

Economic Valuation of Human Health Benefits of Controlling Mercury Emissions from U.S. Coal-Fired Power Plants

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The extensive 3-year scientific work that forms the basis of this presentation was undertaken for NESCAUM by Harvard Center for Risk Analysis (HCRA), part of the Harvard School of Public Health (HSPH). The goal of the work was to develop a methodology to “monetize” the economic benefits of controlling mercury emissions from coal-fired boilers in the U.S. Two end points were evaluated: lower IQ of children born to mothers with elevated blood mercury, and fatal and non fatal heart attacks in adults associated with elevated blood mercury (the second end point was addressed for the first time in the U.S.). The report covers diverse areas of policy-relevant research including: mercury emissions, atmospheric transport and fate of mercury, atmospheric modeling of mercury deposition, relationship between mercury deposition and methylmercury levels in fish (and how they change with changes in emissions), current and future exposures of humans to mercury in fish, dose response functions, and finally, the monetization of the benefits related to reduced mercury emissions. As an example of the application of this methodology, the study quantifies the benefits for the proposed Clear Skies Act (the 2002 version) for the year 2010 (about 30 percent reduction in mercury emissions) and 2020 (about 70 percent reduction).

The results indicate that annual benefits for CSA (2010), associated with improved IQ, range from \$73 million (assuming a neurotoxicity threshold equal to the RfD) to \$194 million (assuming no threshold). The corresponding annual benefits for CSA (2020) are \$119 million to \$288 million. Much larger benefits are associated with avoided cardiovascular events (fatal and non-fatal). For CSA (2010) the monetized annual benefits are \$3.3 billion. The corresponding annual benefits for CSA (2020) are \$4.9 billion. The total annual benefits for the two endpoints range from \$3.5 billion for 2010 to just over \$5.2 billion for 2020.