During 1986, Dr. Ziem was the Physician-Consultant to the U.S. EPA Brake Mechanic Education Program

GRACE ZIEM, M.D., Dr.P.H.
Occupational Health
510 East Fort Avenue
Baltimore, Maryland 21230

(301) 539-4712

3 June 1985

Mr. James E. Clayton
Clayton Associates, Inc.
30 Southard Avenue, Box 589
Farmingdale, NJ 07727

Dear Mr. Clayton:

I have reviewed in detail the specifications of your brake enclosure system and also viewed a sample model, including an inspection of the filter system. I genuinely consider this enclosure system the safest and highest quality system available in the United States, and, to the best of my knowledge, in the world.

I have taught classes for hundreds of brake mechanics on proper procedures, and with other enclosure systems. There have been problems with hand exposure, exposure during filter change, and with most systems, inadequate testing. It is my belief that your equipment resolves these problems. Wet method systems simply do not provide a adequate protection for the cancer-causing potential of asbestos, and I do not recommend then at all. I am currently a consultant helping to develop teaching materials for mechanics, including posters, fact sheets, and audiovisual materials. I intend to recommend the features of your system because of their outstanding safety features. These materials will be distributed to active mechanics and vocational and trade schools.

Recent scientific studies show that asbestos substitute fibers may also have cancer-causing potential and thus enclosure systems will be needed for the forseeable future. In addition, one-fourth of the million U.S. brake mechanics will develop asbestosis if they have ten or more years of exposure, and several hundred yearly will die from asbestos-related cancers. This is because asbestos released during brake blowout remains in the shop until slowly filtered out by human lungs.

I want to encourage your efforts to help eliminate this epidemic of disease, including the development of clutch enclosures, a unique and vital feature.

Very Sincerely,

Grace Ziem M.D.

Grace Ziem, M.D., Dr. P.H.

THE MOUNT SINAI MEDICAL CENTER
ONE GUSTAVE L. LEVY PLACE • NEW YORK, N.Y. 10029

Mount Sinai School of Medicine • The Mount Sinai Hospital

October 12, 1984

Clayton Associates, Inc.
P.O. Box 589
30 Southard Avenue
Farmingdale, NJ 07727

Environmental Sciences Laboratory
Cummings Basic Sciences Building
10 East 102 Street
New York, New York 10029
(212) 650-6173

Attention: Mr. Jim Clayton

Dear Mr. Clayton:

3 This will report the results of air sampling tests conducted on September 19, 1984, to determine asbestos emissions during brake repair work.

Studies have indicated that the majority of asbestos fibers released during brake repair work are shorter than 0.3 micrometers in length. Thus it is important that dust collection equipment in this work utilize HEPA filters with high dust collection efficiency. Your HEPA filters meet this requirement, having a collection efficiency of 99.999% for particles with dimensions of 0.12 micrometers or greater.

These air sampling tests were conducted using personal air samplers with the filter located in the breathing zone of the operator. The tests were conducted in three modes, as follows:

1. Cleaning brake drums using the Clayton Associates brake cleaning equipment.
2. Cleaning brake drums using the Clayton Associates inflatable brake and clutch dust collection equipment.
3. Changing the disposable filter on the Clayton Associates brake cleaning equipment, using negative pressure.

The membrane filters were analyzed by transmission electron microscopy at 25,000x magnification, because the majority of fibers are below the resolution power of optical microscopy. However the filters were also analyzed by the standard OSHA fiber-counting technique, employing phase contract microscopy. The results are as follows:

		Fiber concentrations	
Sample	**Description**	**nanograms/cu meter (electron microscopy)**	**fibers/milliliter (optical microscopy)**
C-1	control - on operator pre-testing	215	0.0
	TEST #1		
C-2	on operator - brake cleaning equipment blowing brake drum	0.0	0.0
	TEST #2		
C-3	on operator - blowing brake drum	0.0	0.0
	TEST #3		
C-4	on operator - inflatable brake and clutch dust collector	0.0	0.0
	TEST #4		
C-5	on operator - inflatable brake and clutch dust collector	0.0	0.0
	TEST #5		
6 C-6	on operator - filter change	0.0	0.0

Results and Conclusions

The tests show that asbestos levels are virtually eliminated by the use of Clayton Associates system employing brake encapsulation devices equipped with HEPA-filter vacuum dust collectors.

6 In addition, by using the Clayton Associates negative pressure system the filter can be change safely, without discharging asbestos dust to the operator or the environment. To my knowledge this is a new and unique feature in dust collection equipment and an outstanding achievement.

If there are any questions regarding the results or conclusions in this report, please do no hesitate to contact me.

Refers to USEPA recommended features found on page 5

Sincerely,

Arthur Rohl, Ph.D.
Assistant Professor

ANR;sa