these radicals and can speed up the formation of smog. The efficiency of some reactions compared to others at forming smog forms the basis of *Reactivity Based Controls*. We have investigated the direct formation of hydroxyl radicals from the reactions of ozone with alkenes, finding that the reactions of O3 with anthropogenic and biogenic alkenes are shown to be an important, and mostly unaccounted for, source of radicals in many urban and rural settings during both day and night. These same reactions have been put forth as a potential source of the secondary organic aerosol that is a contributor, and possibly the most toxic contributor, to particulate pollution. We have also been investigating formation of organic acids and organic peroxides from these reactions in aim to begin to unravel the rather uncertain pathways that form secondary organic aerosol.