UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
National Center for Environmental Assessment
Research Triangle Park, NC 27711

June 5, 2002

Recipients of Third Draft
EPA PM Criteria Document

Dear Colleagues:

The U.S. EPA recently released the two volume Third External Review Draft of the EPA document "Air Quality Criteria for Particulate Matter", for a 60-day public comment period (ending July 10, 2002) and for review by the Clean Air Scientific Advisory Committee (CASAC) at a public meeting scheduled for July 18-19, 2002 at EPA facilities in Research Triangle Park, NC. That draft EPA PM Air Quality Criteria Document (PM AQCD: EPA/600/P-99/002aC and EPA/600/P-99/002bC) assesses newly available information on health and ecological effects of exposure to ambient air PM, to provide key scientific bases to support the current periodic review of U.S. Particulate Matter National Ambient Air Quality Standards (PM NAAQS). Chapter 8 (Epidemiology) of that draft document assesses numerous time-series studies and other types of PM epidemiology studies; and Chapter 9 (Integrative Synthesis) integrates information from the epidemiology chapter with information from other chapters.

The U.S. EPA was recently informed by the Health Effects Institute (HEI) of a generally unappreciated aspect in the use of S-Plus statistical software often employed to fit generalized additive models (GAM) to data in time-series analyses. Salient points regarding this issue are summarized in this letter. More detailed information about the overall S-Plus/GAM issue and preliminary findings from initial reanalyses of National Morbidity Mortality and Air Pollution Studies (NMMAPS) can be found in the HEI letter informing U.S. EPA and other HEI sponsors about the issue, as appended below and/or posted on the HEI website (http://www.healtheffects.org). In the letter, HEI also outlines steps they plan to take to ensure timely peer-review and open discussion of new findings emerging from the reanalyses of the NMMAPS data.

As indicated in the HEI letter, in estimating the GAM, the S-Plus program uses an iterative process that comes to completion when the improvement in model fit is less than a preset criterion. Investigators at Johns Hopkins University (J. Samet and colleagues) used the S-Plus default convergence criteria in conducting HEI-funded PM epidemiology analyses reported in their published NMMAPS multi-city studies discussed in Chapter 8 of the Third Draft PM AQCD. The NMMAPS investigators found that, for a given city, the default convergence criteria of S-Plus appear to be inadequate to assure that convergence of its iterative estimation procedure actually reaches the maximum likelihood value. Depending on the city, use of the default