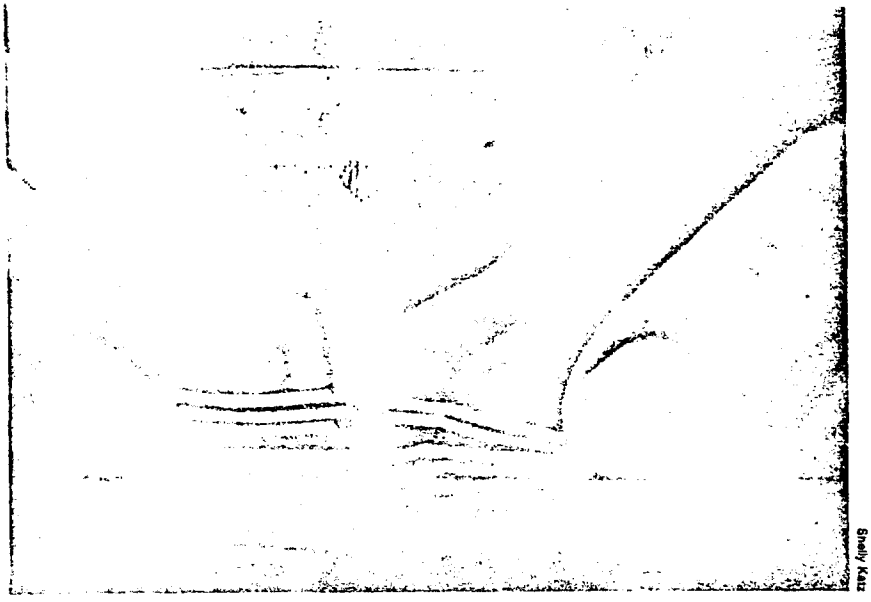

Shelly Katz

A supersonic jet of water can cut with less waste, noise, and dust than a saw.

INDUSTRIAL PRODUCTION

Learning to cut with water

Researchers proved a decade ago that a high-pressure jet of water could slice like a knife through such material as cardboard, fabric, and asbestos. Since then, several companies have put waterjet cutters to work doing just that. But because most of the early waterjet applications were shrouded in secrecy, the market has been slow to develop.

Now the waterjet market is picking up momentum fast, however. Companies such as General Motors Corp., which uses a waterjet to trim brake lining material, are turning to the still-developing technology to help meet federal noise and dust regulations, cut down on material waste, or simplify maintenance. And some—in footwear, clothing, and boxboard plants—are marrying jet cutters to computer controls.

The two suppliers that dominate the waterjet industry—McCartney Mfg. Co. and Flow Research Inc.—say that customers are beginning to treat the waterjet cutter as a production tool rather than an experimental device. And Yih-Ho Pao, president of Flow Research, is bullish on sales. "The market should be more than $10 million in 1977," he says, "and automation could make it $1 billion eventually."

High investment. Waterjets use a "high-pressure intensifier" pump to boost water pressure as high as 60,000 psi, then blast it through a nozzle only about 0.008 in. in diameter at twice the speed of sound. The resulting stream can punch through most nonmetallic materials without many of the problems of conventional tools. "It does the same thing a saw does, but without the noise, dust, or tool wear," says Walter W. Thrush, director of product engineering at GM's Inland Div. The division's Dayton (Ohio) plant uses a McCartney jet cutter to trim 40% of the division's brake lining output, and GM has ordered a second McCartney machine to double its water-cutting capacity. "The initial investment is the biggest problem," says Thrush, "but the total cost of operation is less than with the carbide saws we were using."

Waterjets gain acceptance as production tools; some have computerized controls

The GM system works at simple, straight-line cutting. Flow Research sees a much bigger market for more sophisticated machines. It has just delivered an example of what it has in mind: the first waterjet system in the U. S. controlled by a minicomputer.

The $300,000 system was bought by Weyerhaeuser Co. for its corrugated cardboard production plant in Austin, Minn. A battery of six Flow Research jets will slit board as it spews out at 500 ft. per minute, while mechanical devices score the board for later folding. The system is tied into a minicomputer that stores up to 75 different order sizes. It can reposition the cutters and scorers to within ⅛-in. accuracy in seven seconds. The system eliminates rotating knives and the manpower needed to sharpen and reposition them. And it produces cleaner cuts, according to Flow Research's Yih-Ho, because the waterjet trims cardboard without crushing it.

Its own software. Flow Research, with about 55 jet cutters installed and some 160 sold over its five-year lifetime, is aggressively marketing its integrated approach to the boxboard industry. The company developed its own software for Weyerhaeuser and has sold 72 similar systems to Genco International, a West German manufacturer of boxboard production equipment. "We're offering the basic $30,000 machine or the complete system," says Yih-Ho.

An even more sophisticated system is scheduled for delivery in December to Oxford Industries Inc., a large apparel manufacturer. The computerized system that will control the cutter was developed by CAMSCO Inc., of Richardson, Tex., to create patterns for garments of varied size from a single sample size. It "nestles" them into the best arrangement for minimum material waste.

In the past, CAMSCO's machine would then map out full-sized patterns on paper, which were then placed on material and cut out by hand. The Oxford system will swap a waterjet cutter for the plotter that drew the patterns; it can cut more than 100 layers of material at once. John P. Hunter Jr., Oxford's vice-president for research and development, predicts that the new system's accuracy will reduce waste by allowing pieces to be placed so their lines touch. "We can't do that with steel rule dies or hand knives," he says.

The CAMSCO system uses jet cutters purchased from Flow Research or Petrodyne Corp., an industry newcomer based in Longview, Tex. The company has sold six of the systems, priced between $175,000 and $250,000, to apparel makers, furniture upholsterers, and footwear companies, according to Richard R. Jaffe, CAMSCO's general manager.

So far, McCartney has been considerably more cautious about the future for such highly sophisticated, expensive systems. "We have no role at all to play in developing computerized control equipment," says Gerald K. Faaborg, manager of fluids and cutting systems at McCartney, a subsidiary of Ingersoll-Rand Co. "Our forte is hardware." McCartney machines have been used to cut footwear pieces in three computerized systems, one of them developed by Genesco Inc., the U. S. apparel manufacturing giant, and two now under development by Britain's Shoe & Allied Trades Research Assn. But in these cases the computer software has been developed by the buyer.

Petrodyne has only four prototype machines in use. But it clearly sees boom times ahead. "I think we've got a bear by the tail," declares President Cecil B. Greer. "There are so many applications, it's hard to tell how far it will all go." ■

F3 ?

FMSI 06759

FRICTION MATERIALS STANDARDS INSTITUTE, INC., E-210 ROUTE #4, PARAMUS, N.J. 07652

November 16, 1976

TO: ASBESTOS STUDY COMMITTEE

SUBJECT: Correspondence relating to asbestos

Over the past several weeks I have received copies of correspondence relating to the asbestos problem.

In late October 1976 Mr. Bob Mereness of the Asbestos Information Association contacted me concerning a letter he sent to the EPA. In particular he was concerned with a request that EPA issued for proposals for possible economic impact studies of certain toxic substances. In the request for proposals EPA sent along an enclosure for illustrative purposes. I am enclosing copies of Mr. Mereness' letter to EPA, the letter of the EPA of 2 August 1976, along with Enclosure IV. In Enclosure IV, the EPA used asbestos brake and clutch linings as an example of the type of proposal that the Contractor might be dealing with. In this example, EPA described an economic impact study where asbestos containing friction materials could not be used in motor vehicles in the U.S. As you will note, Mr. Mereness was upset by the use of these illustrations. He felt also that the Institute and its members would be upset by the example used for asbestos containing brake linings and clutch facings. Also, he suggested that our association may wish to comment directly to EPA on the use of this illustration. I will discuss this with the acting Chairman of the Committee and would be pleased to receive other comments.

Another association (ASIA) sent along a copy of a letter that they had received. This letter was sent out by a law firm in Philadelphia soliciting litigation where suits might be pressed against drug companies and other third parties where workman's compensation might be involved. In particular, I call your attention to the last paragraph of this letter where they were soliciting cases involving exposure to asbestos. This letter emphasizes third party liability where originally workmans compensation would have been involved. Where injury from asbestos might be alleged by those working in brake service shops, the primary liability may be with workman's compensation. However, it would appear that this law firm is seeking third party actions, and these could possibly be against those who supply brake linings and clutch facings.

It has been suggested that the third party liability problem might be alleviated in the future if the Institute were to publish in its catalogs recommended procedures on handling brake linings and clutch facings. This is an item that the Asbestos Study Committee might consider for the Institute's catalogs. This too is an item I will discuss with the acting Chairman of this Committee.

E. W. Drislane
Executive Director

CC: Officers & Board of Directors

F-4
(6)

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(1927-1964)

CABLE ADDRESS
JORMEL

MONTGOMERY COUNTY OF.
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MERION, PA 19066
TELEPHONE
MO 7-0333

July, 1976

To my Colleagues in Law:

I have two questions for your consideration.

First, why does a lawyer usually sue the doctor and very seldom the drug company where there is a drug related injury?

Second, why does a lawyer usually collect only workmen's compensation where there may be a valid third party claim for personal injuries against a manufacturer or designer of a product?

It has been our experience that many suits against physicians should in reality be actions against drug companies and that many workmen's compensation cases should proceed into third party claims against the manufacturer, designer or distributor of a product.

If you find a result which is not reasonably related to an initial injury or an initial condition, ask yourself if a drug reaction may not have taken place.

In a workmen's compensation case, ask yourself if an action does not lie against a third party for a design defect or failure to produce a safe product.

Naturally, this does not mean that every drug reaction or that every injury resulting from a product is compensable. It does mean that these matters should be investigated thoroughly.

This office will accept the forwarding of work in drug litigation and in product manufacture and design litigation. In addition, this office would be willing to accept cases involving injury or death from exposure to ashestos particularly where such exposure has been to an employee at the Philadelphia Naval Shipyard and other places of employment. This office represents approximately 70 litigants in asbestos actions resulting in injury or death.

Sincerely,

SHEIN & BROOKMAN, P.A.

By
Joseph D. Shein

JDS/as

ASBESTOS INFORMATION ASSOCIATION
NORTH AMERICA
1835 K Street, N.W., Washington, D.C. 20006 • (202) 223-4885

COPY

27 October 1976

Dr. Andrew Breidenbach
Assistant Administrator for
Water & Hazardous Materials
Environmental Protection Agency
401 M Street, S.W., Rm W-1037
Washington, D. C. 20460

Dear Dr. Breidenbach:

I am sorry I was unable to meet with you this past Friday to discuss the use of asbestos cement pipe and asbestos brake and clutch linings as a "sample research request" in the Request For Proposal No. WA 76-B231, distributed by EPA letter of August 2, 1976. I know John Autry of Johns-Manville Corp. and Joseph Jackson of the Asbestos Cement Pipe Producers Association ably voiced the industry's objection to the use of these locked-in asbestos containing products as the single example of "sample research request," Enclosure IV, for possible studies on the economic impact of selected control options for particular toxic substances.

The EPA letter came to our attention only a few days ago. We were surprised that we did not have the opportunity to discuss the contents of Enclosure IV of the document with your people. As you know it is an objective of this Association to maintain close liaison and cooperate fully with EPA in those matters of mutual interest. Certainly, even in a "sample research request" it is less than fair and highly presumptive to suggest a requirement "that no A/C pipe be produced or installed in the U.S. from two (2) years from a specified date" or "no asbestos containing friction products be utilized in any motor vehicle produced or imported into the United States from two (2) years from a specified date." We are unaware of any scientific data that would justify the extreme suggestions contained in the "sample research request."

We believe public distribution of Enclosure IV to the EPA letter can in itself have an adverse impact on the asbestos industry even if not intended. Though asbestos has recently been listed among 65 toxic pollutants, to single out products

associated with asbestos for illustrative purposes in the EPA letter seems to us to be unwarranted and discriminatory. We believe reference to asbestos containing products, that is A/C pipe and asbestos brake and clutch lining in Enclosure IV of the EPA letter, gives the reader the impression of pre-conceived opinions or attitudes leading to public misapprehensions.

Though it is our understanding responses to the RFP are now being evaluated, we believe that it would be proper to advise the recipients of the August 2 letter that Enclosure IV was developed for illustration purposes only and does not necessarily reflect fact or opinions of the federal government with regard to the toxic effect of asbestos containing materials or actions contemplated by EPA with regard to asbestos containing products, in this instance A/C pipe and asbestos brake and clutch linings.

We would appreciate hearing from you on this matter.

Sincerely yours,

R. H. Mereness
Executive Director

cc: MEMBERS
Adrian May, Esq., Cadwalader, Wickersham & Taft
Mr. John Autry, Johns-Manville Corp. (Washington office)
Mr. Joseph Jackson, A/C Pipe Producers Assn.
Mr. E. Drislane, Friction Materials Standards Institute

RHM:v

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

AUG 1976

Gentlemen:

Subject: Request for Proposal No. WA 76-B231

You are invited to submit to the Environmental Protection Agency a proposal for a study of the Economic Impact of Selected Control Options for Particular Toxic Substances.

The Period of Performance for completion of the work called for in the enclosed Statement of Work will be 24 months. It is anticipated that a Cost-Plus-Fixed-Fee (CPFF) term contract will result from this solicitation; however, the Government reserves the right to award another type of contract.

Your "Technical Proposal" shall be submitted in accordance with the enclosed Technical Proposal Instructions. Your price or cost breakdown shall be submitted by separately identifiable tasks, utilizing DD Form 633-4 or Optional Form 60, which shall be completed in accordance with the enclosed "Business Proposal Instructions." The Technical Proposal and the cost or price breakdown shall be separate and complete in themselves so that evaluation of them may be accomplished concurrently and independently. The Technical Proposal shall be precise, factual, and complete, and not contain any reference to cost.

This request does not commit the Government to pay any costs incurred in the submission of your proposal or in making necessary studies or designs for the preparation thereof. Nor does it commit the Government to procure or contract for said services or supplies. It is also brought to your attention that the Contracting Officer is the only individual who can commit the Government to the expenditure of public funds in connection with this proposed procurement.

FMSI 06764

RFP WA 76-B231

ENCLOSURE IV
Page 1 of 2 pages

SAMPLE RESEARCH REQUEST

Economic Impact of Selected Control Options for Asbestos

For bidding purposes, the Contractor shall provide a detailed plan of study for conducting this effort and shall provide an estimated cost breakdown.

I. Work Description

The Contractor shall assess the economic impact of the following control options regarding asbestos products:

A. Asbestos Cement Pipe (A/C Pipe):

1. Require that no A/C pipe be produced or installed in the U.S. from two (2) years from a specified date.

2. Require that all A/C pipe be precoated at the manufacturing plant to such a degree that no migration of asbestos will occur during the installed life of the pipe (50 years).

3. Require that all water treatment plants and/or water supply facilities provide pH, alkalinity and hardness adjustment resulting in a noncorrosive treated water for any distribution system that contains or is planned to contain A/C pipe.

B. Asbestos Brake and Clutch Linings:

1. Require that no asbestos containing friction products be utilized in any motor vehicle produced or imported into the United States from two (2) years from a specified date.

2. Require that no asbestos containing friction products be utilized in any motor vehicle produced or imported into the United States in such a way that any asbestos emissions may occur from normal use of such vehicles. Controls to prevent such emissions would not be required for maintenance work.