



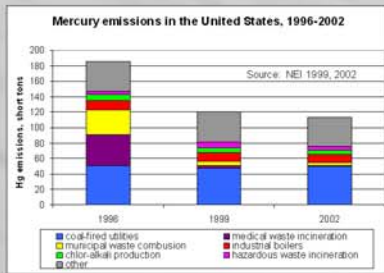
# Estimated trends in mercury concentrations at MDN sites

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## Anthropogenic Hg Emissions

- Over the past decade the largest reductions in anthropogenic Hg emissions have occurred from the municipal waste combustion and medical waste incineration sectors
- Coal-fired utility emissions of Hg have not changed much, but are expected to decrease in the coming years as a result of Clean Air Mercury Rule (CAMR) legislation



## Analysis of trends at MDN sites

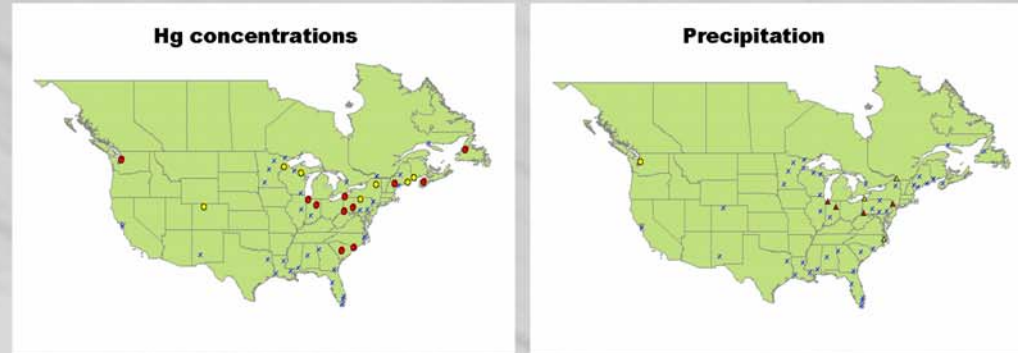
- MDN sites with 7 or more years of data – 49 sites used in this analysis (January 1996 through January 2007)
- Seasonal Kendall test to estimate trends in Hg concentrations and precipitation amounts
- These time series are somewhat short in length, but sufficient to begin an assessment of current trends and illustrate analyses which can be conducted in the near future

## MDN sites used in this analysis (N = 49)



## Trends in Hg concentration and precipitation

- x denotes non-significant trends
- Significant trends are indicated in yellow (p<0.1) or red (p<0.05)
- Significant increases are denoted with triangles, decreases with circles



## Hg concentrations

- Statistically significant decreases in Hg concentrations were observed at 18 of 49 sites
- At these 18 sites, Hg decreases ranged from  $-0.78 \text{ ng L}^{-1} \text{ yr}^{-1}$  (IN34) to  $-0.12 \text{ ng L}^{-1} \text{ yr}^{-1}$  (NS01), and were generally in the range of about  $-0.25$  to  $-0.30 \text{ ng L}^{-1} \text{ yr}^{-1}$
- Fourteen of these sites are located near the Great Lakes, and in the northeastern US and Canadian maritime provinces
- Considering both significant and non-significant trends, Hg concentrations were found to be decreasing at 41 of 49 sites
- However, along the Gulf Coast and in the Southwest, no statistically significant changes in Hg concentration have yet been observed

## Precipitation

- Significant increases at 7 sites (4 of which experienced significant declines in Hg concentration – IN20, IN34, PA30, and PA37), significant decrease at one site (VA18, which also saw a decline in Hg concentration)
- Considering both significant and non-significant trends, precipitation has increased at 31 of 49 sites

## Next Steps

- Continue to evaluate trends in Hg wet deposition as more data become available, and as planned EGU emission reductions are phased-in
- New York State has received EPA funding to install MDN samplers and speciated Hg (elemental, reactive gaseous, and particulate) Tekran systems in Rochester and New York City to establish an ambient Hg baseline and compare with similar data from rural sites in New York

## Acknowledgments

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