

**ANNUAL PROJECT REPORT
AS OF DECEMBER 1994**

1. PROJECT SPONSOR:

Babcock & Wilcox Company
Contract Research Division
1562 Beeson Street
Alliance, OH 44601-2196

2. PROJECT MANAGER:

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3. OCDO GRANT NO#: CDO-D-87-58(B)

4. PROJECT: Final Report

5. PROJECT TITLE: SNRB™ Air Toxics Testing

6. PROJECT TERM: FROM April 1993 TO March 1994

7. PROJECT	<u>NAME</u>	<u>COST-SHARE</u>
CO-SPONSORS:	OCDO	\$ 50,000
	US DOE	346,458
	EPRI	240,000
	Ohio Edison	<u>120,000</u>
TOTAL PROJECT COST:		\$756,458

I. ABSTRACT

8. OBJECTIVES

The SO_x-NO_x-Rox Box™ or SNRB™ system is a combined process which reduces emissions of SO₂, NO_x, particulates, trace metals and acid gases from coal-fired boilers. Characterization of the air toxics emissions reduction potential of the SNRB™ system is an integral step in commercialization of the technology. Commercial application of the technology will directly enhance the continued use of Ohio coal in utility and industrial boiler applications.

9. WORK DONE AND CONCLUSIONS:

A comprehensive field test to quantify emissions of hazardous air pollutants at Ohio Edison's Burger Power Plant was completed in 1993. The program monitoring emissions from the pulverized coal-fired boiler and the 5-MWe SNRB™ demonstration facility. The emissions measured included trace metals, polycyclic aromatic hydrocarbons, polychlorinated dioxins and dibenzofurans, volatile organic compounds, aldehydes, HCl and HF, particulate emissions/particle size measurements and

radionuclides. The SNRB™ process was found to significantly reduce emissions/particle size measurements and radionuclides. The SNRB™ process was found to significantly reduce emissions of selected hazardous air pollutants.

10. PLANS FOR COMING YEAR:

This project was completed in 1994.

II. HIGHLIGHTS/ACCOMPLISHMENTS

11. In addition to controlling SO₂, NO_x and particulate emissions, the SNRB™ system demonstrated high emissions control efficiencies for trace metals, HCl and HF generated by combustion of Ohio coal. Specific performances measured in the air toxics emissions test program include:

- Greater than 99% removal of particulates by the SNRB™ fabric filter
- Greater than 98% removal efficiencies for the trace metals chromium, barium, cobalt, manganese, vanadium, beryllium, arsenic, lead and selenium. Lesser control efficiencies for more volatile metals such as antimony and mercury were observed as expected at the 850 F baghouse operating temperature.
- Greater than 99% HCl and HF emissions reduction by the SNRB™ system
- No detectable formaldehyde or other aldehydes with sensitivities at 0.15 micrograms per day standard cubic meter.

The data generated in the program has been incorporated into EPRI's Power Plant Integrated Systems: Chemical Emissions Study (PISCES) data base. This data base is expected to contribute to the basis for determining utility boiler regulatory requirements.

III. ARTICLES/PRESENTATIONS

12. The results of this project were presented at the 3rd meeting of the USDOE - Pittsburgh Energy Technology Center's Air Toxic Technology Working Group (TWG) held in Durham, North Carolina in March, 1994. The TWG is an advisory panel to the DOE-sponsored "Comprehensive Assessment of Toxic Emissions from Coal-Fired Power Plants" program.