

COMPOSITION BRAKE SHOES
LEAD & ASBESTOS EMISSIONS INTO
THE ATMOSPHERE DURING BRAKING

WEST CHICAGO



January 30, 1978

R. H. Alber
Sales Manager
ANCHOR Brake Shoes

Ryckman Edgerley Tomlinson and Associates, Environmental Engineers, conducted a study of lead and asbestos emissions from ANCHOR Brake Shoes on 09/02/76.

Mine Safety Appliance's gravimetric samplers were placed at three locations around the American Steel Foundries railroad wheel dynamometer in Granite City, Illinois. Appropriate filters were used and analyses were performed according to procedures recommended by the National Institute of Occupational Safety and Health (Phase contrast microscopy for asbestos and atomic absorption spectroscopy for lead)

Testing conditions were designed to give the greatest possible exposure situation. A series of 90 MPH stops were made using a wheel load of 21000 pounds and a 6000 pound brake shoe load. The total material loss during these tests were 382 grams. These were exaggerated conditions since the normal AAR Official dynamometer test results in losses of about 60 grams of brake shoe materials.

Locations monitored included:

1. The operators console
2. 15 feet downwind from the shoe
3. 30 feet downwind from the shoe

(The wind is generated by a pedestal fan cooling the shoe/wheel contact area)

Results of the analysis of test samples collected were:

Location	No. of Tests	Lead mg/m ³		Asbestos Fibers/ml	
		Result	OSHA Max.	Result	OSHA Max.
1	9	0.044	0.200	0.052	2.0
2	4	0.100	0.200	0.080	2.0
3	8	0.036	0.200	0.036	2.0

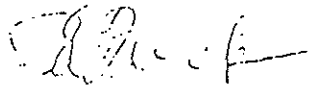
COMPOSITION BRAKE SHOES
LEAD & ASBESTOS EMISSIONS INTO
THE ATMOSPHERE DURING BRAKING

WEST CHICAGO
Page 2

CONCLUSIONS:

The critical locations monitored indicated airborne concentrations well below the permissible O.S.H.A. standards.

Since these tests were much more severe than normal braking conditions, the expected lead and asbestos emissions into the atmosphere should be even less than these safe amounts.



R. D. Fleck
Director
Research and Development

RDF:meo

P.S. O.S.H.A. Material Safety Data Sheet to follow.

cc: DBW
JDP
FILE
BOOK