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# UTILITY WATER ACT GROUP

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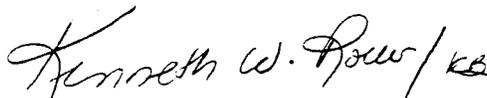
**Docket Control Number: OPPTS-00276**

To Docket Clerk:

Enclosed please find the comments of the Utility Water Act Group ("UWAG") on the draft North American Regional Action Plan on Mercury, Phase II (64 Fed. Reg. 50,284, Sep. 16, 1999), Docket Control Number OPPTS-00276.

If you have any questions about these comments, please contact me at 804/273-3494.

Sincerely,



Kenneth W. Roller  
Water Quality Committee Chair

cc: Kristy A. N. Bulleit, Esq.

**COMMENTS OF  
THE UTILITY WATER ACT GROUP  
ON DRAFT NORTH AMERICAN ACTION PLAN ON MERCURY, PHASE II  
(64 Fed. Reg. 50,284, Sep. 16, 1999)**

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On September 16, 1999, the Environmental Protection Agency ("EPA") published a notice of availability of phase two of a draft North American Regional Action Plan on Mercury ("NARAP" or "Plan").<sup>1</sup> EPA, acting as the representative of the United States, developed the NARAP in conjunction with representatives from the governments of Canada and Mexico.<sup>2</sup> In doing so, these representatives acted pursuant to the authority set forth in the North American Agreement on Environmental Cooperation ("NAAEC") entered into by the United States, Canada and Mexico (collectively, the "Member States") in 1994.<sup>3</sup> The NARAP recommends specific goals and targets for the reduction of anthropogenic mercury emissions in North America. In its notice, EPA invited public comment on the NARAP as part of an ongoing effort to further refine these recommendations.<sup>4</sup> The following comments are submitted by the Utility Water Act Group ("UWAG")<sup>5</sup> and highlight areas of particular concern to UWAG. UWAG endorses the

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<sup>1</sup> See 64 Fed. Reg. 50,284 (1999).

<sup>2</sup> North American Regional Action Plan on Mercury, Phase II, Aug. 17, 1999, North American Implementation Task Force on Mercury.

<sup>3</sup> North American Agreement on Environmental Cooperation, Jan. 1, 1994, U.S.-Can.-Mex.

<sup>4</sup> See 64. Fed. Reg. at 50,284.

<sup>5</sup> UWAG is an association of 110 individual electric utilities and three national trade associations of electric utilities, the Edison Electric Institute, the National Rural Electric Cooperative Association, and the American Public Power Association. The individual utility companies operate power plants and other facilities that generate, transmit and distribute electricity to residential, commercial, industrial and institutional customers. The Edison Electric Institute is an association of investor-owned electric utilities. The National Rural Electric Cooperative Association is an association of nonprofit electric cooperatives supplying central station service through the generation, transmission and distribution of electricity to rural areas of the United States. The American Public Power Association is the national trade association that represents

(continued . . .)

comments of the Utility Air Regulatory Group ("UARG") on the NARAP and incorporates them here by reference.

**I. Any Action on Mercury Must Be Based On An Identified Threat of Serious And Irreparable Harm To Human Health And the Environment**

The NARAP states as a short-term goal the "50 percent reduction nationally in mercury emissions by the year 2006 from existing major stationary sources based on 1990 or equivalent emissions inventories."<sup>6</sup> The NARAP also specifies a long-term goal of reducing North American anthropogenic mercury emissions to levels "approach[ing] naturally-occurring levels and fluxes of mercury in environmental media."<sup>7</sup> Missing from the NARAP, however, is an explanation as to why such reductions are necessary.<sup>8</sup> The NARAP does proclaim broadly that "anthropogenic releases of mercury to North American and global environmental media pose risks to human health and the environment." but this statement is meaningless without some identification of the level of risk posed, the nature of such risk, and its significance.<sup>9</sup> Similarly, the NARAP seeks to justify its action items by reference to a "precautionary principle" which states that: "[w]here there are *threats of serious or irreversible damage*, lack of full scientific evidence shall not be used as a reason for postponing cost-effective measures to prevent

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publicly-owned electric utilities in the United States. UWAG's purpose is to participate on behalf of its members in EPA's rulemakings under the Clean Water Act and in litigation arising from those rulemakings.

<sup>6</sup> NARAP at 7.

<sup>7</sup> Id.

<sup>8</sup> This also assumes that such reductions are *possible*, which, for reasons discussed in UARG's comments on the NARAP, is unlikely in the extreme.

<sup>9</sup> NARAP at 7.

environmental degradation."<sup>10</sup> Here again, however, neither the NARAP nor EPA have established that an identifiable threat of "serious" or "irreversible" damage to human health or the environment exists.

EPA specifically declined to find such a threat in its 1998 Utility Study, stating that: "The EPA recognizes that there are substantial uncertainties that make it difficult to quantify the magnitude of the risks due to utility emissions, and that further research and/or evaluation would be needed to reduce these uncertainties."<sup>11</sup> Similarly, both the NARAP and EPA's 1997 Mercury Study identify a host of areas where more research is needed to make the threshold determination as to the threat, if any, that U.S. anthropogenic mercury emissions pose to public health.<sup>12</sup>

In the absence of a comprehensive determination that U.S. anthropogenic mercury emissions pose an identifiable, serious threat to public health and the environment, any EPA action to regulate mercury would be arbitrary and in contravention of EPA's responsibilities under the Clean Water Act and the Clean Air Act. In sum, the NARAP does not excuse EPA from making an initial, comprehensive and scientifically justified determination that anthropogenic mercury emissions pose a "serious" and "irreversible" threat to public health before undertaking regulatory efforts intended to restrict such emissions.

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<sup>10</sup> Id. (emphasis supplied).

<sup>11</sup> Study of Hazardous Air Pollutant Emissions from Electric Utility Steam Generating Units – Final Report to Congress, EPA-453/R-98-004a (EPA 1998) ("Utility Study"), vol. 1, at ES-18; see also Mercury Study Report to Congress, EPA 452/R-97-003 (EPA 1997) ("Mercury Study"), vol. 1, at 3-8 ("no monitoring data have been identified that conclusively demonstrate or refute a relationship between any of the individual anthropogenic sources in the emissions inventory and increased mercury concentrations in environmental media or biota."); 5-3 ("Well-conducted studies are also needed to clarify exposure levels at which toxic effects other than those defined as 'critical' could occur in humans.").

<sup>12</sup> Mercury Study, vol. 1, at 5-1 through 5-7; NARAP at 13-16; see also Utility Study, vol. 1, at ES-18.

## **II. Any Determination Regarding the Health Risks Posed By Mercury Emissions Must Be Based On the Use of Scientifically Sound Methods**

EPA's determination as to the health effects posed by mercury emissions will be judged by the quality of the models and methods used to make that determination. In this regard, EPA must exercise particular caution when applying three of the models that will play critical roles in the assessment of the relationship between anthropogenic emissions, mercury exposures in humans, and the health effects, if any, resulting from such exposures. These are: (1) EPA's reference dose ("RfD") for mercury;<sup>13</sup> (2) EPA's use of bioaccumulation factors ("BAFs") for mercury; and (3) EPA's use of test method 1631 for mercury quantification.

### **A. The Mercury Reference Dose**

EPA's current reference dose is based on questionable data from cases of acute, episodic mercury poisoning in Iraq and Japan at extreme levels of exposure. Such data are of limited use in determining a RfD for mercury, which must be calculated based on subtle indicators of mercury poisoning, and EPA's continued reliance on this data has been questioned by other federal agencies, including the Food and Drug Administration ("FDA") and the Agency for Toxic Substances and Disease Registry ("ATSDR").

Accordingly, as EPA has recognized, EPA's RfD needs to be re-evaluated in light of more recent studies of mercury exposure from the Seychelles and Faroe Islands.<sup>14</sup> Unlike the cases of severe mercury poisoning in Japan and Iraq described above, these studies measured chronic, low-level mercury exposures via fish consumption over periods of several years and appear to

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<sup>13</sup> The mercury RfD represents a level of mercury consumption deemed to have no effect on human health. It is typically expressed in micrograms of mercury per kilogram bodyweight per day.

<sup>14</sup> See Mercury Study, vol. 1, at 3-25, 3-26, 5-3.

have been subject to more rigorous test conditions. Importantly, the Seychelles data, which have been released in their raw form to allow independent analyses by other scientists, appear to show no adverse effect at dose levels significantly higher than those associated with U.S. fish consumption.<sup>15</sup> This already has led ATSDR and others to calculate new RfDs several times higher than EPA's current RfD. In addition, recent research by the Electric Power Research Institute suggests that the overall uncertainty factor currently used by EPA and others to calculate the mercury RfD should be reduced by a factor of two.<sup>16</sup> Taken as a whole, these changes in the calculation of the mercury RfD would result in the removal or significant curtailment of the overwhelming majority of state fish advisories, many of which were established based on EPA's current 0.1 microgram/kilogram bodyweight/day RfD, and on which EPA has relied as evidence that a mercury "problem" exists. The National Academy of Science's review of EPA's mercury RfD, currently scheduled for completion in June 2000, also should play a major role in EPA's re-evaluation of the "safe" level of mercury exposure.

#### **B. Bioaccumulation Factors**

Another area in which EPA needs to exercise particular caution is in its use of BAFs to determine the bioaccumulation of methyl mercury in fish and aquatic biota. A firm understanding of mercury bioaccumulation in fish and aquatic biota is crucial in setting the mercury water quality criteria that will govern mercury loading to waterbodies. In this regard,

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<sup>15</sup> See, e.g., Davidson et al., Effects of Prenatal and Postnatal Methylmercury Exposure from Fish Consumption on Neurodevelopment. Outcomes at 66 Months of Age in the Seychelles Child Development Study, 280 JAMA 701-07 (1998); Davidson et al., Longitudinal Neurodevelopmental Study of Seychellois Children Following In Utero Exposure to Methylmercury from Maternal Fish Ingestion: Outcomes at 19 and 29 Months, 16 Neurotoxicology 677-688 (1995).

EPA's current BAF methodology is seriously flawed and needs to be reconsidered. In particular, EPA's BAF method assumes a steady-state relationship between mercury in the water column and mercury in aquatic organisms and their food. In doing so, the method ignores a number of complex biotic (physiological, morphological, trophic) and abiotic (physical and chemical) factors that influence the relationship between mercury in waterbodies and its uptake and magnification in aquatic biota. These include complex fate and transport reactions, such as the evasion of mercury from the water column, and temporal and spatial variation within the environment, that make the assumption of a steady-state relationship problematic in the extreme.

As EPA's own Science Advisory Board ("SAB") noted:

Understanding the extent to which mercury is accumulated by various aquatic species is central to both human health and ecological risk assessment. Unfortunately, both calculated and field-measured BAFs show a great deal of variability in the numbers for the same species. The data [presented in EPA's draft Mercury Report to Congress] show that the field-derived BAF<sub>3</sub> and BAF<sub>4</sub> can vary by as much as two orders of magnitude when comparing 5<sup>th</sup> and 95<sup>th</sup> percentiles. The variability is attributed to site specific parameters which control the extent of mercury methylation as well as sorption of mercury to suspended particles and dissolved organics.<sup>17</sup>

For this reason, the SAB, after careful consideration of the available scientific information, has sharply criticized the Agency's use of the BAF methodology. As the SAB stated in its review of EPA's Draft Mercury Study:

The Subcommittee was disappointed with the models downstream from the deposition models, particularly the fate and transport in ecosystems and the bioaccumulation models. The consensus of the

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<sup>16</sup> Presentation of Leonard Levin, Electric Power Research Institute, to National Academy of Sciences, Committee on the Toxicological Effects of Mercury, Public Meeting, Oct. 4, 1999.

<sup>17</sup> An SAB Report: Review of the EPA Draft Mercury Study Report to Congress, EPA-SAB-EC-98-001, pp. 30-31, October 1997 ("SAB Report").

Subcommittee was that the rationale for selection of these post-deposition models was poorly justified and inappropriate. **The Subcommittee felt that these weaknesses were the most serious in the report overall. Specifically, EPA's decision to model % MeHg (methylmercury) as constant across ecosystems, and to model fish bioaccumulation factors (BAF) based on total Hg (rather than MeHg) were most problematic.**<sup>18</sup>

In sum, EPA's BAF methodology model is seriously flawed and is completely inappropriate for use in setting water quality criteria for mercury. EPA should reform this method extensively before attempting to set such criteria.

### **C. Method 1631**

EPA recently approved a new test method (Method 1631) that reportedly is able to quantify mercury reliably down to 0.5 parts per trillion. However, this test method has been challenged in federal court due to several serious deficiencies. The most important of these is the fact that EPA's test protocol does not contain all of the protections necessary to ensure reliable data. It suggests, but fails to mandate, the use of the "clean" sampling and analytical techniques necessary to prevent contamination from diverse sources such as the air exhaled by laboratory technicians with mercury dental fillings. Furthermore, the method has not been shown to function reliably in the diverse matrices in which it may be applied, especially at low levels.

The NARAP commendably acknowledges the importance of reliable data. To the extent that EPA Method 1631 is used, great caution must be exercised to ensure that it is used only the appropriate "clean" techniques and only in the limited context in which it can be supported by EPA's method validation study.

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<sup>18</sup> SAB Report at 18 (emphasis in original).

More generally, all monitoring and laboratory analytical practices concerning mercury should be planned, performed, and evaluated in accordance with EPA's "Policy And Program Requirements For The Mandatory Agency-Wide Quality System."<sup>19</sup>

### **Conclusion**

The NARAP does not excuse EPA from its responsibility to make a comprehensive determination as to the threat to public health and the environment, if any, posed by anthropogenic mercury, and to choose models that will ensure that such a determination is grounded in sound science. Accordingly, EPA should carefully evaluate and address the problems with the methodologies discussed above before considering the need for any regulation of mercury.

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<sup>19</sup> EPA Order No. 5360.1, Charge 1 (July 16, 1998).