THE 19TH ANNUAL HAROLD I. SCHIFF LECTURE

FACULTY OF SCIENCE AND ENGINEERING

Presented by:

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Air Quality Across Large Temporal and Spatial Scales

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Senate Chamber, N940, Ross Building

York University

Abstract: When considering air quality we often limit our thoughts to a particular place at a particular time, usually the present. The goal of this talk is to provide a wider temporal and spatial context for our considerations. Temporally, photochemical smog (i.e. ozone pollution) in Los Angeles has been the subject of research and control efforts for five decades. The progress that Los Angeles has made will be reviewed, and the temporal trends of ozone and other pollutant concentrations there will be compared with those from other metropolitan areas of the world. This review may usefully inform air quality policy decisions in developing cities throughout the globe. On the broadest spatial scale, the limited available data sets indicate that "background" ozone at northern mid-latitudes increased substantially over the past century, and this increase continues today. Current global chemical transport models cannot accurately reproduce the observed trend, indicating that our understanding of the tropospheric ozone budget is incomplete. A significant component of particulate matter observed locally also has been transported on intercontinental scales. On regional spatial scales, transport between adjacent urban areas or air basins can be quite important. Consequently, as local air quality standards are tightened, long-range and regional transport of "background" concentrations contribute an increasing fraction of allowable pollutant concentrations for both ozone and particulate matter, and the "background" concentration may be increasing, particularly for ozone. In summary, effective control strategies for local air quality must encompass local, regional and hemisphere-wide scales and consider changing "background" concentrations as well as changing local emissions.

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