Attachment B

The following attachment provides additional comments on the need for EPA to include other HAPs in the EGU regulation and additional comments on the trading schemes.

EPA made a finding in December 2000 that it is "appropriate and necessary" to regulate HAP utility emissions using the MACT standard provisions under Section 112. The basis of the finding is the 1998 "Study of Hazardous Air Pollutants from Electric Utility Steam Generating Units-Final Report to Congress" (hereafter referred to as RTC). In the current proposal, EPA believes that it has carried out the four instructions under section 112(n)(1)(A); namely: (1) EPA must prepare a study on the "*hazards to public health reasonably anticipated to occur as a result of emissions by electric utility steam generating units of pollutants listed under subsection (b) after imposition of the requirements of this Act…";*(2) *develop alternative control strategies;* (3) "*the Administrator shall regulate electric utility steam generating units under this section, if the Administrator finds such regulation is appropriate and necessary after considering the results of the study required by this subparagraph"; and (4*) *propose to regulate EGUs under section 112.*

EPA clearly states throughout the preamble that the decision to regulate EGUs is expressly linked to the RTC study. For example, EPA has concluded that it is reasonable to interpret section 112(n)(1)(A) as authorizing EPA to promulgate section 112 emissions regulations for Utility Units only with respect to the HAP that the EPA has determined are appropriate and necessary to regulate [based on the finding of the study]." EPA has also relied on the study to determine that no additional HAPs emitted from EGUs are subject to regulation.

Therefore, if EPA's interpretation of section 112(n)(1)(A) is that it supports a regulatory approach based on the findings of the risk assessment it must ensure that the risk assessment represents the "gold standard" according to current Agency guidelines and reflects current understanding of the risks associated with exposure to utility HAP emissions. These guidelines are spelled out in a series of memoranda that require risk assessments upon which federal regulations are based to be accurate, complete, supported by current science, transparent, and protective of public health and the environment with an adequate margin of safety. Considering the importance of the decision to regulate the largest sources of HAP emissions in U.S. it is incumbent upon EPA to ensure that the risk assessment upon which these hazards have been assessed is of the highest standard and quality and that most recent science and health effects information is incorporated into their regulatory policy decision.

In 1994-1995, several members of the Air Quality and Public Health Committee participated in a workgroup process established by the STAPPA and ALAPCO's Air Toxics Committee to provide technical review and comments on EPA's RTC. The draft

RTC did also undergo an external peer review process in 1995. Based on review of the current RTC on EPA's website dated February 1998, we find the Utility HAP RTC to be incomplete and out-of-date with respect to the significant advancements that have been made over the past decade on health effects of HAPs and their risks to human health. In addition, we have determined that the RTC did not adequately respond to the external peer review comments. We believe that one of the reasons for the problems with the RTC is that EPA conducted the external peer review four months prior to the court order deadline and did not have enough time to respond to the extensive comments on the draft. However, EPA has had several years since then to review the study and improve the risk assessment according to the peer review recommendations to ensure that the peer review comments were adequately addressed and that the risk assessment was up-to-date[1]. We believe that EPA's decision to use an out-of-date and incomplete risk assessment, as the basis for regulating the largest sources of HAP emissions in the U.S is unacceptable and profoundly lacking in sound public health policy. We strongly believe that EPA cannot fulfill its obligations under 112(n) until an adequate assessment of the health risks associated with coal- and oil-fired EGUs is completed.

To illustrate the extent to which the February 1998 study is out-of-date and incomplete, we have summarized the major concerns with the study below that were first identified during its draft version by the Workgroup and peer reviewers and that continue to plague the study today.

1. Incomplete risk assessment: EPA used assumptions or methods that would result in an underestimation of the risks from exposure to HAPs emitted from electric utilities. Three specific areas in which the risks were underestimated include: (a) the selection of HAPs of concern; (b) the omission of indirect or multi-pathway exposure and risk assessment; and (c) emission data analysis. A summary is also provided in Table 1.

(a) Selecting HAPs of concern: Although EPA initially identified 67 HAPs that are emitted by EGUs, the current proposal is based on the finding that "mercury was the HAP emitted that is of greatest concern from a public health perspective." EPA also included information indicating that nickel was the pollutant of concern from oil-fired EGUs due to it high level of emissions. As a starting point, EPA's approach for selecting HAPs of concern to be evaluated in the study was problematic. EPA's screening process estimated direct inhalation exposure to nationwide average emission totals (using the Human Exposure Model). However, this model does not account for those pollutants that are transported and deposited far from the original source and pose risks from indirect exposure. As a

[1] Three areas not included in the RTC, for example, are: an assessment of cumulative risks, exposure and risks associated with metals, and risks to children in the RTC.

Table1: Summary of Peer Review Comments and Status of RTC

Peer review comment	Status of RTC
Strongly recommended that EPA should conduct new analyses within a four to six month period to identify indirect impacts from HAPs other than mercury. (Note: the mercury analysis was conducted under the Mercury Study to Congress and considered relatively well done by the peer reviewers.) This analysis should address arsenic and cadmium and perhaps include more on lead and nickel.[2]	EPA did not conduct the multi-pathway analysis for cadmium, lead or nickel. For arsenic, EPA multiplied a factor of 7 to the results of the RELMAP to address higher deposition > 50km that was modeled.
The peer review comments noted that EPA's selection of specific HAPs for determining risks associated with utility emissions omitted substances that may pose risks, and did not include reactive toxics including acrolein, hydrogen chloride (HC1) and hydrogen fluoride (HF). [3]	EPA did not address acrolein in the study. HCl and HF were address qualitatively. No specific modeling was conducted.
The peer review comments indicated that aggregate risks (accounting for the risks from utilities as well as other anthropogenic and natural sources) were not addressed. For example, the use of a 50-kilometer impact zone is not adequate for potent carcinogens, which, in the case of arsenic, are predicted to be seven times higher outside the impact zone when evaluating population aggregate risks.	EPA did not account for aggregate or cumulative risks in the 1998 study. Since then the Agency has developed extensive guidelines that should have been included in the study for this rulemaking.
The peer review comments that a more detailed discussion of background concentrations and exposures for the HAPs being emitted from fossil-fueled power plants is needed. The reviewers felt that this would be of particular concern for non-cancer effects, where the permissible margin for further inputs to overall exposures is already extremely limited.	EPA did not include background concentrations or exposures in order to determine if the incremental exposures from utilities would exceed non-cancer thresholds, particularly in the communities surrounding the EGUs.

[2] The reasons cited for supporting additional multi-pathway analysis of arsenic, cadmium and dioxins in this time-frame were that: (1) data are available for at least a screening-level analysis; (2) those substances are very potent toxic agents; and (3) current multi-source exposures are at such critical levels that further input from utility emissions would result in unhealthful exposures.

[3] The peer reviewers also noted that, while fluctuations in exposures from utility plant emissions would mainly produce short-term, acute effects, these effects would not be accounted for under the chronic-effects approach used by EPA.

result, none of the HAPs that exert health impacts indirectly through accumulation in the food chain (arsenic, dioxins etc) were initially selected to be evaluated in the study.

(b) Multi-pathway analysis: Risk estimates based on direct inhalation exposure did not account for indirect effects associated with post-depositional or multi-pathway exposures that are more important, both qualitatively and quantitatively, than direct inhalation. Multi-pathway assessment is necessary to account for the fate of pollutants after they deposit on the ground and enter aquatic compartments, vegetation, terrestrial animals and other biota, thus producing human exposures via a multi-pathway scenario. As a result, the draft study that was sent out for peer review did not include any indirect or multipathway analyses despite the fact that many of the HAPs emitted from coal- and oil-fired EGUs are bioaccumulative toxins. In response to the peer review comments that such analyses is essential, EPA hastily provided multi-pathway risk assessments for arsenic and dioxins in the final document in order to meet the court order deadline. Under the circumstances, these assessments were not subject to peer review and we are unaware of any external technical review of the multipathway assessments in the final study. With respect to arsenic analysis, EPA continues to take the position that "further analyses were needed to characterize the risks posed by arsenic emissions" (page 4656). Similarly, EPA's conclusions for exposure and risk results for the dioxins analysis "did not conclusively demonstrate the existence of health risks of concern associated with exposure to utility emissions either on a national scale or from any individual utility." For lead and cadmium, EPA conducted a qualitative assessment and makes no further mention of these HAPs in the proposal.

(c) Emissions Data Analysis: The Workgroup raised two important concerns regarding the approach to use median emission estimates for risk assessment. We continue to believe that the methods used by EPA to gather emissions data underestimate emission levels from utilities. First, EPA's emissions testing program was conducted on the broadest range of unit types and controls with the emphasis on "realistic" units as opposed to "worst-case" control scenarios. For example, certain plants were not chosen because they represented the worst-case emitters of toxics, such as cyclone-fired furnaces or hot-side electrostatic precipitators, which may emit more dioxins. Furthermore, this approach does not address such significant sources as oil-fired utilities that have no controls or some coal-fired utilities that, under upset or other conditions, emit HAPs at levels greater than measured under optimal conditions during the testing period. Second, even with the range of units EPA selected, the use of only average HAP emission concentrations does not reflect the actual range of emissions, particularly upper-bound emission levels. Upper-bound emissions, along with average emissions (and related exposures and risks), should have been presented to provide a more comprehensive analysis of the public health impact of utility emissions. Such an approach would have been consistent with EPA's 1995 risk assessment and characterization guidelines. The external

peer reviewers specifically addressed the uncertainties in the Ni estimates used in the risk assessment and requested improvements in the uncertainty analysis; however, it does not appear that these comments were addressed in the final RTC.

2. Inadequate Assessment of Hydrogen Chloride (HCl) and Hydrogen Fluoride (HF): Even in its consideration of exposure from just direct inhalation, EPA omitted from further analysis two HAPs (hydrogen chloride [HCl] and hydrogen fluoride [HF]) that should have been addressed. These pollutants should have been considered because, among other things, they had nationwide emission estimates within the 50-kilometer modeling area ranging three to five orders of magnitude greater than other HAPs emitted from utilities. The Workgroup commented that EPA should justify the omission of these two HAPs, especially since the agency's analysis estimated HCl and HF emissions nationwide to be significant (i.e., 137,000 tons per year and 19,500 tons per year, respectively). EPA's response to this comment was to provide a literature review of the health effects of HCl and HF.[4] They used ambient monitoring data as surrogates for modeling HCl and HF emissions. We believe that EPA's conclusion that "no exceedances of the health benchmarks for either substances" was found is based on inadequate data. The external peer reviewers also requested that acrolein be evaluated; however, it is not clear if EPA was able to address these concerns.

[4] From introduction of chapter in RTC "This chapter is not intended to provide a detailed, comprehensive treatise on the above subject area; rather, it is designed to provide general technical information that will identify possible problem areas that may call for additional, more detailed research."

Concerns about Hot Spots

Another major concern is that EPA's cap-and-trade approach will allow EGUs to purchase and use allowances in lieu of reducing emissions. Although EPA's position is that they do not expect "hot-spots" to develop from trading, EPA has not considered several key factors associated with trading that can disproportionately affect sensitive environmental ecosystems.

1. Sources that purchase allowances in effect emit uncontrolled levels of all three species of Hg: gaseous elemental Hg, reactive gaseous (oxidized) mercury (RGM) and particulate Hg. The trading program can exacerbate existing hot spots and create new ones near power plants because the RGM – which can be as high as 70 % of the total Hg emitted from a bituminous coal-fired power plant – has relatively short travel distances (up to tens of kilometers) and small residence times in the atmosphere, and, therefore, tends to deposit locally near the source.

2. On a regional scale, scientists generally agree that Hg depositing in remote settings, at large distances from large sources, is derived from the transformation in the atmosphere of gaseous elemental Hg by ozone and possibly several other atmospheric oxidants.[5] The fact that many areas in our region – including remote areas – experience high ozone levels, there is an increased potential for the transformation of elemental Hg to the RGM and subsequent deposition in the ozone-polluted airsheds.

3. Another major concern is that, unlike NOx and SO_2, Hg bioaccumulates exponentially in fish.[6] In other words, relatively small inputs of mercury to sensitive aquatic systems can increase the levels of mercury in fish by several orders of magnitude and pose increased risks to public health and the environment. This is problematic in the Northeast region because contamination of the aquatic ecosystem[7] is so pervasive that fish consumption advisories are necessary across the region (see Figure 1). In addition, a robust synthesis of ecological monitoring data developed by the Northeast Ecological Research Consortium (www.briloon.org) has documented a similar threat to loons and other

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[5] Statement of Dr. David P. Krabbenhoft, Research Hydrologist (Geochemist) before the Subcommittee on Environment, Technology, and Standards, House Committee on Science on "Mercury Emissions: State of the Science and Technology" November 5, 2003

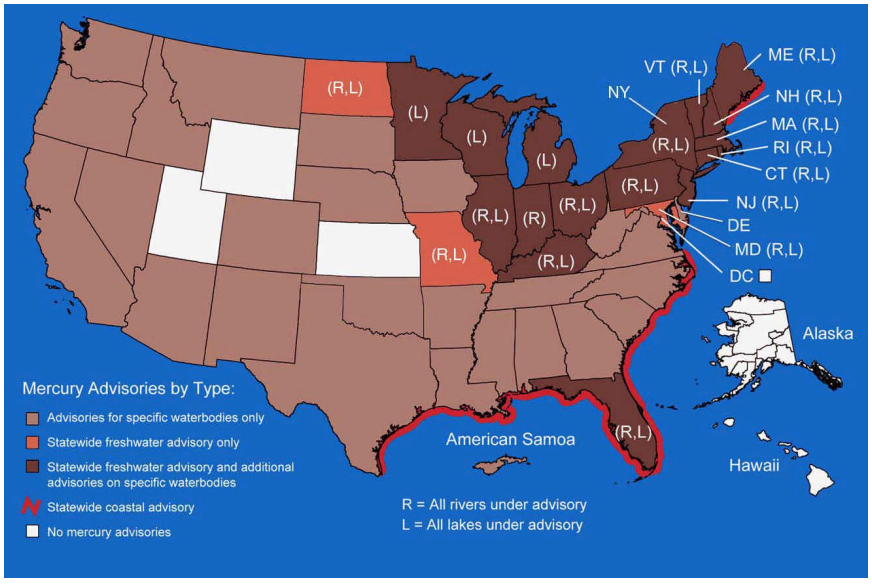
[6] Although it should also be noted that other factors enhance Hg accumulation in fish, including surface water acidification. This is important in the Northeast region because forty-one percent of lakes in the Adirondack Mountains and 15% of lakes in New England have exhibited chronic or episodic acidification or both; 83% of the affected lakes are acidic because of atmospheric deposition. Acidic Deposition in the Northeastern United States: Sources and Inputs, Ecosystem Effects, and Management Strategies. Charles T. Driscoll, Gregory B. Lawrence, Arthur J. Bulger, Thomas J. Butler, Christopher S. Cronan, Christopher Eagar, Kathleen F. Lambert, Gene E. Likens, John L. Stoddard, And Kathleen C. Weathers\ BioScience . *March 2001 / Vol. 51 No. 3*

[7] Documented in the 1998 Northeast States/Eastern Canadian Provinces Mercury Report: Framework for Action.

piscivorous birds. Figure 2 below illustrates, for example, the distribution of mercury in blood and eggs of the Common Loon in North America, with the highest levels of mercury in loons occurring in the Northeast region. These levels potentially threaten the health and sustainability of piscivorous birds and mammals that consume contaminated freshwater fish.

Finally, there are several critically important field studies, much of which have been funded by EPA, that demonstrate the potential *benefits* of immediate and substantial reductions in "new" mercury emissions from EGUs on environmentally sensitive ecosystems. These studies strongly indicate that reducing "new" Hg emissions to the greatest extent and as expeditiously as possible can result in the recovery of the damaged ecosystem over several decades once loadings are significantly reduced. A compendium of studies on the fate, transport, and transformation of Hg in diverse aquatic and terrestrial environments can be easily accessed through EPA's Science to Achieve Results (STAR) program.[8] These important field studies demonstrate that Hg newly deposited to zones of methylation is more readily converted to methylmercury than existing Hg pools. We also recommend that EPA include in their assessment the Florida Department of Environment's (FL DEP) study,[9] which has demonstrated actual reductions of Hg in fish after emission controls were installed in Southern Florida. Importantly, the FL DEP provides important information on predicting that the time required to achieve reduction in fish tissue Hg concentrations. In the Everglades, for example, the FL DEP found a 50 percent reduction in the ultimate response in the fish tissue mercury concentrations is 10 years.

Figure 1. Mercury Fish Consumption Advisories in U.S.[10]

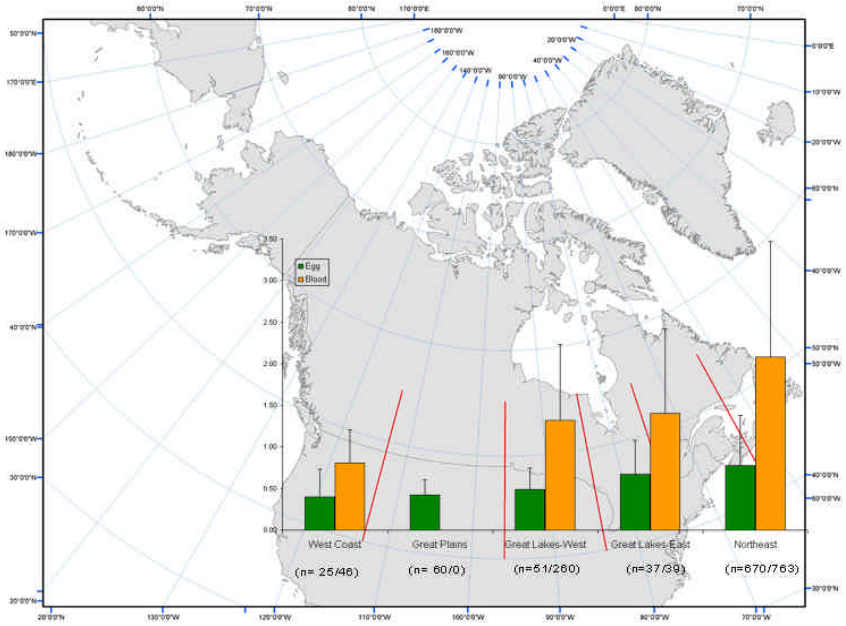


[8] http://es.epa.gov/ncer/publications/topical/mercury.html

[9] Florida Department of Environmental Protection, " Integrating Atmospheric Mercury Deposition with Aquatic Cycling in South Florida," November 2003

[10] Map from NESCAUM's Report Mercury Emissions From Coal-fired Power Plants: The case for regulatory action. October 2003. Map updated by A. Morin

Figure 2. Mercury Levels in Blood and Eggs of the Common Loon[11]



[11] Data from BioDiversity Research Institute and not for distribution. Contact David Evers at david.evers@briloon.org for more information