

**EPA Requests for Clarification in SAB-EEAC Draft
“Review of EPA’s Proposed Methodology for
Updating Mortality Risk Valuation Estimates for Policy Analysis”**

1. Differences in Risk measures used in Hedonic Wage Models: On page 16 (lines 1-6), SAB notes that differences between models that use different risk measures (industry only and occupation-industry, for instance) are not well understood. Research that leads to a better understanding could provide guidance on which combinations would be appropriate. Recommendations in line 10-12 note that the VSL summary measure should only include those hedonic studies where the risk variable includes variation by occupation – either with respect to occupation and industry or occupation only (lines 10-12).

Is the SAB recommending that, in the short term, EPA incorporate in its summary measure only those hedonic studies where the risk variable includes variation by occupation while, in the long term, we pursue research to better understand the differences in risk measures?

2. Consistent Hedonic Wage Model: Page 16 lines 22-25. “A consistent hedonic wage model should be applied to the available years of data, combining an industry and occupation risk measure from the U.S. Bureau of Labor Statistics March Current Population Survey (CPS) wage information, and generating measures of VSL on a consistent basis.”

Should EPA consider this a long term recommendation, and continue to rely on existing estimates in the short term? Is it the Committee’s recommendation that the EPA would then rely mainly or solely on these estimates of the VSL, or that the EPA would then include these estimates in its meta-analysis?

3. Value of a statistical Life Year: page 18 (with discussion bottom of page 17) “The SAB recommends that EPA use a more correct construct such as the value of statistical life-year lost rather than the present value of a future statistical death.”

This recommendation is not consistent with previous advice we’ve received from the EEAC. Below is an excerpt from an SAB Advisory dated October 12, 2007 (EPA-SAB-08-001) (emphasis added):

“Regarding the role of life expectancy in valuing mortality risks, the Committee notes that economic theory, in general, places no restrictions on the relationship between the VSL and remaining life expectancy: the VSL may increase, decrease or remain constant as life expectancy decreases. The relationship between the VSL and life expectancy is therefore an empirical matter. In practice, because life expectancy is difficult to observe, the Agency will have to relate the VSL to factors related to life expectancy—namely age and health status. Although the literature on the relationship between age and the

VSL is growing, the Committee does not believe that it is sufficiently robust to allow the Agency to use a VSL that varies with age. The Committee also believes that the use of a constant Value of a Statistical Life Year (VSLY), which assumes that the VSL is strictly proportional to remaining life expectancy, is unwarranted. If there is insufficient information to indicate that the VSL declines with age, there is not sufficient information to indicate that the VSL is strictly proportional to remaining life expectancy. Thus, the SAB recommends that at present the Agency use an age-independent VSL to value mortality risk reductions. However, we also urge the Agency to report the age distribution of statistical lives saved and the average remaining life expectancies of persons in each age group.”

Could the Committee provide more information on the theoretical or empirical basis for this new recommendation on the appropriateness of using the VSLY instead of the VSL?

4. Broadening the scope of studies. On page 17, lines 13-16, the SAB recommends that EPA broaden the scope of studies “...to derive values for reducing both mortality and morbidity risks.” A number of the studies suggested for citation in Appendix B to the SAB’s draft report estimate values for reduced risks of morbidity (e.g., Gan, et al. 2001; Chestnut, et al. 1996). The EPA’s current White Paper, however, is focused on estimating the value of reductions in risk of mortality.

Please clarify the role of studies on reductions in risks of morbidity in the current White Paper.

Some of the studies listed in the SAB’s draft Appendix B are conducted outside of the U.S. With respect to stated preference studies, an earlier SAB-EEAC offered the following advice: “the SAB believes that surveys should ideally be limited to those conducted in the United States. To the extent that preferences, cultural norms, institutions, and demographic profiles can affect valuation of risk reductions, studies based on non-U.S. populations may provide biased estimates of U.S. values” (page 15; SAB Advisory dated October 12, 2007; EPA-SAB-08-001). The same committee offered the following regarding hedonic wage studies: “All studies not based on the U.S. workforce, not based on risk data of comparable or superior quality to the CFI data, and not adhering to the other criteria discussed above should be excluded” (page 19).

Please clarify if and how EPA should use some of the new citations offered by the SAB for deriving valuation estimates for U.S. policy purposes from studies conducted outside the U.S. (e.g., Henson 1996; Liu et al. 2000).

In addition, the SAB provides a number of citations in Appendix C to “...provide a basis for enriching the evidence base on risk preferences and providing support for benefits-transfer applications...”

Please clarify how the SAB recommends EPA incorporate this evidence into the analysis of estimates for reducing reductions in risks of mortality.

5. Hedonic Studies that do not use CFOI. On page 18, lines 43-45, “the SAB suggests that EPA consider using hedonic wage studies that apply data other than the CFOI data, while acknowledging concerns that studies based on survey data may be subject to non-response bias.”

Prior EEAC advice was to exclude all studies that rely on data of lower quality than the CFOI, which allows, at least in principle, for studies using datasets other than CFOI. Does the current draft recommendation refer to studies that use other datasets that are of equal or greater quality than CFOI, or does it mean that EPA should relax this criterion and incorporate studies using, for example, survey data that preceded CFOI. If the latter is the case, can the EEAC provide specific quality criteria for determining the acceptability of the dataset?

6. Adjusting for income growth over time: page 23 (lines 4-7) Adjust for income differences in the populations (or time periods) in individual studies after determining the estimates to be drawn from a particular study-time-period (income adjustments should then be addressed in the process of aggregating across studies to an estimate for a representative population).”

Further on page 28 “The SAB finds that there is insufficient evidence in the income elasticity of VSL literature to adjust the VSL values from different studies to account for difference in income. Therefore the SAB recommends that both the non-parametric and parametric analyses be conducted without this direct adjustment to VSL. The parametric meta-regression analysis should include specification with an income measure as an explanatory variable. This income measure should be selected to approximate as closely as possible the average disposable household income of the sample used in the primary study.”

Further on page 33 “The documentation of income adjustment to VSL should be clarified in the White paper. Adjustment of VSL estimates by an income elasticity of VSL and index of income growth (based on GDP per capita) does not seem appropriate. However, conversion of VSL to inflation adjusted dollars would be appropriate.”

Finally on page 47 “Comparing VSL estimates at different points in time from a single country provides a coherent way to obtain an income elasticity of VSL estimate for policy purposes. The SAB recommends selecting one of the currently preferred VSL model specifications that can be estimated by combining the U.S. Census Bureau’s Annual Social and Economic Supplement to the Current Population Survey (CPS) with CFOI data and using the income variation over the last two decades to obtain a defensible income elasticity of VSL estimate.”

To clarify, is it the Committee’s recommendation that the EPA should leave the primary VSL estimates un-adjusted for income growth over time in the meta-analysis, but control for the time period of the study using a study year variable in the meta-regression? Is it also the Committee’s recommendation that the EPA should cease its current practice of adjusting the VSL over time for income growth in its economic analyses until such time that we can complete the study described on page 47? In other words, is it the

Committee's recommendation that the EPA adopt zero as its current best estimate of the IEVSL?

The EPA and the Committee agree that EPA should adjust all primary VSL estimates for inflation to put them in common year dollars. It seems clear, however, that, if we knew the true value of the IEVSL (and it were not equal to zero), then we would use this value to also adjust the primary VSL estimates for income growth to make them all conditional on a common income level. In this way, all of the estimated effect sizes in the meta-analysis dataset would represent the same quantity: "the average VSL among the U.S. general adult population in 2013\$ and at the 2013 average income level," for example. If we were to refrain from adjusting the primary estimates for income growth using the IEVSL (assumed known in this hypothetical scenario), then we would not be comparing "apples-to-apples" in the meta-analysis and would introduce a systematic bias to the summary VSL estimate. The magnitude of the bias—which would be a function of the IEVSL, the dates of the studies, and the corresponding average income levels at those dates—could be computed exactly. Although our estimation problem is complicated by the fact that we do not know the true value of the IEVSL, would not the above logic still apply? If we refrain from adjusting the primary VSL estimates for income growth using our best available estimate of the IEVSL (in place of the unknown true value) and we instead use $IEVSL=0$, for example—then would we not necessarily produce a biased estimate of the VSL? The magnitude of the bias in this case could be estimated using our best estimate of the IEVSL, the dates of the studies, and the corresponding average income levels at those dates.

7. Valuing Reductions in Cancer Risk: Page 41, lines 37-41. "Based on available studies, the SAB concludes that there is not sufficient evidence at this time to justify a non-zero cancer differential. The SAB recommends that, instead of adopting a nonzero cancer differential, the EPA consider using existing methods to value the morbidity that occurs prior to an early death, and add that estimated morbidity to conventional estimates of the value of the associated mortality."

Morbidity is often valued in EPA RIAs using cost of illness approaches unless WTP estimates are available. Prior SAB advice (EPA-SAB-EC-01-008) has recommended that EPA add costs of treatment to the VSL when valuing reductions in cancer risk:

Page 5-6: "On the question of whether to add a [WTP] value for cancer morbidity before death, we do not believe that there is an adequate basis in the literature for doing this. But we can endorse adding estimates of the medical costs of treatment and amelioration for fatal cancers to the VSL as a lower bound on the true value of avoiding fatal cancers."

Does the EEAC believe this use of cost-of-illness for terminal cancer is a reasonable approach for valuing the morbidity that occurs prior to an early death from cancer, at least as an interim value until willingness-to-pay estimates can be estimated?