

**ANNUAL PROJECT REPORT
AS OF DECEMBER 2001**

**1. PROJECT SPONSOR:
MANAGER:**

Sorbent Technologies Corporation
1664 East Highland Road
Twinsburg, OH 44087

2. PROJECT

Sid Nelson Jr.
President
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3. OCDO GRANT NO. CDO/R-98-13

**4. PROJECT UPDATE ___ OR
FINAL REPORT** X.

5. PROJECT TITLE: LOWERING THE COST OF MERCURY REMOVAL
AT OHIO'S COAL-FIRED POWER PLANTS

6. PROJECT TERM: FROM 03/01/00 **TO** 12/31/01

7. BUDGET

<u>CO-SPONSORS NAME</u>	<u>COST-SHARE</u>
<u>OCDO</u>	\$ <u>75,000.</u>
<u>Sorbent Technologies Corp.</u>	\$ <u>75,000.</u>

TOTAL PROJECT COST: \$ 150,000.

I. ABSTRACT

8. **OVERVIEW OF PROJECT & OBJECTIVES:**

An inexpensive new sorbent material has been discovered that appears to efficiently remove trace elemental mercury from coal-fired flue gas streams at high temperatures.

The overall objective of this research project was to develop a understanding of how sorbent processing variables affect the mercury removal performance of the new materials so that a pilot- or full-scale demonstration can later be carried out successfully at an Ohio coal-fired boiler site.

Additional goals of this research project were: to simplify the preparation of the new materials; to learn how to best apply them; to scale up their production; and, to determine whether any final disposal issues need to be addressed.

The project's ambitious performance and cost goals were to demonstrate elemental mercury removal of 80 percent from a simulated, representative high-sulfur-coal flue gas at 350°F at an estimated cost of less than \$3,000 per-lb-of-Hg removed.

9. **WORK DONE AND CONCLUSIONS:**

Experiments were performed demonstrating that the new materials were safe to produce, store, and use in high-temperature duct-injection applications.

Laboratory tests with simulated coal-fired flue gases were carried out to determine the mercury capacity of the sorbents. The materials exhibited promising performance.

Methods were developed to manufacture adequate quantities of the new sorbents for boiler testing.

10. **PLANS FOR COMING YEAR:**

The current research project was completed.

II. HIGHLIGHTS/ACCOMPLISHMENTS

11. The new sorbents were shown to be easy to produce and safe to use.

In fixed-bed laboratory testing, the elemental mercury capacity of the new sorbents was about 500% to 1,000% higher than typical powdered activated carbons.

The mercury captured by the new sorbents did not revolatilize or leach with simulated disposal.

III. ARTICLES/PRESENTATIONS

12. Nelson, S., "High-Temperature Sorbents to Lower Mercury Control Costs," Pittsburgh Coal Conference, September 12-14, 2000.