

Summary Minutes of the
U.S. Environmental Protection Agency (EPA)
Science Advisory Board (SAB)
Environmental Economics Advisory Committee (EEAC)
Public Teleconference
April 19, 2012
11:00 a.m. – 3:00 pm Eastern time

Committee Members: Dr. Madhu Khanna, Chair
Dr. Karen Palmer
Dr. Peter Wilcoxon
Dr. Nicholas Flores
Dr. Laura Taylor
Dr. Junjie Wu
Dr. Wayne Gray
Dr. George Parsons
Dr. James Shortle
Dr. David Zilberman

Date and Time: April 19, 2012, 11:00 a.m. – 3:00pm

Purpose: The SAB EEAC discussed the draft paper from the National Center for Environmental Economics (NCEE) entitled *Retrospective Study of the Costs of EPA Regulations: An Interim Report of Five Case Studies (March 2012)*

SAB Staff: Dr. Holly Stallworth, Designated Federal Officer

Other EPA Staff: Al McGartland, Nathalie Simon, Cynthia Morgan, Carl Pasurka, Peter Nagelhout, Ann Ferris, Ron Shadbegian, David Simpson, Elizabeth Kopits, Ann Wolverton, Brett Snyder, Latisha Pettaway

Other: Jeff Shumaker (International Paper); Jerry Schwartz (American Forest and Paper Association); Anne Smith (American Petroleum Institute); Paul Wiegand (National Council for Air and Stream Improvement); Cheryl Hogue (Chemical & Engineering News); Clint Woods (House Committee on Science, Space and Technology), Stephen Storelli (California Air Resources Board); Mary Carol Wagner (Northern Kentucky Water District); Maria Hegstad (Risk Policy Report); Scott Biernat (Association of Metropolitan Water Agencies)

Meeting Webpage:

<http://yosemite.epa.gov/sab/sabproduct.nsf/a84bfee16cc358ad85256ccd006b0b4b/cfe97e01ab2fc6fb85257928005a99a1!OpenDocument&Date=2012-04-19>

Meeting Summary

The discussion followed the issues and general timing as presented in the meeting agenda posted at

THURSDAY, APRIL 19, 2012

Opening of Public Meeting

Dr. Holly Stallworth, Designated Federal Officer (DFO), opened the meeting with a statement that the Environmental Economics Advisory Committee (EEAC) is a standing committee of the chartered Science Advisory Board. As such, EEAC is a federal advisory committee whose meetings and deliberations meet the requirements of the Federal Advisory Committee Act and federal ethics laws.

Dr. Khanna reviewed the agenda and purpose of the meeting then turned the floor over to Dr. Al McGartland, Director of EPA's National Center for Environmental Economics (NCEE). Dr. McGartland began the presentation of NCEE's slides posted at the above URL. He first explained that the purpose of the Retrospective Study (RCS) was to find out whether there were any systematic biases in EPA's ex ante assessment of costs. Dr. McGartland noted that it was difficult to look into the future quantitatively, especially the future path of technological innovation. The loss of Pollution Abatement and Control Expenditures (PACE) survey funding made it more difficult to estimate costs. As challenges to NCEE's analysis, Dr. McGartland cited lack of data on compliance strategies, lack of help from associations; limited number of industry experts; the difficulty of constructing a counterfactual and baseline and the difficulty of disentangling costs of compliance from other factors. Dr. David Simpson of NCEE walked the Committee through the literature search, emphasizing that NCEE focused on the surveys of surveys, not the original studies themselves. Dr. Simpson stressed that industry had little incentive to estimate the least cost of compliance during the pre-regulation phase. NCEE concluded that most ex ante estimates in the literature were too high but could not reject the hypothesis that EPA's ex ante estimates are unbiased predictors of ex post costs. Dr. Elizabeth Kopits described how NCEE had searched the Agency's database RAPIDS for all economically relevant rules and came up with 111 rules of which 42 were selected after screening out rules that were remanded by the court or not implemented or were too difficult to analyze. Of the 42 rules remaining, NCEE selected 10 rules to analyze for Phase 1 of the study. Five (5) of the 42 rules were chosen for Phase 1 as pilot case studies to help test various ex-post cost estimation methodologies. Phase 2 rules were chosen with random sampling. For the Phase 1 case studies, NCEE relied solely on publicly available data sources and industry experts.

Dr. Ron Shadbegian described the Cluster Rule [1998 Integrated National Emission Standards for Hazardous Air Pollutants (NESHAP) and Effluent Guidelines for Pulp and Paper] and the Maximum Available Control Technology (MACT) II rules (2001 NESHAP for Chemical Recovery Combustion Sources at Kraft, Soda, Sulfite and Stand-Alone Semichemical Pulp Mills). For the Cluster rule, which integrated air and water rulemakings, NCEE had to compare the capital expenditures during the compliance period against a baseline (counterfactual) level of pollution abatement capital expenditures. Since the pulp and paper industry's voluntary spending to lower dioxin releases had to be treated as part of the baseline according to EPA's *Guidelines for Economic Analyses*, this made the choice of baseline very challenging. Dr. Shadbegian said he would welcome the Committee's advice on the choice of baseline. He noted that NCEE's conclusion was that EPA over-estimated the capital cost of the Cluster Rule by 30% to 100% depending on the choice of baseline year.

With respect to the MACT II rule, Dr. Shadbegian said NCEE concluded that EPA overestimated Total Capital Investment by roughly 25% and overestimated Total Annualized Costs by nearly 5 times. In explaining these differences, Dr. Shadbegian cited industry taking advantage of the bubble compliance strategy to lower their costs.

Dr. Ann Wolverton covered the implementation of the Methyl Bromide (MBr) Critical Use Exemptions (CUE) in California for open-field strawberries. Dr. Wolverton explained that US agricultural users of MBr are allowed to apply annually for a CUE to the ban on its use. NCEE focused on California because of their disaggregated data as compared to Florida, the other major strawberry-growing region in the U.S. Because NCEE was assessing the burden associated with switching to a MBr alternative, the baseline was the continued use of MBr. Given the use of generous exemptions to strawberry farmers, there was little evidence of negative impacts on strawberry production costs. NCEE concluded that ex-ante operating cost projections were consistent with available ex-post data. NCEE discovered very little switching away from MBr for a variety of reasons, thus it was analytically difficult to evaluate the counterfactual: what farmers would have done if they had not received MBr exemptions for the 2006-2010 seasons, i.e. the extent of switching away from MBr. Thus NCEE found very little evidence of negative economic impacts.

Dr. Cynthia Morgan covered NCEE's case study on the 2001 National Primary Drinking Water Regulation for Arsenic which lowered the Maximum Contaminant Limit (MCL) for arsenic in drinking water from 50 micrograms/liter ($\mu\text{g/L}$) to 10 $\mu\text{g/L}$. Although NCEE used data from the Office of Research and Development (ORD) on best available technology (BAT) costs for small systems, its results were mixed and not generalizable, hence NCEE could not draw any conclusions about the relationship between ex ante and ex post costs.

Dr. Elizabeth Kopits described the 1998 Locomotive Emissions Standards which applied emissions standards and test procedures in three separate tiers of emission standards (HC, CO, NO_x, PM, smoke), with applicability dependent on the locomotive's date of

manufacture. Dr. Kopits explained that EPA's ex ante analysis was based on the incremental per locomotive compliance costs so that total costs were the product of number of locomotives subject to the rule times the costs per locomotive. NCEE's analysis was limited to information from one engineer from Engine, Fuel, and Emissions Engineering, Incorporated (EF&EE), journal articles (primarily authored by engineers from locomotive manufacturing firms) and publicly available data (e.g., American Association of Railroads). Dr. Kopits showed a slide that summarized NCEE's findings based on different cost components. NCEE concluded that for Line Haul locomotives, results were inconclusive with regard to the comparison of ex ante with ex post costs. For Switch locomotives, ex post costs were likely lower due to few remanufactured and new units adopting alternate technology in addition to some support from air quality grants.

Following NCEE's presentation, five (5) public commenters presented their remarks.

During the public comment period, Dr. Anne Smith, on behalf of the American Petroleum Institute said the RCS did not encompass macroeconomic costs. She also said that ex post estimates can be as unreliable as ex ante estimates. She emphasized the need to identify ways to improve ex ante cost methodologies, particularly to identify unanticipated or indirect costs.

Jerry Schwartz, of the American Forest and Paper Association (AF&PA) said AF&PA supports a retrospective look at lessons learned so EPA can improve its cost estimates in the future. Mr. Schwartz said industry had estimated its costs accurately but was assuming a different baseline from EPA's analysis, starting in 1987.

Paul Weigand of the National Council for Air and Stream Improvement (NCASI) said EPA underestimated the costs of the Cluster Rule with respect to the Effluent Guidelines portion by 34% because EPA did not consider costs borne by industry in association with the first Best Available Technology Pretreatment Standard for Existing Sources (BAT/PSES) proposal for chlorine free bleaching and related spending to convert operations to eliminate the use of chlorine in pulp bleaching. Mr. Weigand said that EPA only counted compliance costs for the period between 1998 and 2001 when, in reality, compliance costs were borne by the industry well before this period.

Jerry Shumaker of International Paper said the Cluster Rules were the first major capital investment brought on by regulations in the pulp and paper industry. Mr. Shumaker described pre-1994 expenditures that industry made in anticipation of the need for chlorine free bleaching. He said that International Paper alone spent \$600 million to comply with the Cluster Rule of which \$200 million was for the water portion for the 27 mills that were brought into compliance.

Panelists engaged the industry representatives in a discussion of their baseline vis-à-vis NCEE's baseline.

Steve Via of the American Water Works Association (AWWA) described AWWA as a scientific and educational society dedicated to the improvement of drinking water quality and supply. Mr. Via said EPA's analysis should accurately reflect the ability of local communities to pay for compliance costs.

The panelists turned to the discussion of the charge questions. With respect to charge questions 1 and 2 on evaluating the RCS methodology, panelists spoke about the need for a common conceptual framework throughout the case studies. Noting that the literature review was a review of other reviews, one panelist wondered whether it would be useful to do a qualitative meta analysis to understand what led to differences between ex ante and ex post estimates based on existing studies. Another panelist complimented the matrix of cost components offered in the locomotive emissions case study. The RCS's cutoff of 25% as a significant difference between ex ante and ex post costs was not thought to be useful. Panelists discussed the difficulty of knowing when a regulation begins to change behavior, the nature of voluntary expenditures and whether industry's voluntary spending should be counted as actual compliance costs. An EPA representative pointed out that voluntary expenditures were not supposed to be counted as actual compliance costs according to EPA's *Guidelines for Economic Analyses*. The importance of the timeline was a theme that panelists continued to emphasize. Panelists agreed there was a lot more interest in seeing why ex ante costs differ from ex post rather than whether they differ. One panelist noted a different framework might be needed for municipalities affected by the arsenic rule as compared to private sector firms affected by the Cluster Rule given the difference between publicly owned utilities and private firms.

A panelist said that NCEE's "methodology" was really just a way of getting information. Panelists voiced their belief that the RCS would benefit from having a common conceptual framework, i.e. a superset of the important factors that would be explored across the different case studies. Panelists did not have any suggestions for how NCEE might improve its access to data.

Respectfully Submitted:

Holly Stallworth, Ph.D. /s/
Designated Federal Officer

Certified as Accurate:

Madhu Khanna, Ph.D./s/
Chair

NOTE AND DISCLAIMER: The minutes of this public meeting reflect diverse ideas and suggestions offered by Committee member during the course of deliberations within the meeting. Such ideas, suggestions and deliberations do not necessarily reflect consensus advice from the panel members. The reader is cautioned to not rely on the

minutes to represent final, approved, consensus advice and recommendations offered to the Agency. Such advice and recommendations may be found in the final advisories, commentaries, letters or reports prepared and transmitted to the EPA Administrator following the public meetings.