

Proceedings of the IES workshop and ISEE conference

August, 2002

S Kumar, EPTRI India

Subject: Report on US EPA's Integrated Environmental Strategies (IES) Program Workshop on "International Air Pollution and Energy / Climate Policy Collaboration conducted as part of the 12th Conference of the ISEA & 14th Conference of the ISEE, held at the University of British Columbia in Vancouver, Canada from August 11 -15, 2002.

Attended by K. Satish Kumar, Faculty, HIS.

A Pre-conference Workshop on "International Air Pollution and Energy / Climate Policy Collaboration was conducted for promoting, conducting and disseminating the public health assessment of fossil fuels at local and regional levels. IHS representative was invited to attend this workshop as it has been selected as the lead agency for carrying out the "Health Effects Analysis & Economic Valuation of Health Effects" components of the IES, India studies in collaboration with EPTRI.

Session I (Sunday, August 11)

Lester Grant, US Environmental Protection Agency (EPA) representative, chaired this session. The workshop started with an introduction of the overall objectives of the IES program by Ms. Devra Davis of the Carnegie Mellon University's Heinz School of Public Policy.

This was followed by a presentation on the background to IES program and www.airimpacts.org by Ms. Katherine Sibold of the US EPA. She pointed out that 3 out of 4 megacities having population > 10 million belong to the developing countries.

Dr. Luis Cifuentes, IES partner from Catholic University of Chile gave a presentation on "Developing health methods and analyses of air pollution impacts". He listed out the criteria pollutants recognised by US EPA. He briefed about the "Meta Analysis Model" used by Chile for health effects analysis and highlighted the need to exercise caution in relation to the feasibility of extrapolation of dose-response coefficients, based on Poisson Regression models derived for developed countries, to developing countries.

This was followed by presentations of case studies on "Tropospheric ozone modeling" and "Technology-based estimation of implicit value of lifesaving by Ms. Michelle Bell of Johns Hopkins University and Mr. Guodong Sun of Carnegie Mellon University respectively.

Session II (Sunday, August 11)

Ms. Devra Davis of the Carnegie Mellon University chaired the second session for the day.

Mr. Lester Grant of US EPA made the first presentation in this session on "Particulate Matter (PM) Standards Update: Overview of US PM National Ambient Air Quality Standards (NAAQS), Review process and statistical issues affecting assessment of PM epidemiology ". He talked about the promulgation of modification of original PM NAAQS of 1987, by the US Clean Air Scientific Advisory Committee (CASAC) in 1997. He mentioned about the plans of US EPA, Health Effects Institute (HEI) and National Renewable Energy Laboratory (NREL) to compile a database on over 2000 new studies on health effects of air pollution.

This was followed by a presentation on "Statistical & software issue in recent health assessments" by Mr. Lucas Neas, of US EPA. He stressed the need for long term studies, as there is a plethora of time-series studies, which has limitations of selection bias (choice of cities & time periods), confounding and misclassification. He gave an overview of linear (generalised linear models - GLM)

and additive models (generalised additive models - GAM) and alternative smoothing functions. He mentioned about the "Splus statistical software" which can be run even on laptops.

This was followed by a discussion on "Identifying data gaps, research priorities, plans for future work, initiated by Mr. Aaron Cohen of HEI. The issues addressed in this discussion were the importance of analytical tools and data resources in improving the level of health impact assessment studies. Mitigation measures were also dwelt upon. There was a consensus among all the participants about the pressing need for local epi studies, which are vital for number crunching. The use & abuse of epidemiology in policy making was also discussed.

The workshop ended with a resolution for establishment of an electronic network for the working group on IES in collaboration with national and international research agencies, to provide outreach and training relating to the public health and climate benefits of adopting cleaner and greener energy.

Session III (Sunday, August 11)

The plenary session of the conference was opened in the evening, and was chaired by Drs. Michael Brauer and Susan Kennedy of the School of Occupational & Environmental Hygiene, The University of British Columbia, who also gave the welcome address. The Canadian Minister of Environment, Mr. David Anderson was the honoured guest for the inaugural session of the conference. The keynote lecture on "Nature wars: People vs. Pests" was delivered by Dr. Mark Winston, Simon Fraser University.

Plenary Session (Monday, August 12)

This session was chaired by Dr. Clyde Hertzman, who also delivered the keynote lecture "Miasmas past and present : How our understanding of the mechanisms of environmental causation has expanded over time".

Symposium: Air Pollution and Asthma - Current research on exposures & outcomes (Monday, August 12)

Dr. Ira Tager and Dr. David Bates of the University of British Columbia chaired this session.

The first presentation in this session was on "Measurement & modeling of personal exposures to ambient air pollution related to motor vehicle emissions", by Mr. Lurmann F of University of California, Berkeley, which documented evidence of associations between respiratory health and exposure to motor vehicle emissions.

This was followed by a presentation on "Air pollution and the incidence, prevalence and severity of childhood asthma: Results from the Southern California children's health study", by Peters J of University of Southern California". This study evaluated the role of air pollution on the incidence & prevalence of doctor-diagnosed asthma in a cohort of about 6000 children and establishes the role of air pollution in the incidence & prevalence of asthma & severity of asthma manifestations.

The last presentation in this session was on "Acute effects of air pollutants in respiratory health of asthmatic children in Mexico City" by Ramirez Aguilar of Mexico University". This study was conducted using a clinical trial design to test if antioxidant supplementation has a protective effect in asthmatic children, and conclude that air pollution has a greater impact without the protective effects of the supplement.

Poster Session: Epidemiologic studies of outdoor air quality & meteorological impacts on health (Monday, August 12)

This session was chaired by Dr. Bert Brunekreef and Ms. Susan Greco, of the University of Netherlands.

The classification of studies presented in this session was as follows:

Air pollution time-series studies: 12

Temporal time-series studies: 5

Policy implications: 3

Long term studies: 4

Mixed studies: 2

Poster Session: Risk and health impact assessment and risk management (Tuesday, August 13)

Dr. Raquel Duarte-Davidson and Dr. Elaine Faustman chaired this session.

The themes of the studies presented in this session could be classified as follows:

Dose-response based studies: 2

Exposure assessment studies: 3

Risk assessment / characterisation: 4

Risk management: 2

Economic valuation: 1

Meeting with Mr. Bryan Hubble & Mr. Taylor Fox of US EPA (Tuesday, August 13)

This meeting was arranged to enable me to have an understanding of the models to be used in health effects analysis, for the IES studies. They ran a practical demo of the Criteria Air Pollutant Modeling System (CAPMS) model used by EPA for health impact and benefit assessment. Both the older (1998) and latest version (has inbuilt math functions) were demonstrated. CAPMS is a population-based model that accepts air quality info as inputs and by using predefined dose-response functions estimates health effects of air pollution, by computing incidence rates / prevalence of affected population. It has a beta function for local epi studies, and a scaling factor for using dose-response functions from international studies. Population data is based on U.S. Census, 2000 data and the default population grid size is 10 sq. kms. CAPMS provides output in both spreadsheet or database formats. US EPA would be shortly sending the electronic version of the models along with user mail to IHS.

ISEE Lecture: "What the public taught me about applying epidemiology to public health policy" (Wednesday, August 14)

This lecture was delivered by Dr. Raymond Richard Neutra, California Department of Health Services.

ISEA Lecture: "The whence, wherefore and whither of exposure: The new scientific discipline of environmental enquiry" (Wednesday, August 14)

This lecture was delivered by Mr. Demetrios Moschandreas, an Atmospheric Physicist of Illinois Institute of Technology.

Symposium: Health Impact Assessment (HIA) - A maturing tool of decision-making (Wednesday, August 14)

Dr. Rainer Fehr and Dr. Francesca Racioppi chaired this session.

A presentation on "Health impact assessment as part of strategic environmental assessment: Moving the European policy framework towards a greater integration of health consideration in the development of policies, plans & programs" was made by Dr. Francesca Racioppi, of WHO European Centre for Environment & Health. She stressed the need for HIA studies to put health higher than other sector agendas. Targeting integrated public health goals would facilitate public participation in decision making, thereby enabling evidence-based policy making.

A presentation on "Health impact assessment, current practice in the Netherlands", was made by Lebet E, of the National Institute of Public Health & the Environment, Netherlands. He listed the following steps in HIA:

1. Meta-analysis; 2. Risk characterisation; 3. Aggregate impact indicators; 4. Acceptance / Willingness to pay (WTP).

He stressed for the need for harmonisation / standardisation of approaches to improve quality of HIA studies.

Plenary Session (Thursday, August 15)

This session was chaired by Dr. Tony Fletcher.

There was a 20-minute video presentation of the Great London Fog of 1952 by Dr. David Bates of the University of British Columbia, who also delivered the keynote lecture "Fifty years on from 1952: Recollections of the London Fog of 1952 and its impact".

Symposium: PM / Air pollution components & health effects: Current epidemiological findings (Thursday, August 15)

The first presentation in this session was "Ambient air pollution & respiratory ER visits in Atlanta, by Peel J., Rollins School of Public Health, Emory University, Atlanta. This study emphasised that mortality data requires cause of death classification. This study is named SOPHIA- Study of particles & health in Atlanta. The model has the following approach: 1. Lag structure 2. Spline model 3. ARIES model 4. Knots for time. This study demonstrated that a single pollutant model requires monthly knots and multiple pollutant models require seasonal knots. The major finding of this study is that causes of death related to cardiovascular or respiratory shows the greatest association with air pollution.

The second presentation in this session was "Association between PM air pollution & acute respiratory visits in an ambulatory care setting", by Hughes, RJ of Klemm Analysis Group, Inc. The dependent variables considered by them were the health effects like, asthma, URI; LRI etc, and the independent variables were the pollutants. The ER visit data source was patient visit record (PVR), the criteria being a non-routine visit code. The model used was Poisson-based General Linear Modeling (GLM) using SAS version 8.02. The statistical model was based on time lag and control variables such as season, time trend, average temperature & average dew point. The results were

depicted as Relative Risks (RRs). The greatest no. of association for a diagnosis was for LRI. Adult asthma was most significantly associated with ultra fine count. The pollutant most significant for more than one diagnosis was coarse PM. The limitations of this study are - lack of external validation and use of single pollutant models.

The last presentation in this session was "Health effects of fine & ultra fine particles: The Erfurt studies", by Peters, A of GSF-Institute of epidemiology, Germany. In this study, the characterisation of ambient particles was by mass, by number and chemical composition. These were panel studies with asthmatics. Subjects were non-smoking adults who had to undergo daily monitoring of respiratory symptoms & PEF. The results were as follows: 1. Decrease in lung function; 2. Increase in asthma symptoms, wheeze, SOB, waking up with breathing problems, asthma attacks; 3. Increase in mortality; 4. Ultra fine particles are only moderately correlated with PM 2.5.

I could not attend the post lunch sessions on the last day, as I had to leave for the airport for my return journey to India.

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