The Honorable Michael O. Leavitt  
Administrator  
U.S. Environmental Protection Agency  
1200 Pennsylvania Avenue, N.W.  
Washington, D.C.  20460

SUBJECT: Advisory Council on Clean Air Compliance Analysis Response to Agency Request on Cessation Lag

Dear Administrator Leavitt:

In a letter of August 11, 2004, the Office of Air and Radiation and Office of Policy, Economics and Innovation jointly asked the Health Effects Subcommittee (HES) of the Advisory Council on Clean Air Compliance Analysis to comment on an EPA proposal. This proposal, developed in collaboration with OMB, concerns the cessation lag of PM$_{2.5}$. The cessation lag is defined as the time pattern of reductions in risks of mortality that would be expected after a decrease in ambient particulate matter smaller than 2.5 µm in aerodynamic diameter, i.e. PM$_{2.5}$. The letter requested the Council’s Subcommittee to consider whether a proposed lag structure is generally consistent with our recommendations regarding a previous charge question on this issue.

Our previous comments on this issue noted that because some fraction of the mortality risk associated with PM$_{2.5}$ is the result of long-term exposures and disease processes such as chronic respiratory disease and cancer, the reduction in mortality risk that occurs when exposures are reduced may take several years to be fully realized. The EPA described a proposed lag structure that would allocate 20% of the benefits in the first year, a further 50% equally divided in the years 2 through 5, and the final 30% equally divided in the years 6 through 20. While we believe this proposal is broadly consistent with our recommendations, and preferable to the 5-year distributed lag used earlier, we would suggest a slight modification to this proposal. We have reviewed newly available evidence on this issue and considered several intervention studies examining reductions in exposure to either air pollution or from direct smoking. (See attachment.)

While there is still considerable uncertainty about the cessation lag, the air pollution evidence is generally suggestive of greater impacts in the first year relative to the proposed lag...
structure in question. In fact, some recent abstracts suggest that substantial benefits might occur in the first year. Therefore, the Advisory Council on Clean Air Compliance Analysis recommends that EPA use a primary case where 30% of the mortality reductions occur in the first year, 50% occur equally in years 2 through 5, and the remaining 20% occur equally over years 6 through 20.

These proposed changes to the cessation lag (both the EPA proposal and the HES recommended modification) do not change the estimates of total mortality reductions expected as a result of reductions in PM$_{2.5}$, but they both represent changes in the estimated timing of the expected mortality reductions. The HES recognizes that measures of health benefits in physical terms are not the final step in benefit-cost analysis, where all benefits need to be valued. The time profile assumed for health benefits may have implications for “net present value” calculations. However, this final step of economic valuation does not lie within the scope of expertise of the HES. The charge to the HES on this matter specifically concerns the pattern of health benefits in physical terms, so we limit our comments to this question.

We also urge EPA to: (1) review and keep abreast of the emerging literature in this area; (2) provide the best available justification for the lag structure they use; and (3) strongly consider conducting sensitivity analyses of other possible lag structures. EPA should also consider using smoothed distributions.

With regard to the suggestion to review emerging literature, it should be noted that, in addition to the literature from PM intervention studies, information from the smoking cessation literature is considered very relevant to the PM/mortality cessation lag question. Therefore, we recommend that EPA conduct a systematic review of the literature on the time course of health benefits following cessation of active and passive smoking to better account for this potentially useful information.

Sincerely,

/s/       /s/
Trudy Cameron, Ph.D.     Bart Ostro, Ph.D.
Chair        Chair
Advisory Council on Clean Air Compliance Analysis Health Effects Subcommittee

Attachment:
Studies Considered by HES on PM-Mortality Cessation Lag
Studies Considered by the Health Effects Subcommittee on the PM-Mortality Cessation Lag


NOTICE

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