ATS 621, Fall 2012

Instructions for Project

Project Proposal

This consists simply of your proposed topic, a sentence or two about the particular theme / scope, and a listing of 2 references to be used. References must be within last 5 years. **Please submit by October 17.**

Abstracts

Submit a final abstract **on or before Monday, November 26**

(a) abstracts may be two pages in length (not longer!)

(b) You must use at least 3 approved references in your research (not more than 5 years old)

(c) for the abstract, please follow format attached, *except* you may include figures, tables, etc. Use 10 to 12 point font, 1 inch margins. Include all references (which must be cited in the abstract somewhere) and especially make sure to cite the source of any figures included. Use JGR format for references (see example, and AGU website for others: http://www.agu.org/pubs/AuthorRefSheet.pdf

(d) please make it as informative as possible - try to summarize your research and the important points you will make in your presentation

(e) I will copy and distribute all of the abstracts to the class

(f) ***** grading of the abstract for content and for adherence to format will constitute part of the final grade for the project *******

Presentations

Presentations will begin **Monday, December 3**

(a) each person will have 15 minutes (including time for questions) to present their research

(b) content of the presentation, including depth of research and understanding, will form major part of the grade

(c) effectiveness of presentation will also constitute a (minor) part of the grade (rehearse your talk!)

(d) please plan to use PowerPoint or Acrobat. Let me know early if this present a problem.

DEMONSTRATION OF A TECHNIQUE TO ESTIMATE INDIVIDUAL, DAILY VALUES FOR THE AMBIENT AND NONAMBIENT COMPONENTS OF TOTAL PERSONAL EXPOSURE TO PARTICULATE MATTER

William E Wilson, Stefanie Ebelt, Michael Brauer National Center for Environmental Assessment, U.S. Environmental Protection Agency, Research Triangle Park, NC; Environmental Science and Engineering Program, Harvard School of Public Health, Boston, MA; Department of Medicine, University of British Columbia, Vancouver, BC, Canada

Total human exposure (*T*) to particulate matter (PM) may be divided into two major components: (1) exposure to ambient PM while outdoors plus exposure while indoors to ambient PM that has infiltrated indoors (ambient exposure, *A*) and (2) exposure to nonambient PM due to indoor sources and personal activity or personal cloud sources (nonambient exposure, *N*). For epidemiology using panel studies with measurements of individual health outcomes, it is desirable to know total, ambient, and nonambient exposures as well as ambient concentrations. A data set from a panel study in Vancouver, BC, Canada, that contains measurements of total personal exposure and ambient concentrations of both PM2.5 and sulfate, provides sufficient information to estimate daily, individual values of ambient and nonambient exposure to PM2.5, and ambient exposure to PM10-2.5 and PM10. The technique requires the assumption that either there are no indoor sources of sulfate, or if such sources exist a correction may be made, and the assumption that some information is available on the values of the penetration factor (*P*) and the deposition or removal rate (*k*) for the PM mass or composition fractions of interest. This technique is based on the equilibrium mass balance model which relates ambient exposure (*A*) to ambient concentration (*C*), i.e., A = yC + (1-y)(Pa/[a+k])C, where *y* is the fraction of time spent outdoors, and *a* is the air exchange rate. Also A/C = {y + (1-y)(Pa/[a+k])}= the attenuation factor. In the Vancouver panel study, subjects kept activity diaries so it was possible to estimate individual, daily measured values of the fraction of time spent outdoors (*y*). Since $T = A$ for sulfate, $T/C = A/C$ for sulfate = the attenuation factor for sulfate. If estimates of *P* and *k* for sulfate are available, then daily, individual values of *a*, which does not depend on the particle size, may be estimated. The *A* for PM10-2.5 is estimated using the measured values of *y*, the estimated value of *a*, and estimated values of *P* and *k* for PM 2.5. Plots of *T* vs. *C* for sulfate, for individual subjects, and for the entire panel, are used to check for the presence or absence of indoor sulfate sources and to check for outliers. If a subject is found to have an indoor source of sulfate, the attenuation coefficient is taken from the regression of personal sulfate on ambient sulfate. The time series of individual, daily exposures have been used to investigate the association of various health effects with the different indicators of exposure.

References

T. L. Jensen, S. Kreidenweis, Y. Kim, H. Sievering, and A. Pszenny, "Aerosol Distributions Measured in the North Atlantic Marine Boundary Layer during ASTEX/MAGE," *Journal of Geophysical Research,* **101** (D2), 4455–4467, 1996.

Final Presentation
AT 621 F 12

Student Name

Grading criteria:	*Weight*	*Grade*
Summary writeup (accuracy, organization, clarity, references)	20%	
Presentation skills (viewgraphs, organization, speaking)	20%	
Answering questions (grasp of topic)	20%	
Research (depth of study, appropriateness of topic)	40%	

Overall Grade