

## Comments for the Public Meeting of the Chartered Science Advisory Board on Strengthening Transparency in Regulatory Science: Addendum

This addendum clarifies points made in our previously submitted comments.

We would like to expand our discussion around the evaluation of evidence for health effects of environmental exposures. To appropriately evaluate the quality of a body of scientific evidence to best inform regulatory action, we should carefully review the methods of the study, as well as aspects related to the scientific findings such as precision, the magnitude of the estimated effect, exposure-response, and publication bias. These domains are evaluated as part of systematic review methods that have been recommended for use to evaluate environmental health evidence.<sup>1,2</sup> While, in an ideal world, it would be feasible to repeat studies in different settings and populations (i.e., replication), this is often not economically, scientifically, or ethically feasible, and, in some cases, not necessary. Large-scale cohort studies provide excellent results but cost large sums to implement. Further, delaying policy actions in order to conduct additional studies can prolong potentially harmful exposures in the population by, for example, waiting for more confirmatory studies prior to banning chlorpyrifos as proposed in the past administration. Scientists and regulators should consider all the evidence, including from non-human studies, as the evidentiary base can be sufficient for decisions. Additional considerations include the precautionary principle<sup>3</sup> and balance the need for more and better-quality studies with the ability to protect public health now. Lastly, the current structure of the Transparency rule will focus on the wrong issue of providing raw data when the quality of studies is not solely dependent on that and will have deleterious consequences for study participants and ultimately the public's health.

Publication bias is a concern related to published studies. This concern extends to replication efforts in other populations, with other methods, etc. However, many meta-analyses explicitly evaluate the potential for publication bias and some statistically correct for it. For example, the largest systematic review to date on the acute effects of fine particle components on mortality<sup>4</sup> diligently evaluated publication bias in the included studies. *A priori*, Achilleos et al. described the methods they would use to correct the pooled effect estimates if any publication bias were detected. However, they did not detect any statistically significant asymmetry in the funnel plots and, therefore, no further adjustments for publication bias were necessary.

Sincerely,

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4. Achilleos S, Kioumourtzoglou MA, Wu CD, Schwartz JD, Koutrakis P, Papatheodorou SI. Acute effects of fine particulate matter constituents on mortality: A systematic review and meta-regression analysis. *Environment international*. 2017 Dec 1;109:89-100.

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