PLAINTIFF'S EXHIBIT
NAR-187

JUN 3

IN THE CIRCUIT COURT
FOR THE THIRD JUDICIAL CIRCUIT
MADISON COUNTY, ILLINOIS

THE BANK OF ALTON, as Executor and Special Administrator of the Estate of RICHARD JAMISON, Deceased,	)	
Plaintiff,	)	
v.	)	Cause No. 87-L-1230
A. P. GREEN REFRACTORIES, et al.,	)	
Defendants.	)	

DEFENDANT NORTH AMERICAN REFRACTORIES COMPANY
SUPPLEMENTAL COMPLIANCE WITH RULE 220 ORDER

COMES NOW defendant North American Refractories Company ("North American"), by and through its attorneys, Coburn, Croft & Putzell, and for its supplemental compliance with the court's Rule 220 Order regarding the disclosure of expert witnesses for the above-captioned case, states as follows:

1. In addition to those witnesses listed in its initial Compliance with Rule 220 Order, filed July 29, 1988, defendant may call the following individuals as witnesses in the trial of the above-captioned case:

a. Gary Bayer will testify as disclosed in the letter dated June 5, 1989 to Randall Bono from Mark Howard, a copy of which is attached hereto.

b. Brian J. Kinman will testify to his evaluations of the economic loss sustained as a result of the death of Richard Jamison, including the assumptions and opinions of plaintiff's expert, Dr. Leroy Grossman. A curriculum vitae for Mr. Kinman will be provided as soon as it is available.

Published by AsbestosClaims.Law
asbestosclaims.law/library/21539/1

2. Defendant North American reserves the right to adopt any experts offered by any of the other defendants.

Respectfully submitted,

COBURN, CROFT & PUTZELL

By: Ronald L. Hack

Kenneth R. Heineman
Ellen E. Bonacorsi
Ronald L. Hack
One Mercantile Center
Suite 2900
St. Louis, Missouri 63101
(314) 621-8575

Attorneys for Defendant
North American Refractories
Company

North American Refractories Company's Supplemental Rule 220 Compliance in Bank of Alton v. A. P. Green Refrac... Published by AsbestosClaims.Law
ACL Doc 21539 · Page 2 of 73 asbestosclaims.law/library/21539/2

The undersigned certifies that a copy of the foregoing was mailed, postage prepaid, this 7th day of July, 1989 to:

ATTORNEYS FOR PLAINTIFFS:

Randall Bono
Kenneth Graves
Bono & Graves, Ltd., P.C.
Benbo Building
65 East Ferguson Avenue
P.O. Box 128
Wood River, IL 62095

and

Paul Hulsey
Ness, Motley, Loadholt,
Richardson & Poole
151 Meeting Street, Suite 600
P.O. Box 1137
Charleston, SC 29402

ATTORNEYS FOR DEFENDANTS:

A.P. GREEN REFRACTORIES
ARMSTRONG WORLD INDUSTRIES, INC.
BALDWIN-HILL
BENJAMIN FOSTER COMPANY
CERTAIN-TEED CORP.
FIBREBOARD CORPORATION
GAF CORPORATION
KEENE CORPORATION
NATIONAL GYPSUM COMPANY
OWENS-ILLINOIS, INC.
PFIZER, INC.
PITTSBURGH CORNING CORP.
ROCKWOOL MANUFACTURING CO.
UNITED STATES GYPSUM COMPANY
QUIGLEY CO., INC.
FLEXITALLIC GASKET CO., INC.

Robert H. Schultz, Jr.
Heyl, Royster, Voelker & Allen
17 Ginger Creek Meadows
P.O. Box 467
Edwardsville, IL 62025

A.W. CHESTERTON, INC.

John J. Kurowski
315 North Illinois Street
Belleville, IL 62220

AMERICAN WIRE & CABLE

Gregory H. Wolk
Portman, Edwards, Cooper
& Singer
7733 Forsyth, Suite 1000
St. Louis, MO 63105

ANCHOR PACKING COMPANY

Edward J. McCambridge
William F. Mahoney
Segal, McCambridge, Singer
& Mahoney
Two First National Plaza
20 South Clark Street, Suite 700
Chicago, IL 60602

BENDIX

Beth A. Kamp
Brown, James & Rabbitt, P.C.
705 Olive, 11th Floor
St. Louis, MO 63101

DURABLA MANUFACTURING CO.

John J. Horgan
Brian R. Plegge
Moser, Marsalek, Carpenter,
Cleary,
Jaeckel & Keaney
314 North Broadway, Suite 360
St. Louis, MO 63102-2088

Published by AsbestosClaims.Law
asbestosclaims.law/library/21539/3

EAGLE-PICHER CORP.

Michael J. Nester
Donovan, Rose, Nester & Szewczyk
8 East Washington Street
Belleville, IL 62220-2190

FIBREBOARD CORPORATION

James K. Toohey
Ross & Hardies
150 North Michigan Avenue
Chicago, IL 60601

FISCHER LUMBER COMPANY

James McGlynn
McGlynn & McGlynn
65 South 65th Street
Belleville, IL 62223

FLEXITALLIC, INC.

Charles E. Dorkey, III
Riochards & O'Neil
885 Third Avenue
New York, NY 10022

FLINTKOTE

Ronald L. Vance
Shepherd, Sandberg & Phoenix
One City Centre, Suite 1500
St. Louis, MO 63101

GAF CORPORATION

Edwin E. Brooks
Katten, Mucnin, Zavis, Pearl
& Galler
525 West Monroe Street
Suite 1600
Chicago, IL 60606

GARLOCK, INC.

Rebecca Jackson
Bryan, Cave, McPheeters
& McRoberts
500 North Broadway
St. Louis, MO 63101

GENERAL GASKET

John Lynch
Evans & Dixon
22 Glen-Ed Professional Park
P.O. Box 405
Edwardsville, IL 62025

GENERAL REFRACTORIES

Kenneth Snodgrass, Jr.
Goldsworthy, Fifield & Hasselberg
360 Jefferson Bank Building
124 S.W. Adams
Peoria, IL 61602

GRANT WILSON
M.H. DETRICK

James R. Benson
Greg E. Roosevelt
Bernard & Davidson
3600 Nameoki Road
P.O. Box 1345
Granite City, IL 62040

H.K. PORTER COMPANY, INC.
SOUTHERN TEXTILE CORP.

C. Michael Evert, Jr.
Evert & Weathersby
3405 Piedmont Road, NE
Suite 225
Atlanta, GA 30305

HARBISON-WALKER

Steve Thompson
Daniel Schattnik
Reed, Armstrong, Gorman & Coffey
507 Mark Twain Bank Building
P.O. Box 368
Edwardsville, IL 62025

J.P. BUSHNELL PACKING SUPPLY CO.

Michael R. Noakes
F. Douglas O'Leary
Robert C. Cook
Moser, Marsalek, Carpenter,
Cleary, Jaeckel & Keaney
314 North Broadway, Suite 360
St. Louis, MO 63102-2088

JOHN E. BRAZEE & COMPANY

John K. Sheehan
Brown, Miller & Sheehan
117 North Kirkwood Road
Suite 200
St. Louis, MO 63122

and

Gail Donnelly Bader
216 North Main Street
P.O. Box 414
Edwardsville, IL 62025

JOHN CRANE, INC.

John L. Memolin
A. J. Bronsky
Brown, James & Rabbitt
705 Olive Street, Suite 1100
St. Louis, MO 63101

and

Gary K. Morgan
7930 Clayton Road
Suite 409
St. Louis, MO 63117

KOPPERS COMPANY
SAGER CORPORATION

George F. Fitzpatrick, Jr.
Wildman, Harrold, Allen & Dixon
One IBM Plaza, Suite 3000
Chicago, IL 60611

LAMONS METAL GASKET CO.

Paul B. Lee
Lucas & Murphy, P.C.
510 Frisco Building
906 Olive Street
St. Louis, MO 63101

NATIONAL ELECTRIC COIL

Byron L. Gregory
McDermott, Will & Emery
111 West Monroe Street
Chicago, IL 60603-4067

and

Jeanne Knowles Townsend
Goldstein & Price
818 Olive Street, Suite 1300
St. Louis, MO 63101

OWENS-CORNING FIBERGLAS

Steven P. Sanders
Thomas B. Weaver
Raymond R. Fournie
Armstrong, Teasdale, Schlafly,
Davis & Dicus
One Metropolitan Square
Suite 2600
St. Louis, MO 63102-2740

OWENS-ILLINOIS, INC.
FIBREBOARD CORP.
PITTSBURGH CORNING CORP.

Robert H. Riley
Joseph O'Hara, Jr.
Schiff, Hardin & Waite
7200 Sears Tower
Chicago, IL 60606

Published by AsbestosClaims.Law
asbestosclaims.law/library/21539/5

RAYMARK INDUSTRIES, INC.
THE CELOTEX CORPORATION
CAREY CANADA, INC.

Gordon Broom
Jeffrey S. Hebrank
Burroughs, Simpson, Hepler,
Broom & MacDonald
500 St. Louis Street, Suite 300
P.O. Box 510
Edwardsville, IL 62025

and

Raymond H. Modesitt
Patrick, Wilkinson, Goeller
& Modesitt
333 Ohio Street
P.O. Box Box 1567
Terre Haute, IN 47808-1567

RILEY STOKER CORPORATION

Andrew D. Dillon
Shepherd, Sandberg & Phoenix
One City Centre, Suite 1500
St. Louis, MO 63101

SIDENER SUPPLY COMPANY
HIGH-TEMP REFRACTORY COMPANY

Jerome C. Simon
Thomas Carter, II
Moser, Marsalek, Carpenter, Cleary,
Jaeckel & Keaney
314 North Broadway, Suite 360
St. Louis, MO 63102-2088

W.R. GRACE & COMPANY
BORG-WARNER

Roger F. Wilson
Hinshaw, Culbertson, Moelmann,
Hoban & Fuller
521 West Main
P.O. Box 509
Belleville, IL 62222

WHEELER PROTECTIVE APPAREL

Ted Harvey
Freeark, Harvey, Mendillo & Dennis
115 West Washington Street
P.O.Box 423
Belleville, IL 62220

ATTORNEYS FOR EMPLOYERS:

COMMONWEALTH EDISON

David J. Dubicki
718 Commercial National
Bank Building
Peoria, IL 61602

GRANITE CITY STEEL
AMERICAN STEEL FOUNDARY
OLIN CORPORATION
MONSANTO
CERRO COPPER
CLARK OIL CO.
AMOCO OIL CO.
SHELL OIL CO.

Allan M. Goodloe, Jr.
Thompson & Mitchell
525 West Main
P.O. Box 750
Belleville, IL 62222

ILLINOIS POWER

Nicholas J. Neiers
Samuels, Miller, Schroeder,
Jackson & Sly
406 Citizens Building
P.O. Box 1359
Decatur, IL 62525

Ronald L. Jack

Published by AsbestosClaims.Law
asbestosclaims.law/library/21539/6

Q When you had this meeting, was that the first time they had ever heard that asbestos might be hazardous?

A I can't speak for them.

Q What steps did you then take to go forward with the elimination of asbestos?

A We agreed to set up a series. We agreed to set up a research project to eliminate the use of these materials.

Q What was the name of the project? Do you recall the name of the project?

A Elimination of asbestos.

Q Is there a file somewhere at NARCO that contains the written material pertaining to that project?

A It is possible.

Q Would that be located in the research department somewhere?

A If it exists.

Q How often did your group meet?

A Well, we didn't really meet on that issue. We met at that time, I was meeting with staff on an every-two-or-three-month basis to review their work.

Q All right.

A At that time we would have covered what was going on.

Q Would there be records pertaining to what actually occurred in this research project to eliminate asbestos?

EXHIBIT "B"

A Yes.

Q Where would those records be?

A At the technical center.

Q You believe they are still there?

A Yes.

Q Have you reviewed them in preparation for your testimony?

A Yes.

MR. BARON: Counsel, do you have those records?

MR. HEINTZMAN: I don't have them with me at this time, no.

MR. BARON: I believe we requested those records in our request for production.

MR. HEINTZMAN: I'm not sure you did. You requested records which dealt with the potential health hazards of asbestos. These records don't specifically go into the potential health hazards, regarding the project to eliminate the asbestos from the products. I do not have those with me at this time.

MR. BARON: We will request that you produce them posthaste, within the next week or so. Would that be possible?

MR. HEINTZMAN: Provided one thing, the

records also refer to other products and may contain some privileged communication. If we can work out an arrangement regarding the confidentiality of these. As you know, many of their competitors are also defendants in this liigation. To produce records which might have technical information about other products, that can create a problem for us. We would have to protect that privilege.

MR. BARON: The only problem is they will have a hearing on this case on August 2nd. We feel that it is critical that we have those documents before August 2nd to review, to utilize those at the hearing.

So if you are going to insist on that, we need to do it very promptly. I hope that we would not have to have court intervention.

MR. HEINTZMAN: I don't think court intervention is necessary. We will be in contact with Ron Heck and those fellows. Just to protect the confidentiality of that.

MR. BARON: Fine. And we can bring it up at the Thursday meeting so we can be sure that we are going to get those documents.

North American Refractories Company's Supplemental Rule 220 Compliance in Bank of Alton v. A. P. Green Refrac... Published by AsbestosClaims.Law
ACL Doc 21539 · Page 9 of 73 asbestosclaims.law/library/21539/9

BY MR. BARON:

Q Were there problems involved with the removal of asbestos from these products from an engineering point of view?

A Yes. That's why we used the material in the firs place.

Q Okay.

A They had good features. They gave good features.

Q NARCO has been in business as NARCO since 1929? Has it not?

A Yes.

Q It has been producing specialty products since 1929?

A I can't answer that.

Q Well, certainly it was producing specialty products prior to 1963. Was it not?

A I think so, yes.

Q Now, based on the list that had been given to me, the very first time that asbestos was ever used in any product manufactured by NARCO was in 1963?

A That is what the records show.

Q Was NARCO unable to manufacture commercially usable specialty products prior to 1963.

A I don't know. I can't answer that. I wasn't here.

North American Refractories Company's Supplemental Rule 220 Compliance in Bank of Alton v. A. P. Green Refra... Published by AsbestosClaims.Law
ACL Doc 21539 · Page 10 of 73 asbestosclaims.law/library/21539/10

BRIEF REVIEW OF

MAJOR SPECIALTY PROJECTS

OCTOBER 28, 1980

11. RA-835: ELIMINATION OF ASBESTOS FROM GUN MIXES

OBJECTIVE: The use of asbestos as a gunning aid which reduces the rebound of gunning mixes is now looked on with disfavor because of environmental rules and regulations limiting the quantity of asbestos in the air. Efforts are to be made to find a substitute for asbestos for our gun mixes; in particular, our basic gun mixes will be worked on first. If successful here, we will then extend our technology to other products employing asbestos.

A. Completion of Work Outstanding:

A new data sheet has been issued for Aerogun.

This program is completed.

BRIEF REVIEW OF

MAJOR SPECIALTY PROJECTS

JANUARY 4, 1980

Published by AsbestosClaims.Law
asbestosclaims.law/library/21539/13

12. RA-835: ELIMINATION OF ASBESTOS FROM GUN MIXES

OBJECTIVE: The use of asbestos as a gunning aid which reduces the rebound of gunning mixes is now looked on with disfavor because of environmental rules and regulations limiting the quantity of asbestos in the air. Efforts are to be made to find a substitute for asbestos for our gun mixes; in particular, our basic gun mixes will be worked on first. If successful here, we will then extend our technology to other products employing asbestos.

A work order is being made to substitute a clay mineral for the use of attapulgite in NARCOLITE.

Under this assignment work has also been carried out which involves the testing of a modified AEROGUN which was made at Farber for several special accounts. This mix had been changed unilaterally by the Farber personnel and we had never really examined it in detail. Testing is completed with the exception of a chemical analysis. A data sheet will be issued to revise the properties of AEROGUN since the replacement of asbestos has resulted in slightly denser mix and a product with much less magnesia than before due to the removal of the asbestos (a magnesium silicate).

IEF REVIEW OF MAJOR SPECIALTY PROJECTS

March 11, 1975

EXHIBIT

"A"

Published by AsbestosClaims.Law
asbestosclaims.law/library/21539/15

3. NO RA: ELIMINATION OF ASBESTOS FROM GUN MIXES

OBJECTIVE: The use of asbestos as a gunning aid which reduces the rebound in gunning mixes is now looked on with disfavor because of environ-

Published by AsbestosClaims.Law
asbestosclaims.law/library/21539/16

mental rules and regulations limiting the quantity of asbestos in the air. Efforts are to be made to find a substitute for asbestos for our gun mixes; in particular our basic gun mixes will be worked on first. If successful here, we will then extend our technology to other products employing asbestos.

The initial feeling was that a simple substitution of a less harmful fiber-type material could be used in place of asbestos and retain the current gunning characteristics of the various basic gun mixes. Fibers ordered and tested included milled fiberglass, soft wood flour, alpha cellulose, sisal fibers, cotton flock, fiber flax (chopped), rayon and nylon flock. Each of these materials was added to NARMAG OH gun mix and each mix, in turn, was gunned cold without premoistening into panels for rebound and strength data. Hot gunning of the same mixes was also carried out where it was felt that the cold gunning showed some promise. Based on the results of our laboratory work, we would like to find a location where we could try a trial of NARMAG OH gun mix to verify the gunning characteristics found experimentally; this mix would include wood flour as a substitute for asbestos.

Cold gunning of CM-18 indicates that wood flour will also be a good candidate for a substitute for asbestos in this product; therefore, we would like to secure a trial for this material, too.

CRB-347 and PD-345 have also been gunned cold with several binders, but at this time no acceptable alternative has been found. Work will continue on these products. Future work in this area will involve additional hot gunning trials using NARMAG OH gun mix as the base in order to evaluate several substitutes that in cold gunning did not look too good, but might do quite well in hot gunning. The idea of using fine shredded paper has some merit and will be explored. Finally, numerous large organic chemical companies will be canvassed inquiring about potential application of some of their products as a substitute for asbestos with respect to our needs. Several products, such as EMA, CMC and Methyl cellulose, fall in this category. After these avenues of approach have been tried with respect to a direct substitution and have not been successful, then we will have to go back to each mix and see what is required to change the mix in order to eliminate the asbestos and yet obtain good gunning characteristics. Hopefully, we can find a simple substitute although at this point, it does not look too promising.

BRIEF REVIEW OF

MAJOR SPECIALTY PROJECTS

SEPTEMBER 3, 1975

Published by AsbestosClaims.Law
asbestosclaims.law/library/21539/18

3. No RA: ELIMINATION OF ASBESTOS FROM GUN MIXES

OBJECTIVE: The use of asbestos as a gunning aid which reduces the rebound in gunning mixes is now looked on with disfavor because of environmental rules and regulations limiting the

Published by AsbestosClaims.Law
asbestosclaims.law/library/21539/19

quantity of asbestos in the air. Efforts are to be made to find a substitute for asbestos for our gun mixes; in particular, our basic gun mixes will be worked on first. If successful here, we will then extend our technology to other products employing asbestos.

A letter has been written to nine companies asking for help in finding a substitute for asbestos. This action is in addition to what we have been doing in the laboratory as reported in our last Products Committee Review on this subject. One company has responded with samples of a beneficiated bentonite which we will investigate. A second company has suggested the use of CMC and related compounds; we will have to establish how to proceed with screening materials which customers are sending us other than simply gunning.

We also plan to discuss this matter with personnel at Franklin Institute in Philadelphia to see whether they can be of any assistance to us in this program.

This project is a toughie!

IX P13 Cc

BRIEF REVIEW OF

MAJOR SPECIALTY PROJECTS

DECEMBER 16, 1975

Published by AsbestosClaims.Law
asbestosclaims.law/library/21539/21

3. No RA: ELIMINATION OF ASBESTOS FROM GUN MIXES

OBJECTIVE: The use of asbestos as a gunning aid which reduces the rebound in gunning mixes is now looked on with disfavor because of environmental rules and regulations limiting the quantity of asbestos in the air. Efforts are to be made to find a substitute for asbestos for our gun mixes; in particular, our basic gun mixes will be worked on first. If successful here, we will then extend our technology to other products employing asbestos.

We have received several additional additives; however, there has been no benchwork devised to test these and, in lieu of the lack of the Allentown Gun, no work has been accomplished on this assignment. When the Specialties Installation and Service Crew are in their new quarters in Pittsburgh, we will ask them to continue our regular testing program if no other methods of tests have been developed at that time.

Published by AsbestosClaims.Law
asbestosclaims.law/library/21539/22

BRIEF REVIEW OF

MAJOR SPECIALTY PROJECTS

MARCH 9, 1976

Published by AsbestosClaims.Law
asbestosclaims.law/library/21539/23

3. No RA: ELIMINATION OF ASBESTOS FROM GUN MIXES

OBJECTIVE: The use of asbestos as a gunning aid which reduces the rebound in gunning mixes is now looked on with disfavor because of environmental rules and regulations limiting the quantity of asbestos in the air. Efforts are to be made to find a substitute for asbestos for our gun mixes; in particular, our basic gun mixes will be worked on first. If successful here, we will then extend our technology to other products employing asbestos.

Our program will soon recommence. NARCOGUN PD-345 has been chosen as the mix to use because it has shown less tendency to be produced with anything but asbestos. Additions to be tested include cellulose gums, hydroxyethyl cellulose products, xanthum gums, micas and several types of fibers. So far, eleven batches have been produced and will be gunned shortly. Rebound, cold strength and bulk density will be principal properties of interest. If successful here, the additive will, of course, be tried in our other gun mixes where asbestos is used.

The 11 mixes reported to have been batched in the last Project Review have not been gunned. Twelve additional mixes have also been batched. All mixes involve NARCOGUN PD-345 because of its success with asbestos and nothing else to date. The mixes will be gunned and evaluated for rebound only at this point in time.

Published by AsbestosClaims.Law
asbestosclaims.law/library/21539/25

1x P 13 (

BRIEF REVIEW OF

MAJOR SPECIALTY PROJECTS

JUNE 8, 1976

Published by AsbestosClaims.Law
asbestosclaims.law/library/21539/26

3. No RA: ELIMINATION OF ASBESTOS FROM GUN MIXES

OBJECTIVE: The use of asbestos as a gunning aid which reduces the rebound in gunning mixes is now looked on with disfavor because of environmental rules and regulations limiting the quantity of asbestos in the air. Efforts are to be made to find a substitute for asbestos for our gun mixes, in particular, our basic gun mixes will be worked on first. If successful here, we will then extend our technology to other products employing asbestos.

Published by AsbestosClaims.Law
asbestosclaims.law/library/21539/27

The 11 mixes reported to have been batched in the last Project Review have not been gunned. Twelve additional mixes have also been batched. All mixes involve NARCOGUN PD-345 because of its success with asbestos and nothing else to date. The mixes will be gunned and evaluated for rebound only at this point in time.

Kelsey to. → RHL

BRIEF REVIEW OF

MAJOR SPECIALTY PROJECTS

SEPTEMBER 28, 1976

Published by AsbestosClaims.Law
asbestosclaims.law/library/21539/29

2. RA-835: ELIMINATION OF ASBESTOS FROM GUN MIXES

OBJECTIVE: The use of asbestos as a gunning aid which reduces the rebound in gunning mixes is now looked on with disfavor because of environmental rules and regulations limiting the quantity of asbestos in the air. Efforts are to be made to find a substitute for asbestos for our gun mixes; in particular, our basic gun mixes will be worked on first. If successful here, we will then extend our technology to other products employing asbestos.

Fifteen mixes of PD-345 employing both physical and chemical additives were gunned since the last report period. One additive, an attapulgite clay, gave rebound data very similar to that for asbestos. Based upon these data, work orders were issued to Womelsdorf to manufacture PD-345 and CM-18 with this additive, WO-1006 and WO-1007, respectively. One and one-half times as much attapulgite was required in comparison to asbestos, but this amount is so small anyway (1.5 to 2.0%) that we don't anticipate any problems. The work orders were also gunned and found to have excellent rebound, 17 and 8%, respectively. The usual physical properties are also being evaluated from these gunned panels.

In the meantime, a survey of the other asbestos-containing mixes has revealed only three additional products sold during 1975 and 1976 that contain asbestos--NARCOLITE, NARCOGUN CO and AEROGUN. NARCOLITE is by far and away the most active product of the three and plans are being made to experiment with attapulgite replacements in this product first, followed by the others.

As physical results are completed on each product, we will gradually switch to the new additive and carefully monitor service reports on gunning and life.

Published by AsbestosClaims.Law
asbestosclaims.law/library/21539/31

IXP13 C

BRIEF REVIEW OF

MAJOR SPECIALTY PROJECTS

JANUARY 11, 1977

Published by AsbestosClaims.Law
asbestosclaims.law/library/21539/32

2. RA-835: ELIMINATION OF ASBESTOS FROM GUN MIXES

OBJECTIVE: The use of asbestos as a gunning aid which reduces the rebound in gunning mixes is now looked on with disfavor because of environmental rules and regulations limiting the quantity of asbestos in the air. Efforts are to be made to find a substitute for asbestos for our gun mixes; in particular, our basic gun mixes will be worked on first. If successful here, we will then extend our technology to other products employing asbestos.

Work orders of PD-345 and CM-18 with an attapulgite clay substituted for asbestos have been completely evaluated; based on the good data obtained, new mix sheets for PD-345, PD-345A and CM-18 will be written and issued which show the use of this substitute. Future service results should be carefully monitored. NARMAG OH GUN MIX with the similar replacement has been made; the product cold guns all right. However, the Research Center gun became inoperative so further evaluation, including hot gunning, will be delayed.

Alumina-silica specialties mixes are also undergoing evaluation for feasibility of using the same substitute where necessary. NARCOLITE was studied in the laboratory and preliminary data suggests that attapulgite will work as an asbestos replacement, although a version with no asbestos or replacement also looked promising. Gunning properties of NARCOLITE with asbestos and attapulgite vs. NARCOLITE GUN will be compared next. Again, the gun repairs are holding up this work.

These mixes are essentially our major selling products using asbestos so chances are very good that asbestos will be out of all specialties before long.

A new mix that affects this program was encountered by the unilateral reinstatement by the Sales Department of SD-336. The attapulgite substitution was arbitrarily made in this product formulation; Mt. Union management was verbally informed of this decision on December 23, with paperwork to follow.

IX P 13 (ar)

BRIEF REVIEW OF

MAJOR SPECIALTY PROJECTS

MAY 17, 1977

Published by AsbestosClaims.Law
asbestosclaims.law/library/21539/34

5. RA-835: ELIMINATION OF ASBESTOS FROM GUN MIXES

OBJECTIVE: The use of asbestos as a gunning aid which reduces the rebound in gunning mixes is now looked on with disfavor because of environmental rules and regulations limiting the quantity of asbestos in the air. Efforts are to be made to find a substitute for asbestos for our gun mixes; in particular, our basic gun mixes will be worked on first. If successful here, we will then extend our technology to other products employing asbestos.

Laboratory work carried out under this project during the last several months can be itemized below:

A. Conversion of NARMAG OH GUN. Hot gunning will be required in order to complete testing on this product and this cannot be completed until city water is returned to the Research Center.

B. Conversion of NARCOLITE. The use of Attagel 50 as a replacement for asbestos in this castable appears to be okay. A new mix sheet will be issued to the Curwensville plant reflecting this change. In the meantime, we will continue to look at possible less expensive ways of manufacturing NARCOLITE with, for example, the use of more plastic clays. We have found from our work that NARCOLITE and NARCOLITE GUN exhibit significantly different properties both as cast and gunned indicating a definite need for both products.

C. Substitution of Attagel 50 in SD-336. Cold gunning of several varieti of this mix with Attagel 50 were examined; none of the materials exhibited data sheet properties after drying at 230°F or firing at 2000°F for modulus of rupture, cold crushing or density. This matter needs to be discussed before we proceed with too many trials. The field reports will really tell us whether we have a problem.

In summary, then, for Farber there are no mixes requiring asbestos. At Curwensville, we believe that with the conversion of NARCOLITE to Attagel 50 that there are no more specialties using asbestos. Womelsdorf needs only to have the NARMAG OH GUN completed and we will have all specialties made without the use of asbestos.

IX P 13 (au)

BRIEF REVIEW OF

MAJOR SPECIALTY PROJECTS

DECEMBER 19, 1977

Published by AsbestosClaims.Law
asbestosclaims.law/library/21539/36

5. RA-835: ELIMINATION OF ASBESTOS FROM GUN MIXES

OBJECTIVE: The use of asbestos as a gunning aid which reduces the rebound in gunning mixes is now looked on with disfavor because of environmental rules and regulations limiting the quantity of asbestos in the air. Efforts are to be made to find a substitute for asbestos for our gun mixes; in particular, our basic gun mixes will be worked on first. If successful here, we will then extend our technology to other products employing asbestos.

Published by AsbestosClaims.Law
asbestosclaims.law/library/21539/37

In the last report it was mentioned that, although we had converted NARCOLITE to Attagel 50, we would continue to look for less expensive ways of manufacturing NARCOLITE. The use of more plastic clays was one approach mentioned. Gleason clay, M&D clay and mixtures of the two proved to be detrimental to properties such as strength, plasticity or water retention. Several types of bentonites were investigated next, Hector and western. Again, strengths were affected and, also, imparted "thixotropic" tendencies to the body of the castable.

Another look at western bentonite is felt in order. In addition a less expensive grade of attapulgite will be checked out.

One product we should incorporate in this program is AEROGUN if the tonnage is sufficient. Does Sales have thoughts on this? Your input is badly needed.

IX P 13 (ax)

BRIEF REVIEW OF

MAJOR SPECIALTY PROJECTS

JULY 25, 1978

Published by AsbestosClaims.Law
asbestosclaims.law/library/21539/39

6. RA-835: ELIMINATION OF ASBESTOS FROM GUN MIXES

OBJECTIVE: The use of asbestos as a gunning aid which reduces the rebound in gunning mixes is now looked on with disfavor because of environmental rules and regulations limiting the quantity of asbestos in the air. Efforts are to be made to find a substitute for asbestos for our gun mixes; in particular, our basic gun mixes will be worked on first. If successful here, we will then extend our technology to other products employing asbestos.

No work was carried out under this assignment during this period.

BRIEF REVIEW OF

MAJOR SPECIALTY PROJECTS

MAY 9, 1979

Published by AsbestosClaims.Law
asbestosclaims.law/library/21539/41

12. RA-835: ELIMINATION OF ASBESTOS FROM GUN MIXES

OBJECTIVE: The use of asbestos as a gunning aid which reduces the rebound of gunning mixes is now looked on with disfavor because of environmental rules and regulations limiting the quantity of asbestos in the air. Efforts are to be made to find a substitute for asbestos for our gun mixes; in particular, our basic gun mixes will be worked on first. If successful here, we will then extend our technology to other products employing asbestos.

The only work that has to be carried out on this assignment involves the optimization of the proper amount and type of clay mineral which we are now using in NARCOLITE as a replacement for asbestos; no further work, however, has been done.

IXP13 C

BRIEF REVIEW OF

MAJOR SPECIALTY PROJECTS

JANUARY 11, 1977

Published by AsbestosClaims.Law
asbestosclaims.law/library/21539/43

2. RA-835: ELIMINATION OF ASBESTOS FROM GUN MIXES

OBJECTIVE: The use of asbestos as a gunning aid which reduces the rebound in gunning mixes is now looked on with disfavor because of environmental rules and regulations limiting the quantity of asbestos in the air. Efforts are to be made to find a substitute for asbestos for our gun mixes; in particular, our basic gun mixes will be worked on first. If successful here, we will then extend our technology to other products employing asbestos.

Work orders of PD-345 and CM-18 with an attapulgite clay substituted for asbestos have been completely evaluated; based on the good data obtained, new mix sheets for PD-345, PD-345A and CM-18 will be written and issued which show the use of this substitute. Future service results should be carefully monitored. NARMAG OH GUN MIX with the similar replacement has been made; the product cold guns all right. However, the Research Center gun became inoperative so further evaluation, including hot gunning, will be delayed.

Alumina-silica specialties mixes are also undergoing evaluation for feasibility of using the same substitute where necessary. NARCOLITE was studied in the laboratory and preliminary data suggests that attapulgite will work as an asbestos replacement, although a version with no asbestos or replacement also looked promising. Gunning properties of NARCOLITE with asbestos and attapulgite vs. NARCOLITE GUN will be compared next. Again, the gun repairs are holding up this work.

These mixes are essentially our major selling products using asbestos so chances are very good that asbestos will be out of all specialties before long.

A new mix that affects this program was encountered by the unilateral reinstatement by the Sales Department of SD-336. The attapulgite substitution was arbitrarily made in this product formulation; Mt. Union management was verbally informed of this decision on December 23, with paperwork to follow.

IX P 13 (ax)

BRIEF REVIEW OF

MAJOR SPECIALTY PROJECTS

JULY 25, 1978

Published by AsbestosClaims.Law
asbestosclaims.law/library/21539/45

6. RA-835: ELIMINATION OF ASBESTOS FROM GUN MIXES

OBJECTIVE: The use of asbestos as a gunning aid which reduces the rebound in gunning mixes is now looked on with disfavor because of environmental rules and regulations limiting the quantity of asbestos in the air. Efforts are to be made to find a substitute for asbestos for our gun mixes; in particular, our basic gun mixes will be worked on first. If successful here, we will then extend our technology to other products employing asbestos.

No work was carried out under this assignment during this period.

Published by AsbestosClaims.Law
asbestosclaims.law/library/21539/46

BRIEF REVIEW OF

MAJOR SPECIALTY PROJECTS

MAY 9, 1979

Published by AsbestosClaims.Law
asbestosclaims.law/library/21539/47

12. RA-835: ELIMINATION OF ASBESTOS FROM GUN MIXES

OBJECTIVE: The use of asbestos as a gunning aid which reduces the rebound of gunning mixes is now looked on with disfavor because of environmental rules and regulations limiting the quantity of asbestos in the air. Efforts are to be made to find a substitute for asbestos for our gun mixes; in particular, our basic gun mixes will be worked on first. If successful here, we will then extend our technology to other products employing asbestos.

The only work that has to be carried out on this assignment involves the optimization of the proper amount and type of clay mineral which we are now using in NARCOLITE as a replacement for asbestos; no further work, however, has been done.

Published by AsbestosClaims.Law
asbestosclaims.law/library/21539/48

BRIEF REVIEW OF

MAJOR SPECIALTY PROJECTS

JANUARY 4, 1980

Published by AsbestosClaims.Law
asbestosclaims.law/library/21539/49

12. RA-835: ELIMINATION OF ASBESTOS FROM GUN MIXES

OBJECTIVE: The use of asbestos as a gunning aid which reduces the rebound of gunning mixes is now looked on with disfavor because of environmental rules and regulations limiting the quantity of asbestos in the air. Efforts are to be made to find a substitute for asbestos for our gun mixes; in particular, our basic gun mixes will be worked on first. If successful here, we will then extend our technology to other products employing asbestos.

A work order is being made to substitute a clay mineral for the use of attapulgite in NARCOLITE.

Under this assignment work has also been carried out which involves the testing of a modified AEROGUN which was made at Farber for several special accounts. This mix had been changed unilaterally by the Farber personnel and we had never really examined it in detail. Testing is completed with the exception of a chemical analysis. A data sheet will be issued to revise the properties of AEROGUN since the replacement of asbestos has resulted in slightly denser mix and a product with much less magnesia than before due to the removal of the asbestos (a magnesium silicate).

Published by AsbestosClaims.Law
asbestosclaims.law/library/21539/50

BRIEF REVIEW OF

MAJOR SPECIALTY PROJECTS

OCTOBER 28, 1980

Published by AsbestosClaims.Law
asbestosclaims.law/library/21539/51

11. RA-835: ELIMINATION OF ASBESTOS FROM GUN MIXES

OBJECTIVE: The use of asbestos as a gunning aid which reduces the rebound of gunning mixes is now looked on with disfavor because of environmental rules and regulations limiting the quantity of asbestos in the air. Efforts are to be made to find a substitute for asbestos for our gun mixes; in particular, our basic gun mixes will be worked on first. If successful here, we will then extend our technology to other products employing asbestos.

A. Completion of Work Outstanding:

A new data sheet has been issued for Aerogun.

This program is completed.

Published by AsbestosClaims.Law
asbestosclaims.law/library/21539/52

IX P 13 (ar)

BRIEF REVIEW OF

MAJOR SPECIALTY PROJECTS

MAY 17, 1977

Published by AsbestosClaims.Law
asbestosclaims.law/library/21539/53

5. RA-835: ELIMINATION OF ASBESTOS FROM GUN MIXES

OBJECTIVE: The use of asbestos as a gunning aid which reduces the rebound in gunning mixes is now looked on with disfavor because of environmental rules and regulations limiting the quantity of asbestos in the air. Efforts are to be made to find a substitute for asbestos for our gun mixes; in particular, our basic gun mixes will be worked on first. If successful here, we will then extend our technology to other products employing asbestos.

Laboratory work carried out under this project during the last several months can be itemized below:

A. Conversion of NARMAG OH GUN. Hot gunning will be required in order to complete testing on this product and this cannot be completed until city water is returned to the Research Center.

B. Conversion of NARCOLITE. The use of Attagel 50 as a replacement for asbestos in this castable appears to be okay. A new mix sheet will be issued to the Curwensville plant reflecting this change. In the meantime, we will continue to look at possible less expensive ways of manufacturing NARCOLITE with, for example, the use of more plastic clays. We have found from our work that NARCOLITE and NARCOLITE GUN exhibit significantly different properties both as cast and gunned indicating a definite need for both products.

C. Substitution of Attagel 50 in SD-336. Cold gunning of several varieti of this mix with Attagel 50 were examined; none of the materials exhibited data sheet properties after drying at 230°F or firing at 2000°F for modulus of rupture, cold crushing or density. This matter needs to be discussed before we proceed with too many trials. The field reports will really tell us whether we have a problem.

In summary, then, for Farber there are no mixes requiring asbestos. At Curwensville, we believe that with the conversion of NARCOLITE to Attagel 50 that there are no more specialties using asbestos. Womelsdorf needs only to have the NARMAG OH GUN completed and we will have all specialties made without the use of asbestos.

IX P 13 (aa)

BRIEF REVIEW OF

MAJOR SPECIALTY PROJECTS

DECEMBER 19, 1977

Published by AsbestosClaims.Law
asbestosclaims.law/library/21539/55

5. RA-835: ELIMINATION OF ASBESTOS FROM GUN MIXES

OBJECTIVE: The use of asbestos as a gunning aid which reduces the rebound in gunning mixes is now looked on with disfavor because of environmental rules and regulations limiting the quantity of asbestos in the air. Efforts are to be made to find a substitute for asbestos for our gun mixes; in particular, our basic gun mixes will be worked on first. If successful here, we will then extend our technology to other products employing asbestos.

Published by AsbestosClaims.Law
asbestosclaims.law/library/21539/56

In the last report it was mentioned that, although we had converted NARCOLITE to Attagel 50, we would continue to look for less expensive ways of manufacturing NARCOLITE. The use of more plastic clays was one approach mentioned. Gleason clay, M&D clay and mixtures of the two proved to be detrimental to properties such as strength, plasticity or water retention. Several types of bentonites were investigated next, Hector and western. Again, strengths were affected and, also, imparted "thixotropic" tendencies to the body of the castable.

Another look at western bentonite is felt in order. In addition a less expensive grade of attapulgite will be checked out.

One product we should incorporate in this program is AEROGUN if the tonnage is sufficient. Does Sales have thoughts on this? Your input is badly needed.

Published by AsbestosClaims.Law
asbestosclaims.law/library/21539/57

Ix P 13 (

BRIEF REVIEW OF

MAJOR SPECIALTY PROJECTS

JUNE 8, 1976

Published by AsbestosClaims.Law
asbestosclaims.law/library/21539/58

3. No RA: ELIMINATION OF ASBESTOS FROM GUN MIXES

OBJECTIVE: The use of asbestos as a gunning aid which reduces the rebound in gunning mixes is now looked on with disfavor because of environmental rules and regulations limiting the quantity of asbestos in the air. Efforts are to be made to find a substitute for asbestos for our gun mixes, in particular, our basic gun mixes will be worked on first. If successful here, we will then extend our technology to other products employing asbestos.

The 11 mixes reported to have been batched in the last Project Review have not been gunned. Twelve additional mixes have also been batched. All mixes involve NARCOGUN PD-345 because of its success with asbestos and nothing else to date. The mixes will be gunned and evaluated for rebound only at this point in time.

Published by AsbestosClaims.Law
asbestosclaims.law/library/21539/60

Returned to. → RHL

BRIEF REVIEW OF

MAJOR SPECIALTY PROJECTS

SEPTEMBER 28, 1976

Published by AsbestosClaims.Law
asbestosclaims.law/library/21539/61

2. RA-835: ELIMINATION OF ASBESTOS FROM GUN MIXES

OBJECTIVE: The use of asbestos as a gunning aid which reduces the rebound in gunning mixes is now looked on with disfavor because of environmental rules and regulations limiting the quantity of asbestos in the air. Efforts are to be made to find a substitute for asbestos for our gun mixes; in particular, our basic gun mixes will be worked on first. If successful here, we will then extend our technology to other products employing asbestos.

Fifteen mixes of PD-345 employing both physical and chemical additives were gunned since the last report period. One additive, an attapulgite clay, gave rebound data very similar to that for asbestos. Based upon these data, work orders were issued to Womelsdorf to manufacture PD-345 and CM-18 with this additive, WO-1006 and WO-1007, respectively. One and one-half times as much attapulgite was required in comparison to asbestos, but this amount is so small anyway (1.5 to 2.0%) that we don't anticipate any problems. The work orders were also gunned and found to have excellent rebound, 17 and 8%, respectively. The usual physical properties are also being evaluated from these gunned panels.

Published by AsbestosClaims.Law
asbestosclaims.law/library/21539/62

In the meantime, a survey of the other asbestos-containing mixes has revealed only three additional products sold during 1975 and 1976 that contain asbestos--NARCOLITE, NARCOGUN CO and AEROGUN. NARCOLITE is by far and away the most active product of the three and plans are being made to experiment with attapulgite replacements in this product first, followed by the others.

As physical results are completed on each product, we will gradually switch to the new additive and carefully monitor service reports on gunning and life.

Published by AsbestosClaims.Law
asbestosclaims.law/library/21539/63

IX P13 C.

BRIEF REVIEW OF

MAJOR SPECIALTY PROJECTS

DECEMBER 16, 1975

Published by AsbestosClaims.Law
asbestosclaims.law/library/21539/64

3. No RA: ELIMINATION OF ASBESTOS FROM GUN MIXES

OBJECTIVE: The use of asbestos as a gunning aid which reduces the rebound in gunning mixes is now looked on with disfavor because of environmental rules and regulations limiting the quantity of asbestos in the air. Efforts are to be made to find a substitute for asbestos for our gun mixes; in particular, our basic gun mixes will be worked on first. If successful here, we will then extend our technology to other products employing asbestos.

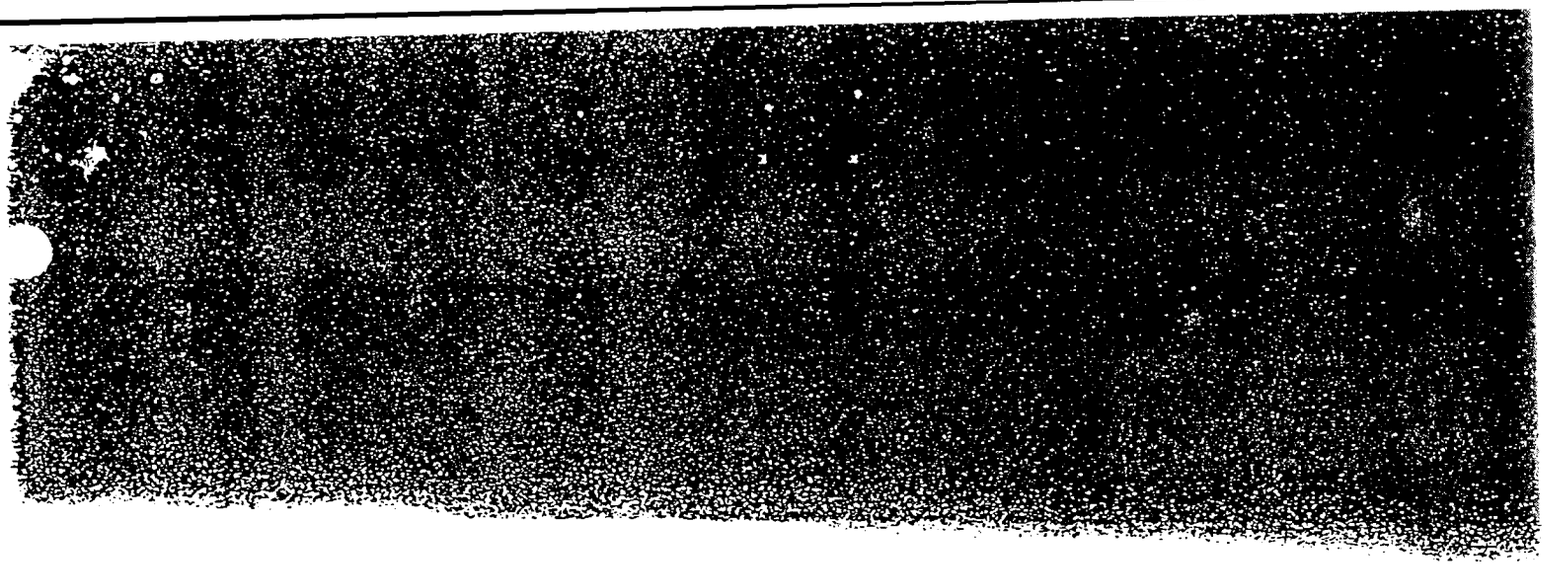
We have received several additional additives; however, there has been no benchwork devised to test these and, in lieu of the lack of the Allentown Gun, no work has been accomplished on this assignment. When the Specialties Installation and Service Crew are in their new quarters in Pittsburgh, we will ask them to continue our regular testing program if no other methods of tests have been developed at that time.

BRIEF REVIEW OF

MAJOR SPECIALTY PROJECTS

MARCH 9, 1976

Published by AsbestosClaims.Law
asbestosclaims.law/library/21539/66



3. No RA: ELIMINATION OF ASBESTOS FROM GUN MIXES

OBJECTIVE: The use of asbestos as a gunning aid which reduces the rebound in gunning mixes is now looked on with disfavor because of environmental rules and regulations limiting the quantity of asbestos in the air. Efforts are to be made to find a substitute for asbestos for our gun mixes; in particular, our basic gun mixes will be worked on first. If successful here, we will then extend our technology to other products employing asbestos.

Our program will soon recommence. NARCOGUN PD-345 has been chosen as the mix to use because it has shown less tendency to be produced with anything but asbestos. Additions to be tested include cellulose gums, hydroxyethyl cellulose products, xanthum gums, micas and several types of fibers. So far, eleven batches have been produced and will be gunned shortly. Rebound, cold strength and bulk density will be principal properties of interest. If successful here, the additive will, of course, be tried in our other gun mixes where asbestos is used.

BRIEF REVIEW OF

MAJOR SPECIALTY PROJECTS

SEPTEMBER 3, 1975

Published by AsbestosClaims.Law
asbestosclaims.law/library/21539/68

3. No RA: ELIMINATION OF ASBESTOS FROM GUN MIXES

OBJECTIVE: The use of asbestos as a gunning aid which reduces the rebound in gunning mixes is now looked on with disfavor because of environmental rules and regulations limiting the

Published by AsbestosClaims.Law
asbestosclaims.law/library/21539/69

quantity of asbestos in the air. Efforts are to be made to find a substitute for asbestos for our gun mixes; in particular, our basic gun mixes will be worked on first. If successful here, we will then extend our technology to other products employing asbestos.

A letter has been written to nine companies asking for help in finding a substitute for asbestos. This action is in addition to what we have been doing in the laboratory as reported in our last Products Committee Review on this subject. One company has responded with samples of a beneficiated bentonite which we will investigate. A second company has suggested the use of CMC and related compounds; we will have to establish how to proceed with screening materials which customers are sending us other than simply gunning.

We also plan to discuss this matter with personnel at Franklin Institute in Philadelphia to see whether they can be of any assistance to us in this program.

This project is a toughie!

IEF REVIEW OF MAJOR SPECIALTY PROJECTS

March 11, 1975

EXHIBIT

"A"

Published by AsbestosClaims.Law
asbestosclaims.law/library/21539/71

3. NO RA: ELIMINATION OF ASBESTOS FROM GUN MIXES

OBJECTIVE: The use of asbestos as a gunning aid which reduces the rebound in gunning mixes is now looked on with disfavor because of environ-

Published by AsbestosClaims.Law
asbestosclaims.law/library/21539/72

mental rules and regulations limiting the quantity of asbestos in the air. Efforts are to be made to find a substitute for asbestos for our gun mixes; in particular our basic gun mixes will be worked on first. If successful here, we will then extend our technology to other products employing asbestos.

The initial feeling was that a simple substitution of a less harmful fiber-type material could be used in place of asbestos and retain the current gunning characteristics of the various basic gun mixes. Fibers ordered and tested included milled fiberglass, soft wood flour, alpha cellulose, sisal fibers, cotton flock, fiber flax (chopped), rayon and nylon flock. Each of these materials was added to NARMAG OH gun mix and each mix, in turn, was gunned cold without premoistening into panels for rebound and strength data. Hot gunning of the same mixes was also carried out where it was felt that the cold gunning showed some promise. Based on the results of our laboratory work, we would like to find a location where we could try a trial of NARMAG OH gun mix to verify the gunning characteristics found experimentally; this mix would include wood flour as a substitute for asbestos.

Cold gunning of CM-18 indicates that wood flour will also be a good candidate for a substitute for asbestos in this product; therefore, we would like to secure a trial for this material, too.

CRB-347 and PD-345 have also been gunned cold with several binders, but at this time no acceptable alternative has been found. Work will continue on these products. Future work in this area will involve additional hot gunning trials using NARMAG OH gun mix as the base in order to evaluate several substitutes that in cold gunning did not look too good, but might do quite well in hot gunning. The idea of using fine shredded paper has some merit and will be explored. Finally, numerous large organic chemical companies will be canvassed inquiring about potential application of some of their products as a substitute for asbestos with respect to our needs. Several products, such as EMA, CMC and Methyl cellulose, fall in this category. After these avenues of approach have been tried with respect to a direct substitution and have not been successful, then we will have to go back to each mix and see what is required to change the mix in order to eliminate the asbestos and yet obtain good gunning characteristics. Hopefully, we can find a simple substitute although at this point, it does not look too promising.