

# The Sixth Annual Harold I. Schiff Lecture Faculty of Pure and Applied Science

Presented by:

**Dr. Jochen Rudolph**

Institut fuer Atmosphärische Chemie  
Forschungszentrum Juelich, Germany

on:

## **Biomass Burning: An Important Source for Atmospheric Pollution on a Global Scale**

**Tuesday, December 10th, 1996  
3 p.m.**

**Senate Chamber, North 940, Ross Bldg.  
York University**

**Abstract:** On global scale biomass burning is one of the most important sources for a number of trace gases which are of high relevance for the global climate as well as for the chemistry of the atmosphere. The global carbon dioxide budget is mainly influenced by the carbon released due to permanent deforestation, however for other trace gases the total amount of biomass burnt has to be considered. This includes, in addition to deforestation, the burning of agricultural wastes, grassland and bush fires as well as the use of fuel wood for domestic fires, in many developing countries the most widely used energy source for heating and cooking. For some of the emissions there is a direct impact on the global climate (e.g. carbon dioxide, methane, soot particles).

But an important impact of many emitted compounds is via the chemistry of the atmosphere. A number of substances, e.g. the methyl halides, act as source gases for stratospheric chlorine and bromine and thus affect the stratospheric ozone layer. Other emitted compounds such as carbon monoxide, hydrocarbons and nitrogen oxide, influence the chemistry of the troposphere, especially the budget and distribution of tropospheric ozone. There is strong evidence that biomass burning has a severe impact on the concentration of ozone in large parts of the tropic and subtropic troposphere. In this presentation an overview of the most important types of biomass burning and the resulting emissions of trace gases will be given. Some examples for the impact of biomass burning on the tropospheric trace gas budgets and distributions will be given. One of the most important aspects is the impact of biomass burning on tropospheric ozone. The quantitative understanding and modeling of the ozone formation in plumes from biomass burning critically depends on the knowledge of the composition of the emissions as well as of the dilution and dispersion processes. The content of reactive hydrocarbons in the emissions has a substantial impact on the efficiency of the ozone formation in biomass burning plumes.

*Organized by the York Centre for Atmospheric Chemistry*

*For further information please contact Carol Weldon, 736-5410 or [carol@unicaat.yorku.ca](mailto:carol@unicaat.yorku.ca)*