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VIA ELECTRONIC MAIL:
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Holly Stallworth, Ph.D
Designated Federal Officer (DFO)
EPA Science Advisory Board (1400 R)
U.S. Environmental Protection Agency
1300 Pennsylvania Avenue, NW
Washington, DC 20460

Re: Environmental Economics Advisory Committee Review of EPA White Paper "Valuing Mortality Risk Reduction for Environmental Policy"

Dear Dr. Stallworth:

API appreciates the opportunity to comment on the U.S. Environmental Protection Agency's ("EPA" or "Agency") process of updating its guidance for conducting benefit-cost analysis. API is a national trade association representing roughly 400 member companies involved in all aspects of the oil and natural gas industry. API members are dedicated to meeting environmental requirements and allocate billions of dollars each year in order to do so, while economically developing and supplying the energy resources needed by our nation.

API commends EPA for developing guidelines to promote greater transparency and consistency in the conduct and reporting of economic analyses at the Agency. Development and adherence to guidelines facilitate and improve efforts such as the Office of Management and Budget's (OMB) recent 2008 annual report to Congress on the benefits and costs of federal regulations.[1]

In the SAB Review Draft *Valuing Mortality Risk Reductions for Environmental Policy: A White Paper* under consideration here, API notes that the EPA *Guidelines for Preparing Economic Analyses* (2008), referred to as draft *Guidelines*, is cited heavily and used as a launching point to discuss key issues. We highlight that we have separately commented on these draft *Guidelines* in our letter of February 27, 2009, and that those comments supplement the points we make here.

API's earlier comments, for instance, identify a key contribution to this literature which is not discussed or cited in either the draft *Guidelines* or this white paper. That contribution is the NEEDS study (Needs,

[1] Office of Management and Budget, Office of Information and Regulatory Affairs. "2008 Report to Congress on the Benefits and Costs of Federal Regulations and Unfunded Mandates on State, Local, and Tribal Entities."
http://www.whitehouse.gov/omb/assets/information_and_regulatory_affairs/2008_cb_final.pdf.

2006).[2] The EPA white paper also overlooks important contributions by Rabl (2006, 2003).[3] All of these works address supplementing VSL evaluations with the Loss of Life Expectancy (LLE) or the value of life year lost (VOLY).

API highlights its key comments below, with additional detail provided in the main body of the document.

- API recommends that EPA use the value of life year lost (VOLY) approach as the preferred method of calculating the economic benefits of changes in mortality.
- EPA should avoid the inclusion of outliers in meta-analysis employed to estimate VOLY or VSL.
- EPA should take a more rigorous approach to ensure uncertainties are accounted for and accurately characterized in estimation of the benefits of reduced air pollution, and that reports of the analyses communicate clearly the overall level of uncertainties to policy makers.
- API recommends, with respect to the issue of "cancer premiums" that additional research is needed to establish existence and to reduce the uncertainty surrounding the magnitude of estimates before they are considered for incorporation in government benefit-cost analysis.
- Even more strongly, it is clear that there is little, if any, justification for incorporation of "altruistic effects" into benefit-cost analysis conducted by the Agency given data and methodological considerations.
- API suggests that the Agency's scarce resources would be better served through efforts aimed at reducing the fundamental uncertainties associated with estimates of VOLY and VSL.
- EPA benefit-cost analysis should also account, to the extent possible, for countervailing impacts of regulations on life years saved.

API recommends that EPA use the value of life year lost (VOLY) approach as the preferred method of calculating the economic benefits of changes in mortality.

The virtually exclusive use of VSL by EPA in benefit-cost analysis, combined with use of high end concentration response functions, has resulted in the likely over-estimation of the benefits of changes in air pollution.

As pointed out by Rabl et al. (2006) [4] and others, there is no such thing as "extra deaths", "reduced probability of death" or "statistical lives saved'. Rather, air pollution could potentially reduce one's life expectancy or cause an average loss of life expectancy across a population. Therefore, Rabl recommends expressing air pollution mortality in terms of "Loss of Life Expectancy" (LLE) changes. This framework automatically takes into account the constraint that everyone dies exactly once, regardless of their

[2] NEEDS. (2006). "Final Report on the Monetary Valuation of Mortality and Morbidity Risks from Air Pollution." New Energy Externalities Developments for Sustainability. Project No: 502687. EU Sixth Framework Programme. http://www.needs-project.org/RS1b/NEEDS_RS1b_D6.7.pdf
[3] Rabl, A. (2006). "Analysis of Air Pollution Mortality in Terms of Life Expectancy Changes: Relation between Time Series, Intervention, and Cohort Studies." Environmental Health, A global Access Science Source, No. 5.
[3] Rabl, A. (2003). "Interpretation of Air Pollution Mortality: Number of Deaths or Years of Life Lost?" J. Air Waste Management Assn. Vol 53, No. 1, pp 41-50.
[4] Rabl, A. (2006). "Analysis of Air Pollution Mortality in Terms of Life Expectancy Changes: Relation between Time Series, Intervention, and Cohort Studies." Environmental Health, a Global Access Science Source, No. 5.

exposure, or lack thereof, to air pollution. The LLE approach was recognized by the European Union (EU) as providing a more accurate and meaningful metric to quantify potential chronic effects of air pollution. The LLE, or more specifically, the value of life year lost (VOLY) approach was used in conjunction with the VSL approach to evaluate various policy options for reducing PM air pollution under the EU Clean Air for Europe program (AEA, 2005) [5]. The LLE concept is able to account for the magnitude of the loss of life expectancy per death, which can be very different across various parts of the population, for example, air pollution deaths compared with traffic mortality, each being concentrated in different segments of the population.

As part of the work to improve economic analysis of air pollution reductions under the EU CAFE program, a high-quality study was completed that provides reliable and credible VOLY estimates (NEEDS, 2006).[6] In contrast to the studies EPA has relied on to estimate the VSL, which focused in part on occupational risk tradeoffs, the NEEDS study focused directly on VOLY lost by air pollution mortality, thereby avoiding significant benefit transfer-related concerns. API strongly recommends that EPA consider the VOLY estimates from the NEEDS research and consider developing similar estimates using a U.S. based survey.

API strongly recommends that EPA adopt the approach of calculating the economic benefits of air pollution reduction that focuses on mortality using the VOLY approach as the preferred method. At a minimum, EPA should use the VOLY approach in conjunction with VSL as recommended in OMB *Circular A-4*. This would provide a more robust range of economic benefit values to consider.

EPA should avoid the inclusion of outliers in meta-analysis employed to estimate VOLY or VSL.

In this white paper, EPA reviews a number of other meta-analyses, including Bellavance et al. (2009)[7] which is described as a meta-analysis that makes use of a selection of studies based on their inclusion in previous meta-analyses. The highest observable estimates of VSL (e.g., $50 million) are found in the Sandy and Elliott (1996)[8] study which the Bellavance study discusses but does not include in its main analysis, while EPA adds this paper back into their meta-analysis in the white paper. Bellavance et al. (2009) note that estimates from the UK (including the Sandy and Elliott paper) are "very high compared to other countries", a phenomenon which they note requires further investigation. The EPA white paper, if choosing to include high UK estimates where others have not, should better address the UK high estimate bias and the reasons for including this study.

EPA should take a more rigorous approach to ensure uncertainties are accounted for and accurately characterized in estimation of the benefits of reduced air pollution, and that reports of the analyses communicate clearly the overall level of uncertainties to policy makers.

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[5] AEA (2005). Methodology for the Cost-Benefit Analysis for CAFÉ. Vol. 2: Health Impact Assessment. AEA Technology Environment: UK.
[6] Ibid.
[7] Bellavance, F., Dionne, G., Lebeau, M. (2009). "The value of statistical life: a meta-analysis with a mixed effects regression model". Journal of Health Economics. Vol 28, pp444-464.
[8] Sandy, R. and Elliott, R.F. (1996). "Unions and risks: their impact on the level of compensation for fatal risk." Economica. Vol. 63, pp. 291-310.

Uncertainties in various stages of economic analysis are compounded in the final analytic product. Causes of uncertainties include lack of data or use of outdated data, use of worst-case assumptions for input parameters, use of outdated, flawed or unvalidated models, and uncertainties within modeling algorithms themselves. Probabilistic uncertainty analysis would be one way to better quantify these uncertainties. API strongly recommends rigorous implementation of OMB and federal agency information quality guidelines for economic, risk assessment, cost-benefit, and cost-effectiveness analyses.

API urges EPA to review OMB guidance for "Quantitative Analysis of Uncertainty" to ensure that uncertainty is handled appropriately in completing economic analyses and in the reporting of such analyses (68 Fed. Reg. 5523):

> *"Your [i.e., an agency's] estimates cannot be more precise than their most uncertain component. Thus, your analysis should report estimates in a way that reflects the degree of uncertainty and not create a false sense of precision. Your analysis should not reflect any unstated or unsupported preferences, even for such worthy objectives as protecting public health or the environment. Unstated assumptions can affect the analysis in unsuspected ways, making it difficult for decision-makers to evaluate the true magnitude of the uncertainties involved"*

API recommends that resources be devoted to more accurately characterizing the level of uncertainty surrounding benefit estimates of reduced air pollution particularly given data limitations, the inherent uncertainties associated with benefit-transfer functions, and stated preference methodologies. For example, use of stated preference (SP) methods relies on hypothetical survey techniques that elicit from individuals how much they would be willing to pay to avoid a particular risk. Such techniques can lead to misstatement of true preferences. Survey techniques are not based on any type of market price data nor are they derived from any utility maximizing or cost minimizing behavior. Hence, estimates derived from such survey techniques can be highly speculative, subject to manipulation, and highly uncertain, with the potential to significantly distort net benefit estimates. Given the methodological problems and limitations associated with SP techniques, it is critical to quantify the uncertainty associated with SP-derived estimates. This would facilitate public review and guard against highly uncertain benefit estimates from driving the outcome of a benefit-cost analysis.

In this light, API believes, with respect to the issue of "cancer premiums", that additional work is needed to establish existence and reduce the uncertainty surrounding the magnitude of these estimates before they are considered for incorporation in government benefit-cost analysis. API does not consider the current data sufficient to support a specific value for a "cancer premium" for the VSL. The results for the studies providing the most direct evidence (stated preference studies including cancer and non-cancer risks) are mixed. Some studies report a differential whereas others do not, and some studies do not indicate a higher differential for cancer versus non-cancer risks.

Even more strongly, it is clear that there is little, if any, justification for incorporation of "altruistic effects" into benefit-cost analysis conducted by the Agency given data and methodological considerations. As pointed out in the SAB Review Draft *Valuing Mortality Risk Reductions for Environmental Policy: A White Paper*, most (if not all) existing studies cannot be utilized to determine if the effect actually exists, let alone what its magnitude might be. In sum, API suggests that the Agency's

scarce resources would be better served through efforts aimed at reducing the fundamental uncertainties associated with estimates of VOLY and VSL, e.g., developing parameter estimates for relevant subgroups of the population, developing better data sets, and moving to VOLY estimates, to name a few.

Finally, EPA benefit-cost analysis should also account, to the extent possible, for countervailing impacts of regulations on life years saved. Compliance costs of federal environmental, health, and safety regulations exceed many billions of dollars annually. This translates into significant real costs (and in some cases a high level of job losses) to consumers that can increase individual and family stress, displace other risk-reducing purchases, such as more comprehensive health insurance, safer motor vehicles, higher quality foodstuff, or membership in a health club (see, e.g., Hahn, Lutter and Viscusi, *Do Federal Regulations Reduce Mortality*, AEI-Brookings Joint Center for Regulatory Studies, 2000). It is rather improbable that no countervailing impacts would exist with respect to the impacts of major environmental regulation.

API cites numerous documents in these comments. While not attached to this comment package, they are available through regulatory dockets or by request to API. Please contact me (202-682-8340 or Feldman@api.org) should you wish to request any of the cited documents, or if you have any questions regarding these comments.

Sincerely,

Howard J. Feldman