Comments from Dr. Bennett, member, SAB Mercury and Air Toxics Standards for Power Plants Residual Risk Technology Review and Cost Review Workgroup

Key Issues to be Considered in Discussion of the Science Advisory Board Draft Report on Mercury and Air Toxics Standards for Power Plants Residual Risk Technology Review and Cost Review

1. The SAB document on Mercury and Air Toxics Standards for Power Plants Residual Risk Technology Review and Cost Review (MATS Review) is a compilation of sections written by various members, rather than a consensus document. Those writing the science reviews were not asked to provide any recommendations. A meeting was not held with the workgroup to discuss the issues, likely due to the short time-frame. As such, there are numerous statements that appear to be contradictory with in the document. We need to determine which statements are the minority view among the SAB and either eliminate them or state they are a minority view.

2. The document lacks a statement regarding the scope of the review. Specifically, the primary focus is on the direct impact of mercury and other HAPS, and does not discuss whether co-benefits related to PM reduction should be included in the analysis. Originally, this discussion was going to be included in a separate document on co-benefits, but it does not appear that this document was completed. There is some discussion regarding the health impacts of reducing PM exposure below the level of the current standard, as that was one criticism regarding the inclusion of co-benefits of the analysis and there are a number of recent scientific articles that have been published, thus individual members deemed it relevant to include information on low level PM exposure. Our introductory paragraph should outline the scope of what is included in the report.

3. One of the recommendations directly states, "net health effects of fish should be the correct measure for a benefits assessment" (page 8, line 28-29). This appears to be in contradiction to the point of the analysis, which should focus on the health risks resulting from exposure to mercury, as that is the subject of the regulation. There are difficulties in assessing the health impacts of mercury as the primary source of exposure is through consumption of fish, but this means that one needs to account for negative confounding in situations like this that arise when a covariate is a source of exposure, in this case fish consumption (Choi et al., 2008). Further, public health officials should provide messaging to encourage consumption of fish low in mercury and high in beneficial fatty acids, particularly for pregnant women (Mahaffey et al. 2011). However, neither of these facts make fish consumption the outcome of a risk evaluation of mercury. Rather, one should determine the benefit of potentially lower mercury exposure resulting from lower emissions due to the regulation. These various ideas seem to have been confused.

4. The bulk of the scientific evidence discussed in the SAB report discusses, first, that the EPAs choice of reference dose for a safe level of mercury has been shown to be outdated

and too high. Critically, research also indicates that full scale IQ, the measure considered by the EPA, is not the most sensitive outcome from mercury, but rather a suite of neurological impacts. The resulting recommendation should therefore be that the EPAs analysis undervalues the resulting neurodevelopmental costs to low level exposure during pregnancy. Second, there is a strong discussion on the cardiovascular health risks associated with mercury, including the recommendation from a panel assembled by the EPA supporting inclusion in future benefits analysis. The resulting recommendation should be that EPA include costs associated with cardiovascular outcomes in their analysis. Third, there is considerable science documenting that exposure to mercury resulting from power plant emissions comes not only from freshwater fish recreationally caught in small to medium size lakes, but also from marine fish. Therefore, the resulting recommendation should clearly state that the exposure assessment include all sources of mercury.

5. There are some statements in the report that do not have any, or have weak, supporting evidence. As SAB comments are meant to be science based, we should consider removing some statements that do not have a strong scientific basis.

I have additional specific comments, but wanted to provide my overarching thoughts.

References:

Choi, A.L., Cordier, S., Weihe, P., and Grandjean, P. Negative Confounding in the Evaluation of Toxicity: The Case of Methylmercury in Fish and Seafood. Crit Rev Toxicol. 2008; 38(10) 877-893.

Mahaffey, K.R., Sunderland, E.M., Chan, H.M., Choi, A.L., Grandjean, P., Marien, K., Oken, E., Sakamoto, M., Schoeny, R., Weihe, P, Yan, C.-H., Yasutake. Balancing the benefits of n-3 polyunsaturated fatty acids and the risks of methylmercury exposure from fish consumption. Nutr Rev. 2011; 69(9)493-508.