

FY99-XXXI-89
CENTER FOR AIR TOXIC METALS AFFILIATES PROGRAM

CONTRACTOR: Energy & Environmental Research Center

PRINCIPAL INVESTIGATORS:

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PARTICIPANTS

<u>Sponsor</u>	<u>Cost Share¹</u>
Otter Tail Power Company	\$75,000
Northern States Power Company	\$75,000
Tennessee Valley Authority	\$75,000
U.S. Environmental Protection Agency	\$3,592,400
ND Industrial Commission	<u>\$75,000</u>
Total Project Costs	\$3,892,400

Project Schedule - 36 Months

Contract Date - 6/22/99
 Start Date – (A continuation of Project 62)
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 Completion Date – 12-31-02

Project Deliverables

Status Report – 9/1/99 ✓
 Status Report – 2/01/00
 Final Report – 2/01/01 ✓

OBJECTIVE / STATEMENT OF WORK

CATM is a partnership among government, industry, and academia that is focused on pollution prevention and control technologies. As part of ongoing research activities at the EERC, CATM provides critical data and predictive methodologies to the EPA to help define regulations and to provide a forum for EPA/industry interaction. The focus of CATM is to further current understanding of the behavior of potentially toxic metals in coal-fired utilities, other fossil fuel systems, waste-to-energy systems, and waste incinerators. CATM goals are to develop methods to prevent or reduce air toxic metal emissions, predict the fate of metals, determine the effectiveness of control devices, and identify new control technologies.

STATUS

Ongoing CATM research activities are addressing several issues related to trace element emissions. CATM research Program Areas and sample study items are:

- Fundamental Mechanisms of Mercury Species Formation in Coal Combustion Flue Gas
 - ▲ Alkali metal can react with chloride additional to the flue gas interfering with the formation of particulate-bound and oxidized mercury.
- Development of Sampling and Analytical Tools for Oxidized Mercury Species
 - ▲ Cryotrapping and mass spectrometry techniques are being combined to enable mercury species identification in flue gas streams.
- Development of Mercury Control Technologies
 - ▲ Tests conducted with sorbents, O₂, HCl, NO_x, SO₂ and H₂O suggest that SO₂ and NO_x interactions affect the forms of mercury and mercury capture.
 - ▲ Under certain conditions, the addition of Cl₂ and HCl may improve mercury capture across activated carbon.
 - ▲ Mercury release from coal combustion by-products (fly ash, bottom ash, etc) is extraordinarily low.
- Application of Database and Models to the Fundamental and Applied Study of Air Toxic Metals
 - ▲ The CATM database contains over 300,000 data points from over 40,000 samples representing over 70 plants.
- Technology Commercialization, Education, and Publication
 - ▲ CATM with EPA and DOE sponsored two air quality conferences in 1999 and 2000, respectively, with the conferences topics of mercury, trace elements and particulate matter.