

State of California  
AIR RESOURCES BOARD

Resolution 02-14

March 21, 2002

Agenda Item No.: 02-2-2

WHEREAS, the Air Resources Board has been directed to carry out an effective research program in conjunction with its efforts to combat air pollution, pursuant to Health and Safety Code sections 39700 through 39705;

WHEREAS, a research proposal, number 2507-223, entitled "Determination of the Asbestos Content of Current Automotive Dry Friction Materials, and the Potential Contribution of Asbestos to the Particulate Matter Derived from Brake Wear," has been submitted by the California Department of Health Services;

WHEREAS, the Research Division staff has reviewed and recommended this proposal for approval; and

WHEREAS, the Research Screening Committee has reviewed and recommends for funding:

Proposal Number 2507-223 entitled "Determination of the Asbestos Content of Current Automotive Dry Friction Materials, and the Potential Contribution of Asbestos to the Particulate Matter Derived from Brake Wear," submitted by the California Department of Health Services, for a total amount not to exceed \$131,055.

NOW, THEREFORE BE IT RESOLVED, that the Air Resources Board, pursuant to the authority granted by Health and Safety Code section 39703, hereby accepts the recommendation of the Research Screening Committee and approves the following:

Proposal Number 2507-223 entitled "Determination of the Asbestos Content of Current Automotive Dry Friction Materials, and the Potential Contribution of Asbestos to the Particulate Matter Derived from Brake Wear," submitted by the California Department of Health Services, for a total amount not to exceed \$131,055.

BE IT FURTHER RESOLVED, that the Executive Officer is hereby authorized to initiate administrative procedures and execute all necessary documents and contracts for the research effort proposed herein, and as described in Attachment A, in an amount not to exceed \$131,055.

I hereby certify that the above is a true and correct copy of Resolution 02-14, as adopted by the Air Resources Board.

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Marie Kavan, Clerk of the Board

## **ATTACHMENT A**

“Determination of the Asbestos Content of Current Automotive Dry Friction Materials,  
and the Potential Contribution of Asbestos to the Particulate Matter  
Derived from Brake Wear”

### **Background**

The U.S. EPA instituted a ban on the production of most Automotive Dry Friction Materials (ADFM) products (such as brake pads and linings) containing asbestos (a known carcinogen) in 1989. However, ADFM products were exempted in 1991. Recent reports indicate that asbestos is widely used in after-market brakes. However, the proportion of vehicle brakes containing asbestos, as well as the compositional formulation of asbestos in the brake lining material, is unknown. Therefore, motor vehicle emission rates and inventories of asbestos are also unknown.

### **Objective**

The objective of this study is to obtain information that can be used to estimate the extent of asbestos emissions due to brake-wear from vehicles used in California. The key elements include the identification and verification of asbestos in brakes, and the determination of the character and composition of asbestos in dust produced by vehicle brake-wear.

### **Methods**

The first task is to survey the brake industry to assess the prevalence of asbestos in brakes of vehicles in California. Subsequently, samples of brakes and brake dust will be collected from brake repair shops, and from vehicles operated on a dynamometer. These samples will be subjected to detailed laboratory analysis. Finally, the contractor will characterize the form, size, and levels of asbestos present in brake dust.

### **Expected Results**

This project will characterize the asbestos composition of the brakes and brake-wear generated dust collected from vehicles, including the asbestos fiber type, fiber size distribution, and concentration as a percent of total mass. The results will help clarify the relationship between the form of asbestos present in brakes, and the asbestos released in the brake dust by high temperature abrasion. The ARB staff will obtain useful information on the nature and use of current automotive brake lining products containing asbestos, as verified through direct laboratory analysis.

### **Significance to the Board**

Recent reports show that asbestos is widely used in after-market brakes. To determine the need to control emissions of this carcinogen, ARB staff need to estimate the extent of asbestos emissions due to brake-wear from vehicles used in California. The results of this project should help the ARB to assess the potential health threat from public exposure to asbestos emissions generated from brake-wear.

**Contractor:**

California Department of Health Services (DHS)

**Contract Period:**

18 months

**Principal Investigator (PI):**

Dr. Stephen Wall

**Contract Amount:**

\$131,055

**Cofunding:**

None

**Basis for Indirect Cost Rate:**

The indirect cost rate specified is what DHS requires for all contracts. The ARB staff accepted their 19 percent rate, regarding it as relatively low compared to those required by non-State laboratories.

**Past Experience with this Principal Investigator:**

Dr. Stephen Wall successfully completed a research study for the ARB that involved the development of a sophisticated sampling technique of toxic chemicals from stationary sources (Contract No. A932-098, Final Report Date October, 1996).

**Prior Research Division Funding to California Department of Health Services:**

Year	2001	2000	1999
Funding	\$0	\$0	\$0

# BUDGET SUMMARY

California Department of Health Services

Determination of the Asbestos Content of Current Automotive Dry Friction Materials,  
and the Potential Contribution of Asbestos to the Particulate Matter  
Derived from Brake Wear

## **DIRECT COSTS AND BENEFITS**

1.	Labor and Employee Fringe Benefits	\$ 59,652
2.	Subcontractors	\$ 20,816
3.	Equipment	\$
4.	Travel and Subsistence	\$ 2,243
5.	Electronic Data Processing	\$
6.	Reproduction/Publication	\$ 1,215
7.	Mail and Phone	\$ 1,215
8.	Supplies	\$ 25,375 <sup>1</sup>
9.	Analyses	\$
10.	Miscellaneous	<u>\$ 374</u>
	Total Direct Costs	\$ 110,890

## **INDIRECT COSTS**

1.	Overhead	\$ 12,407
2.	General and Administrative Expenses	\$ 7,758
3.	Other Indirect Costs	\$
4.	Fee or Profit	<u>\$</u>
	Total Indirect Costs	<u>\$ 20,165</u>

**TOTAL PROJECT COSTS** **\$ 131,055**

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<sup>1</sup> Supplies: \$25,375

General expenses for consumables, \$ 5,421

Calibration standards, sampling, and analysis consumables, \$14,954

Components for fabrication and assembly of sampling system, \$5,000

## Attachment 1

# SUBCONTRACTORS' BUDGET SUMMARY

Subcontractor: Sierra Research, Incorporated

Description of subcontractor's responsibility: Survey industry and operate chassis dynamometer.

### **DIRECT COSTS AND BENEFITS**

1.	Labor and Employee Fringe Benefits	\$5,000	
2.	Subcontractors	\$ -0-	
3.	Equipment	\$ -0-	
4.	Travel and Subsistence	\$ -0-	
5.	Electronic Data Processing	\$ -0-	
6.	Reproduction/Publication	\$ -0-	
7.	Mail and Phone	\$ 500	
8.	Supplies	\$ -0-	
9.	Analyses	\$ -0-	
10.	Miscellaneous	<u>\$8,400<sup>1</sup></u>	
	Total Direct Costs		<u>\$13,900</u>

### **INDIRECT COSTS**

1.	Overhead	\$4,199	
2.	General and Administrative Expenses	\$ 825	
3.	Other Indirect Costs	\$ -0-	
4.	Fee or Profit	<u>\$1,892</u>	
	Total Indirect Costs		<u>\$6,916</u>

### **TOTAL PROJECT COSTS**

**\$20,816**

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<sup>1</sup> Supplies (\$8,400):

\$500 for brake pad replacements  
\$1,400 for vehicle procurement  
\$500 for thermocouples and data loggers  
\$6,000 for laboratory leasing costs