USE OF RECYCLED PAPER BY CONGRESS

HEARING

BEFORE THE

COMMITTEE ON RULES AND ADMINISTRATION

UNITED STATES SENATE

NINETY-SECOND CONGRESS

FIRST SESSION

ON

S. 2266

TO AMEND SECTION 734 OF TITLE 44, UNITED STATES CODE, TO REQUIRE THE PUBLIC PRINTER TO FURNISH RECYCLED MATERIAL FOR THE OFFICIAL USE OF THE SENATE AND THE HOUSE OF REPRESENTATIVES

AND

S. 2267

TO AMEND CHAPTER 9 OF TITLE 44, UNITED STATES CODE, TO REQUIRE THE USE OF RECYCLED PAPER IN THE PRINTING OF THE CONGRESSIONAL RECORD

AUGUST 3, 1971

Printed for the use of the Committee on Rules and Administration

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USE OF RECYCLED PAPER BY CONGRESS

TUESDAY, AUGUST 3, 1971

U.S. SENATE,
COMMITTEE ON RULES AND ADMINISTRATION,
Washington, D.C.

The committee met at 10 a.m., in room 301, Old Senate Office Building, the Honorable B. Everett Jordan, chairman, presiding.

Present: Senator Jordan.

Staff present: Hugh Q. Alexander, chief counsel; Burkett Van Kirk, minority counsel; John P. Coder, professional staff member; Thomas P. McGurn, professional staff member; Hildreth T. Sharp, assistant chief clerk; and Jack Sapp, editorial assistant.

OPENING STATEMENT OF HON. B. EVERETT JORDAN, CHAIRMAN, COMMITTEE ON RULES AND ADMINISTRATION

The CHAIRMAN. The committee will please come to order.

I considered this hearing of such importance that I called the whole Rules and Administration Committee to be here instead of having a subcommittee hearing, but it seems as though I am the sum total of all the committee. We hope, however, that some other members will be able to attend.

Members of the committee and distinguished witnesses, it is indeed a pleasure to welcome you to this public hearing concerning congressional use of recycled paper.

As I said when I announced these hearings on July 27, the use of recycled paper as one means to combat solid waste problems has interested me for some time. If Congress can take the lead in utilizing paper produced in large measure from the fibers of wastepaper and other waste products, we would both conserve our tree resources and cut back on the growing volume of solid wastes. I think it is important that Congress should set the example.

For this reason, the Joint Committee on Printing, of which I am chairman, ordered a study several months ago as a first step toward determining the feasibility of congressional use of recycled printing papers. The final results of this study will be in soon, and I am glad that representatives of those conducting it are on hand to testify today. I discussed in my newsletter of June 13, 7 weeks ago, some of the problems and complexities to which this study would be addressed and, without objection I am inserting the text of that newsletter into the record following my remarks this morning.

Moreover, it is out of a conviction that we should move quickly that I scheduled this hearing today—before the completion of the study initiated by the joint committee, before the August 6 recess,

and only 2 weeks after the introduction of the two bills now pending before this committee.

Our goal today is to determine what is possible and feasible, both in terms of the state of the art and the printing paper requirements of the Government. We have a distinguished and very qualified slate of witnesses, and with their expert help I think we can answer the technical and practical questions necessary to attain that goal.

I am especially glad that Senator Moss is here to testify in behalf of his two bills, S. 2266 and S. 2267. I am grateful for the leadership he has taken in introducing these measures, and I can assure him that we will consider them thoroughly and promptly.

We will now hear from my good friend of many years, the junior Senator from Utah, who will speak in behalf of his bills. Senator Moss.

Before you start, Senator Moss, without objection, we will insert the text of my newsletter of June 13, 1971, and also the texts of S. 2266 and S. 2267 into the record at this point.

(The documents referred to follow:)

NEWSLETTER FROM THE OFFICE OF SENATOR B. EVERETT JORDAN, JUNE 13, 1971

SENATOR JORDAN REPORTS

Washington—In a recent newsletter I discussed recycling as one possible means of controlling the growing problems of solid wastes—glass and metal containers, waste paper and other forms of trash.

Much advanced technology has been brought to this field in recent years and I am extremely hopeful that new concepts now being tested will prove successful.

In the Senate, committees of which I am a member, the Public Works Committee and the Joint Committee on Printing, have been actively studying solid waste problems.

As Chairman of the Joint Committee on Printing I have had for some time a special interest in the possibilities of recycling waste paper fibers. Many people do not realize that the paper industry is the fourth largest in the nation. Our country produced 40 million tons of waste paper and paperboard last year. A means of controlling this mounting proliferation of trash and putting it to maximum constructive re-use should be of top domestic priority in my judgment.

For these reasons our Committee has ordered a study designed to explore the maximum practical level of employing recycled fibers in printing papers used by the federal government to achieve the two primary goals of conserving our tree resources and reducing solid wastes. A preliminary report from those conducting the study is expected around mid-August.

But the problem is much larger. While the federal government is predictably the nation's largest single user of paper, its total consumption is but a fraction of one percent of the industry's total annual output.

Moreover, recycling waste paper is a staggeringly complex problem. Once used paper has been collected in our urban centers and shipped to processing plants—and these two items in themselves are quite expensive—it must then be run through so-called "de-inking" mills which do just what the names implies. Only eight paper companies in the nation presently have such facilities. And it has been estimated that to build enough similar plants to serve the country would take years and cost in excess of $4 billion. Moreover, the end product would be a paper of lower quality which costs more. And finally—and this is perhaps the most distressing—the de-inking process produces from three to four times as much air and water pollution as that resulting from processes utilizing virgin fibers.

But while the problems of paper fiber recycling are complex, I believe we have made and continue to make substantial progress, both within the industry and in government.

Papers currently being produced contain between 18 and 20 percent recycled fibers. Projections are that in the years ahead this figure can be raised to 30 or

35 percent—fibers that would otherwise contribute to our growing mountains of trash.

Success has also been attained in the science of growing better trees faster. One breed of southern pine has been developed which has an amazing four-foot per year growth rate. And these advances contribute much to tree conservation, the second important goal to which our Committee's study seeks to contribute.

But we should not be satisfied with these accomplishments. Much remains to be done and I am convinced that through the continued close cooperation of government, industry and scientific and other interested private groups we can make sound progress toward controlling this aspect of our solid waste problem. I hope the efforts of the Joint Committee on Printing will prove a significant contribution to this overall goal.

92D CONGRESS
1ST SESSION

S. 2266

IN THE SENATE OF THE UNITED STATES

JULY 14, 1971

Mr. Moss (for himself, Mr. BAYH, Mr. BIBLE, Mr. BOGGS, Mr. CANNON, Mr. CRANSTON, Mr. FANNIN, Mr. HARRIS, Mr. HARTKE, Mr. HATFIELD, Mr. HOLLINGS, Mr. HUMPHREY, Mr. JAVITS, Mr. MCGEE, Mr. MCGOVERN, Mr. METCALF, Mr. MONDALE, Mr. MUSKIE, Mr. NELSON, Mr. PELL, Mr. PERCY, Mr. PROXMIRE, Mr. RANDOLPH, Mr. RIBICOFF, Mr. TAFT, Mr. TOWER, Mr. TUNNEY, and Mr. WILLIAMS) introduced the following bill; which was read twice and referred to the Committee on Rules and Administration

A BILL

To amend section 734 of title 44, United States Code, to require the Public Printer to furnish recycled material for the official use of the Senate and the House of Representatives.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That section 734 of title 44, United States Code, is amended—

(1) by inserting before "Upon" the subsection designation "(a)"; and

(2) by adding at the end thereof the following new subsection:

"(b) All or any part of the stationery, blank books, tables, forms, and other necessary papers furnished for official use under this section shall contain, upon the request of the individual or committee on whose behalf such papers are requisitioned, not less than 50 per centum recycled material. For the purpose of this subsection, the term 'recycled material' means any paper which (1) has served the purpose for which it was originally manufactured, (2) has been scrapped or otherwise discarded as an element of solid waste, and (3) has been recovered in whole or in part and reprocessed into a new raw material used in the manufacturing process of new paper, but such term does not mean those materials generated by the paper manufacturing process and reused within a plant as part of such process."

SEC. 2. The amendments made by the first section of this Act shall become effective thirty days after the date of enactment of this Act.

92D CONGRESS
1ST SESSION

S. 2267

IN THE SENATE OF THE UNITED STATES

JULY 14, 1971

Mr. Moss (for himself, Mr. BAYH, Mr. BIBLE, Mr. BOGGS, Mr. CANNON, Mr. CRANSTON, Mr. FANNIN, Mr. HARRIS, Mr. HARTKE, Mr. HATFIELD, Mr. HOLLINGS, Mr. HUMPHREY, Mr. JAVITS, Mr. MCGEE, Mr. MCGOVERN, Mr. METCALF, Mr. MONDALE, Mr. MUSKIE, Mr. NELSON Mr. PELL, Mr. PERCY, Mr. PROXMIRE, Mr. RANDOLPH, Mr. RIBICOFF, Mr. TAFT, Mr. TOWER, Mr. TUNNEY, and Mr. WILLIAMS) introduced the following bill; which was read twice and referred to the Committee on Rules and Administration

A BILL

To amend chapter 9 of title 44, United States Code, to require the use of recycled paper in the printing of the Congressional Record.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That (a) chapter 9 of title 44, United States Code, is amended by adding at the end thereof the following new section:

"§ 911. Congressional Record: use of recycled paper

"Paper used in the printing of the Congressional Record shall contain not less than 50 per centum recycled

material. For the purpose of this section, the term 'recycled material' means any paper which (1) has served the purpose for which it was originally manufactured, (2) has been scrapped or otherwise discarded as an element of solid waste, and (3) has been recovered in whole or in part and reprocessed into a new raw material used in the manufacturing process of new paper, but such term does not mean those materials generated by the paper manufacturing process and reused within a plant as part of such process."

(b) The analysis of that chapter is amended by adding below item 910 a new item as follows:

"911. Congressional Record: use of recycled paper."

SEC. 2. The amendments made by the first section of this Act shall become effective thirty days after the date of enactment of this Act.

The CHAIRMAN. Senator Moss, thank you very much for being with us. You may proceed as you wish.

STATEMENT OF HON. FRANK E. MOSS, A U.S. SENATOR FROM THE STATE OF UTAH

Senator Moss. Thank you, Mr. Chairman.

I certainly appreciate this opportunity to appear here and I commend you and the committee for your early consideration of these bills, S. 2266 and S. 2267, relating to congressional use of recycled paper.

As you so accurately pointed out in your statement the other day:

> If it is possible and feasible for Congress to use paper produced in large measure from the fibers of waste paper and other waste products, we would not only help solve some of our solid waste problems which are mounting at such a rapid rate, but we would also be conserving our tree resources.

I expect that this hearing will focus not only on the need to increase use of recycled materials, but also the feasibility of doing so.

The need is great. While we may have supplies of pulp adequate to carry us over the next few years, one Forest Service expert flatly states:

> Sometime during the mid-1970's, if wood or pulp imports do not increase significantly, the U.S. simply will not have the supply of the more desirable wood species to meet the demand.

Meanwhile, we are throwing away millions of tons of paper annually, much of which could be reclaimed.

And this waste is a source of pollution. Seventy-five percent of this refuse goes into open dumps, which are unsightly and unsanitary; 8 percent is incinerated, much of it in incinerators that are substantial polluters; some gets dumped out at sea, creating water pollution; about 6 percent into landfills. We are spending over $4½ billion annually to dispose of municipal solid waste, and these costs are increasing rapidly as cities like Chicago, New York, Philadelphia, and San Francisco run out of landfill space. We could use our vast solid waste resources to save millions of trees annually; instead, we waste it and cause environmental degradation in the process. We must take steps to correct this misuse of resources.

My bills would have Congress take the lead in increasing the use of recycled materials. S. 2266 would enable Senators and Congressmen, as well as committees, to requisition recycled paper through the Government Printing Office. As you know, this is not possible now in the Senate. Recycled paper for correspondence and newsletters must come out of the stationery room allotment or out of the private funds of Senators. The other body handles its paper supplies differently, with the result that Members of that body can order recycled paper as part of their regular supplies. To date over 200 Congressmen have used recycled paper for part or all of their office work. Surely it is an anomalous situation that the Members of the Senate cannot choose to have recycled paper in their own offices.

The experience of the other body; of New York City, which recently let bids for over one-third million reams of recycled bond paper; and of Canada Dry, Bank of America, American Telephone & Telegraph, Coca-Cola, to name just a few of the many business concerns that are

now using recycled paper, show that the technical capacity exists to produce high-quality recycled paper. We should eliminate any artificial barriers to its use in congressional offices.

The other bill, S. 2267, would require that paper used in the Congressional Record contain a specified percentage of recycled material. In this case it may not be so much a case of taking the lead, as it is for Congress to catch up to what is already being done in the newspaper industry. Already, over 200 newspapers use recycled paper for part of their production, and these include many of the large and prestigious papers in the country: the Baltimore Sun, the Washington Post, the Philadelphia Inquirer, the Boston Globe, the Boston Herald Traveler, the Chicago Sun-Times, the Chicago Daily News, the Louisville Courier-Journal, the New York Post, the New York Daily News, the San Francisco Examiner, the Oakland Tribune, Newsday, and the Gannett chain. Tests by the American Newspaper Publishers Association Research Institute, a respected independent laboratory, show that recycled newsprint has better printability and printing opacity and greater tear strength than the average virgin newsprint manufactured in the Northeast; not only that, recycled newsprint is cheaper. There is no reason why at least part of the Congressional Record could not be printed on recycled paper.

I have been informed that there is at present only one manufacturer of recycled newsprint, and objections may be raised to S. 2267 on the grounds that it would tie the Government Printing Office to one supplier. In order to avoid this problem the committee might want to consider an alternate wording that would provide that at least 50 percent of the paper used in the printing of the Congressional Record be composed of totally recycled material.

Of course one of the purposes of the bill is to encourage new companies to enter the secondary materials field by providing a market for their product. This change in wording would serve this purpose and yet not tie the Government Printing Office to a single source of supply during the time when new firms are coming into the business.

The impetus that Congress can give to recycling is truly significant. Though the amounts of paper involved are large—the Record, for instance, uses 10 million pounds of paper per year—they are small in percentage of our national paper consumption. But correspondence goes out from our offices to millions of citizens annually. Our use of recycled paper will stir public debate and public awareness of the possibilities of recycling. It will serve as an example to businesses and offices around the country, and, not incidentally, to agencies of the Federal Government. By stimulating the recovery of paper fiber from our wastes, we will encourage other forms of reclamation of some of the millions of tons of metals and glass that are disposed of every year. Finally, by use of recycled paper ourselves, each of us can make a small personal contribution toward solving one of the environmental problems of this country. It is a commitment I believe we should make.

Mr. Chairman, in a sense, this may be symbolic to provide for the use of recycled paper, but it seems to me we are on the verge in this country of the necessity of recycling so many things. Up to now, we have just thrown everything away we use. We not only clutter up our landscape but lose to the waste dumps valuable material that ought to be reclaimed and reused.

It serves two purposes: it preserves our natural resources which cannot go on forever being mined by reusing them and, at the same time, it cuts down on pollution and clutter of the landscape.

I think these two are very important bills in that sense.

The CHAIRMAN. Thank you very much.

I am sure you know that I am a member of the Public Works Committee, which has brought out all the regulatory legislation on the books today that pertains to pollution of the air and water and to solid waste disposal. I helped draft all that legislation.

Paper is one of the big offenders of our waste. Over 1 million pounds of solid waste exists daily right here in the city of Washington. That takes in garbage and everything else. There are billions of cans.

Last year I went to a recycling demonstration over in West Virginia where they were recycling not only beer cans, but Pepsi cans, and all the other kinds of cans. Of course, that is another thing that can be done, and is being done, and will be done.

The same thing applies to bottles. When they came out with nonreturnable bottles, that really escalated the problem of bottles. That is another problem that can be solved because they can be remelted and reused. It is a matter of collecting them. They are collected anyway in the city disposal plants, and a great deal of effort has been shown here.

This is another phase of that which I am very much interested in. I am glad you brought this to the attention of the committee at this time. I appreciate your fine testimony.

Senator MOSS. Well, I do thank you, Mr. Chairman.

As you so ably pointed out, there is such a great task before us and this clearing up of pollution and recycling is one of the best answers to clearing up pollution.

The CHAIRMAN. Thank you very much.

I have statements from Senator Claiborne Pell—a member of the Committee on Rules and Administration—Senator Harrison A. Williams, Jr., and Senator J. Caleb Boggs, who are not able to appear. Also Senator Gaylord Nelson, Senator William Proxmire, and Senator Jennings Randolph asked to send in statements. Without objection, those statements will be inserted in the record at this point.

(The statements referred to follow:)

STATEMENT OF HON. CLAIBORNE PELL, A U.S. SENATOR FROM THE STATE OF RHODE ISLAND

Mr. Chairman, I strongly support the proposals before the Committee for providing for use of recycled papers by the Congress.

I have been deeply impressed by the efforts being made by individual citizens of this country, and particularly in my own State of Rhode Island, to encourage the use of recycled materials, including paper and glass. In Rhode Island thousands of individuals are taking the time and the trouble to sort waste products from their own homes, and deliver them to recycling collection centers. I think this is commendable. It also is strong evidence that the average citizen in our country cares immensely about our environment and is willing to go to some personal trouble to do his part to protect it, and to conserve resources.

In my own State, a number of ecology action groups are conducting material recycling projects with widespread public participation. In addition, newspapers are making an effort to use recycled paper. The Providence Journal and Evening Bulletin, the largest newspaper in our State, and the Pawtuxet Valley Daily Times both make use of recycled paper. The Providence Journal last year used some 3,000 tons and has pledged to use more of it as it becomes available.

I think the Congress in printing the Record, and in its procurement of other paper products, has a responsibility to follow the excellent example being set by these private organizations and individuals.

For that reason, I have co-sponsored the legislation before us, S. 2266 and S. 2267, providing for the use of recycled paper for printing of the Congressional Record and making recycled paper available for other official uses of the Senate and the House of Representatives.

STATEMENT OF HON. HARRISON A. WILLIAMS, JR., A U.S. SENATOR FROM THE STATE OF NEW JERSEY

Mr. Chairman, I am very grateful for this opportunity to present to the committee my views on S. 2266 and S. 2267, both of which I am proud to co-sponsor. The fact that you have scheduled this hearing only three weeks after these bills were introduced underscores the significance of these measures, and demonstrates your recognition of the need for prompt action on them.

Of the myriad problems and challenges that confront our society today, I believe that pollution of our environment is the most critical. There are many problems which make life difficult, even miserable, for many of our people; but there are only two things which threaten to eradicate the human race—nuclear warfare and environmental pollution. We simply cannot continue to thoughtlessly destroy the natural resources that support all life, and expect life to continue.

The dimensions of the pollution problem are truly staggering. We have ringed our urban areas with garbage dumps that gobble more land every year. We have turned mighty rivers into open sewers. And we have turned the sweet atmosphere sour.

But, despite this gloomy assessment of our environmental condition, I see much reason for hope. It seems clear to me that we have the ability to stop, and reverse, the pollution trend, if we have the determination to do so. And, there are numerous signs that we do have that determination. In every part of the Nation there are growing grass roots movements vigorously engaged in fighting pollution. In response to their demands, government officials at every level are implementing plans to clean up the environment, plans that take as many forms as there are forms of pollution. And, as a result, a whole new industry has been born—an industry whose product is a cleaner environment. Part of this industry involves recycling—the technique of re-using the salvageable materials contained in discarded items—and it is this phase of the environmental movement with which we are concerned here today.

Recycling has several extremely valuable results: for one thing, it helps to reduce the tremendous problem of disposing of some 350 million tons of solid waste products every year; and for another, it helps to reduce the consumption of natural resources which are, we are finding, not inexhaustable after all.

Something like half the solid waste (by weight) disposed of annually is paper, or paper products. Much of this could be profitably reclaimed for the manufacture of partially or wholly recycled paper products; but, there must be a market for such products. Fortunately, private industry has seen the benefits of recycling paper and today some supermarkets are offering paper towels made from recycled materials, and some newspapers are being printed on recycled newsprint. The bills before the committee today are designed to increase the market for recycled paper by promoting its use by Congress.

Mr. Chairman, it is ironic that the Federal government, known far and wide as a leading user of paper, makes almost no use of recycled paper. And it is singularly inappropriate that this Congress, a leader in the anti-pollution effort, does not require that recycled paper be made available to its members.

The first of the bills before the committee today, S. 2266, would require the Public Printer to make paper manufactured with at least 50 percent recycled material available as part of the regular stationery allotment to individual members of Congress, and to committees, that request it. I understand that currently, House members may purchase recycled paper with the funds they are appropriated for stationery. However, when I sought to obtain recycled paper for use in my own office, and in the Labor and Public Welfare Committee, I found it was not available under the Senate's stationery allotment system.

From a mechanical standpoint, a procedural standpoint, and an economic standpoint, there is no reason why Senators should not be able to easily and economically utilize recycled paper for their stationery needs. This bill would guarantee them that option by law, and I urge the committee to act favorably and promptly on it.

The second bill, S. 2267, would perhaps be even more effective in promoting the use of recycled paper within Congress. It would require that the Congressional Record be printed on paper containing at least 50 percent recycled materials. This, Mr. Chairman, would represent a worthwhile contribution to reduction of solid waste, and to conservation of natural resources. It would have even more significance as a symbolic act of leadership by the Congress.

For each day Congress is in session there are more than 43,000 issues of the Congressional Record printed. In a year's time this operation consumes some 5,000 tons of paper. If half of that amount were recycled material, it would mean some 42,000 fewer trees would have to be consumed in order to record the proceedings in Congress. The logic of requiring the Record to be printed on recycled paper is apparent, Mr. Chairman, and I hope the Committee will see fit to approve S. 2267.

Many members of Congress, myself among them, have for some time been voicing concern over environmental pollution. We have exhorted Federal, State and local officials, and private citizens, to step up their fight to preserve our environment. And, in my judgment, we have enacted some excellent legislation which entitles us to say that Congress has been in the forefront of that fight.

It is only fitting that members of Congress demonstrate their commitment to pollution control by following ecologically-sound practices in the day-to-day operations of the legislative branch. We should, in other words, practice what we preach. I believe these two bills would be of considerable help in accomplishing that.

STATEMENT OF HON. J. CALEB BOGGS, A U.S. SENATOR FROM THE STATE OF DELAWARE

Mr. Chairman, I wish to express my strong support for the two bills that are being considered at today's hearing. These bills—S. 2266 and S. 2267—would dramatically demonstrate that the Congress intends to lessen the accumulation of solid wastes in our society by encouraging recycling of these wastes.

I am honored to be a co-sponsor of both bills, and I want to commend Senator Moss for his initiative in developing these important bills.

S. 2266 will permit members of the Senate and the House of Representatives to obtain recycled paper for use in our offices. A member, if this legislation passes, could order his official stationery and other paper materials produced so that at least 50 percent of the paper fibers come from waste paper.

Such legislation is permissive. No member is required to order recycled paper. But current law prohibits members of Congress from obtaining recycled paper in their regular stationery allotment.

Similarly, S. 2267 would encourage recycling as it requires that the Congressional Record be published on paper that contains fibers that are at least 50 percent reclaimed.

These two bills will expand the market for recycled paper in our nation. This will encourage the collection and reuse of waste paper, a practice in which an increasing number of American families are now participating. Such legislation will preserve our forests for uses for which no substitute exists. And these bills should produce a modest savings to the taxpayer as recycled paper should be less expensive.

As you said, Mr. Chairman, in your Floor statement announcing these hearings:

"The use of recycled paper as one means to combat solid waste problems has interested me for some time. If it is possible and feasible for Congress to use paper produced in large measure from the fibers of waste paper and other waste products, we would not only help solve some of our solid waste problems which are mounting at such a rapid rate, but we would also be conserving our tree resources."

In addition, I believe a more significant aspect exists in these bills. This is their psychological impact. If the Congress of the United States goes on

record, favoring the use of waste paper for its own activities, such action should encourage other levels of government, as well as private corporations and individuals, to utilize recycled paper regularly. And this demand will encourage the paper industry to augment its existing research program into improving methods for recycling waste paper.

As you are aware, Mr. Chairman, President Nixon earlier this year ordered the General Services Administration to review its specifications and to alter many of them to require the usage of recycled paper by all Executive Departments. These bills under consideration today would place the Congress fully in harmony with that action by the Executive Branch.

In closing, Mr. Chairman, I want to urge your Committee to act favorably on these bills. They will have a strong and beneficial impact on our effort to enhance the environment of our nation.

Mr. Chairman, many organizations in my own State, I am honored to say, have actively participated in recent drives to collect reusable "wastes." As one example among many, citizens in Newark, Del., have sponsored several waste drives, and on one recent Saturday, collected ten and one-half tons of waste paper. Without objection, I would like to include in the hearing record a recent press clipping about this drive.

[From the Morning News, Wilmington, Del., July 20, 1971]

NEWARK'S FOURTH RECYCLING DAY IS SATURDAY

Newark's waste-recycling program, a periodic project which has met with considerable success, will be held for the fourth time Saturday.

The recycling plan involving the collection of newpapers, cans and glass by the truckload, will be held between 9 a.m. and 4 p.m., according to municipal officials.

Each time a recycling day has been held, according to the Newark city manager's office, the tons of re-usable trash that have been picked up and trucked off to salvage firms has increased. On the third recycling Saturday last month, officials said the city netted 21,000 pounds of paper and 10,145 pounds of glass.

Residents are asked to bring cans, bottles and newspapers to the Newark Shopping Center where the Sunday Breakfast Mission will have two trucks to load with newspapers and magazines. The labels are to be removed from glass and can containers.

STATEMENT OF HON. GAYLORD NELSON, A U.S. SENATOR FROM THE STATE OF WISCONSIN

Mr. Chairman, as a cosponsor of S. 2266 and S. 2267, I appreciate this opportunity to offer some remarks in support of these proposals to make recycled paper available for the official use of the Senate and the House of Representatives, as well as to require its use in the printing of the Congressional Record.

For too many years we have attempted to ignore the consequences of living in a "disposable" society. With the arrogance of affluence and throwaway attitudes we have tried to buy convenience by deferring the ultimate costs of a devastated environment and a diminishing supply of natural resources. As we are now discovering, the environmental due bill for ill-considered actions cannot be avoided without a serious effect upon the quality of our lives.

A case in point is our increasingly profligate use of virgin pulpwood.

About half of the trash and waste materials collected by cities throughout the United States is wood fiber discarded after one-time use. At present, far too little of this cellulose fiber is being salvaged or reclaimed from the trash barrel. Instead of recycling this waste fiber back into newsprint, building materials, coarse paper and fiberboard, and developing other new products, thereby reducing pulpwood demand and providing more raw material for industry, this valuable component of municipal waste must be collected and attempts made to dispose of it—both jobs at tremendous public cost. And more often than not, the attempts at disposal are esthetically and environmentally a disaster: polluting the air through faulty incineration; destroying the land and water through dumping or unsatisfactory landfill disposal.

The adverse environmental impact and increasing public expense created by discarded, unrecycled paper and wood fiber would, in my judgment, be sufficient reason alone to support efforts to encourage the recovery and reuse of wood fiber through legislation such as S. 2266 and S. 2267.

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As we look to future projections of wood fiber requirements and wood fiber supply, however, an equally compelling argument is presented for vastly accelerating cellulose fiber recycling now. Under our present practices we are facing a situation where we will not have the pulpwood supply to meet our national demands in but a few years.

In a paper entitled *Increased Wood Fiber Recycling: A Must*, delivered at a Cellulose Solid Waste Seminar in March 1969, Wayne F. Carr, a chemical engineer at the U.S. Forest Service's Forest Products Laboratory at the University of Wisconsin's Madison campus, stated:

"Presently we are producing about 50 million tons of woodpulp per year, and about 1985 we will enter an era of 100 million tons per year production. If the United States merely continues the recycle rate it has maintained for the past 20 years, processing secondary fiber with little technological change, we are not going to have enough wood at an economic price similar to what it is today." Mr. Carr, went on to state that, using the American Paper Institute's statistics on pulpwood production and demand for pulp, "sometime during the mid-1970's, if wood or pulp imports do not increase, the United States will not have the supply to meet the demand."

Thus while we presently have a sufficient supply of domestic pulpwood to meet our current needs, and it appears that Canadian imports of pulpwood can supply the demand for a few additional years, the situation will change rather dramatically in the next ten years or so.

Now there is research under way to grow trees twice as fast. On the surface that sounds like a very reassuring promise. The rub is that if we continue on our present course of action, we will have to grow trees twice as fast just to maintain the current rate of paper or wood fiber supply for each person. This startling prospect is a result of the decreasing ratio of forest land for each person in this country. In 1900 there were 11 acres of forest land for each person and now we are down to 3 acres for each of us. By 1985 that figure will be down to 1½ acres per person.

As Mr. Carr concluded: "This is really the fact of life: We must utilize as much of our waste as possible just to meet demands, unless there is to be a cost spiral for wood fiber that can create problems of gigantic proportions."

Now the recycling of paper is not a new idea or concept. During the latter years of World War II the paper industry recycled 35 percent of the paper we consumed. Today, that rate has been reduced to just about 20 percent, and is projected to decrease even further.

It is interesting to note that countries which are considered to be wood-poor such as Japan, Spain, the Netherlands, and West Germany are presently recycling wood fiber well above the 30 percent level. Even the wood exporting country of Austria recycled fiber above 35 percent according to 1967 figures. More recent data indicates that Japan is now near the 50 percent level and West Germany has passed 45 percent.

Thus it appears from the practices in countries which are already in a wood-poor situation similar to our prospects for the 1980's that the recommendation on fiber recycling made by the National Academy of Science in a 1970 report to the U.S. Department of Health, Education and Welfare entitled "Policies for Solid Waste Management" are certainly a realizable goal. The NAS report called for the recycling of 55 percent of the paper annually consumed by 1985. Other experts familiar with the wood and paper industry have publically stated that there is every reason to believe that with available technology and a bit of insight we can easily reach a 40 to 50 percent recycling rate in the United States."

I am happy to point out to the committee that much of the available technology and new technology in the recycling of paper has been developed and—more importantly—is being introduced and utilized in my state of Wisconsin.

A recent letter from the Forest Service of the United States Department of Agriculture pointed out that "thirty percent of the fiber to this sheet came from the city dump in Madison, Wisconsin. We have reclaimed refuse that is an eyesore and pollution problem in most American Communities."

The letter went on to report that the work of the Forest Products Laboratory in the Wisconsin state capital has found that there is an enormous supply of wood fiber in municipal rubbish for making paper products. In cooperation with two other federal agencies, the Forest Products Laboratory has been working on a cooperative research and development pilot project with the City of Madison to convert the paper and wood fiber—as well as cans, bottles and other com-

ponents of the city's solid waste—into materials which can be reused and thus reenter America's economic lifestream instead of being discarded onto the nation's expanding trashpile.

While this particular project of the Forest Products Laboratory has produced letter paper from Madison trash, it is only one aspect of their comprehensive and continuing research effort to develop new products and new techniques to better utilize the Nation's wood fiber supply—both its discarded waste fibers as well as the annual supply of virgin pulpwood.

The Wisconsin effort has not just been one of government research and pilot demonstration projects, however. Two commercial companies in my state are presently making and marketing commercial grade letter quality paper that is 100 percent recycled paper. The Riverside Paper Corporation of Appleton, Wisconsin, announced this spring the manufacture of their "Ecology" brand letter paper. As the watermark on each sheet proclaims; "Ecology—100% Reclaimed Waste." Riverside's "Ecology" is primarily waste from milk cartons, paper cups and other plastic and wax coated "disposables," collected from manufacturers. The company has indicated that they are also studying the feasibility of collecting used milk cartons from schools and hospitals as a source of supply for "Ecology."

Using a newly patented process which they call "Poly-Solv," Riverside has found it economically feasible to strip the coatings from waste and reclaim the fiber to be recycled into fine quality printing and writing papers. As an added bonus, the Poly-Solv process is itself apparently environmentally clean. It is a closed system without air or water effluent and the coating residue which is stripped from the waste is used as a fuel supplement to run the plant.

Also manufacturing a 100% recycled letter paper is the Bergstrom Paper Company of Neenah, Wisconsin. Bergstrom's paper, "Recycle 100," is made from totally recycled waste paper without the ink or clays being removed. In addition to relieving the demand for virgin pulp, Bergstrom's ability to use waste paper while retaining the ink and clay has reduced the amount of solid waste which might otherwise end up as waste effluent into the Fox River.

Both Riverside and Bergstrom have received the attention of the entire nation and spurred the paper industry. Kimberly-Clark Corporation announced from their home office in Neenah, Wisconsin, on July 14th of this year that they are introducing two papers designed for business use made from 100 percent recycled paper. In this case, the waste paper to be used comes from recycled card and ledger stock, envelope clippings, and other higher quality discards.

As the first 100 percent recycled publication sheet, Bergstrom's Recycle 100 was chosen as the paper to be used for the July 1971 issue of Chem 26 Paper Processing. A leading publication in the pulp and paper field, Chem 26 claims credit as the first commercial magazine to be printed entirely on 100 percent recycled paper. Included in the July issue are two articles describing the hows and whys of Bergstrom and Riverside Paper Companies recycling efforts. I would request that the Committee incorporate these two articles into the hearing record along with the speech by Mr. Wayne Carr,[1] referred to earlier in my remarks.

If the need for the recycling of our waste wood fibers is becoming an increasing concern for both present environmental reasons as well as projected economic demands, and if the technology and experience in recycling wood fiber is already available, what is holding us back?

Among other reasons, there is the need for the development of sustained markets and the acceptance of new recycled products whose characteristics may differ in some degree with similar products made out of virgin materials. As the American Paper Institute stated in their 1970 publication, "The Paper Industry's Part in Protecting the Environment," "Taken as a whole, the national market for products made out of waste paper has been slow to expand. This fact together with economic and technical problems in collection and transportation, has limited the industry's use of waste paper. An appreciable expansion of such use will require the development of new products acceptable to the market."

It is to this goal of expanding the market for recycled paper and upgrading the status of products made from secondary materials that I think S. 2266 and

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[1] Since the Committee has received a more recent and more comprehensive statement on the subject by Mr. Carr (see p. 25). Senator Nelson has graciously withdrawn Mr. Carr's speech from the printed record.

S. 2267 speak. Obviously, the furnishing of recycled material for the official use of the Senate and the House of Representatives and the printing of the Congressional Record on recycled paper is not going to single-handedly reduce our national solid waste problems or relieve the pressure to find wood fiber sources for the next ten years. I must admit, however, that from the growing size of the Congressional Record and from the amount of paper that I observe coming into and being generated by the Senate Office, I am convinced that every member of Congress has a special and personal obligation to foster the recycling of paper.

What this legislation will do is not only create a highly visible market for recycled papers, but give further indication that the Congress is willing to take the leadership in environmental matters and in the economic husbandry of our dwindling resources. I think that our constituents should expect nothing less.

[From CHEM 26, July 1971]

BERGSTROM MAKES WAVES WITH "100%" CONCEPT

On Feb. 4, 1971, the Bergstrom Paper Co. of Neenah, Wis. became the first company in the world to make bond and offset printing paper from 100 percent recycled fibers—in other words, total trash.

The impact was like a rock thrown into a placid pond. A brief article appeared in a national newspaper, and Bergstrom was inundated with telephone calls, letters and a wave of visitors seeking samples. Within days, Oxford Paper Co. and Riverside Paper Co. began running through their own 100 per cent recycled printing sheets. And Garden State Paper Co., which has been making 100 per cent recycled newsprint at its 400 tpd mill in Garfield, N.J., for 10 years, had a dramatic increase in inquiries, in spite of the fact that newsprint and the so-called publication grades have about as much in common as apples and oranges.

In other words, Bergstrom Paper, sitting out there in Wisconsin's beautiful and tranquil Fox River valley, was making waves around the country—whether it wanted to or not. "And we didn't," asserts Bill Thompson, sales manager at Bergstrom. "At first, we just wanted to tentatively see how it would go."

The Bergstrom development has been hailed as a breakthrough, but the men who work out there on W. Wisconsin Avenue don't like the word. "It was an ideal breakthrough, because we were the first to think of it, but technologically it was not, because we had the capability all along," Mr. Thompson points out.

In fact, the first roll of Recycle 100 came off just two weeks after the company made the decision to use a 100 per cent secondary fiber furnish. "We'd been recycling paper for 67 years, so we were hardly new at the business of handling wastepaper, and we found that the techniques and the production line we had developed using waste and various percentages of virgin fibers were capable of handling the 100 per cent waste input," R. B. Tippet, marketing manager, said.

Apart from the Recycle 100 series, the 290 tpd Bergstrom mill produces a full line of printing and fine papers, using pulp substitutes such as envelope clippings, used printing paper and virgin pulp, in varying percentages. Its safety paper is 100 per cent virgin. Until February, all of the Bergstrom products contained at least 20 per cent virgin fiber "but now," as the company notes, "we've got the full range—all the way from 100 per cent virgin to 100 per cent recycled".

Further evidence of just how fast new products are breaking as a result of the 100 per cent recycled concept is that Bergstrom now has another family of paper made from 100 per cent secondary fibers. This is the Renovation line of bond and mimeo papers which are made of recycled fiber that has been de-inked, de-clayed and de-resined.

This line, of course, is of considerably higher quality than the Recycle 100 series, which is made from coated and uncoated printing papers, used kraft, wrappers, non-groundwood books and even old bank notes. It is made in 50, 60, 70 and 80 pounds, but the most popular is the 50-pound stock. The mill has run through 40 pounds in tests and, management says, "we are considering increasing this output, but we would want to have more experience with it before we started marketing the 40-pound sheet".

The unusual thing about the Bergstrom Recycle 100 sheet is that it is not bleached, not de-inked and the clays and original chemical inputs are not taken out. "It includes everything except materials which just cannot be recycled, like the wire around the bale," Mr. Tippet said. The result is that, out of 100 pounds of used paper that goes into the system, there are only three pounds of solid waste left for disposal, compared with about 30 pounds from the de-inked papers that

the mill also produces. Sometimes groundwood paper creeps in, and, although the production line can take it in small percentages, it causes problems. Other "errata" include a variety of obviously non-usable materials such as old tires and wrenches, but at least they are visible. The real problems occur with asphalt on some wrappers.

Bergstrom uses its No. 4 machine for the Recycle 100 because it is the easiest to work with at around (but usually below) 1000 fpm. The mill has three machines—3, 4, and 5. No 5 runs up to 1800 and could go to 2000 and No. 3 runs at 1000. "We could use the other machines for the 100 per cent, but we'd have a cleaning problem," the company notes.

As it is, No. 4 has to be shut down eight hours for clean-up after every batch of Recycle 100 before it can be put back on other grades. The big problem, as mentioned earlier, is asphalt, which makes a mess of the clothing, but there is trouble with "guck" in general. "If we put No. 4 on it steadily, without switching, we don't know how often we would have to shut down, but we would do it if demand necessitated. We're not going to turn down orders," Mr. Thompson laughed.

The 100 per cent puts big demands on the clothing, but Bergstrom says it is happy with the way it is holding up. The input goes through a Hydrapulper, refiners and Bauer Centricleaners before No. 4. The headbox is a Valley Multiplex (head of 50 inches). There are seven four-blade Huyck foil units, two seven-blade Huycks' and three table rolls, 37 dryers, a vertical Beloit size press and first and second fine-needled press felts (50 per cent synthetic; Albany, Huyck and Appleton).

The only additive is some sizing—"and we don't always have to use that"—but the shorter production runs, lengthy cleanups and the fact that, in general, the economics of scale have not yet come into play, make the Recycle 100 slightly more costly to produce. So far, the 100 per cent represents only "a modest amount" of total production at the mill, "but it's growing every day as those orders come in". Demand for the offset is running ahead of bond sales. Cost is between 5 and 10 per cent more than for conventional paper for comparable applications, depending on the order. For instance, a large-tonnage government bid would have a substantially lower per-ton price than a small specialized order. "It's priced about like a No. 4 bond," was the way Mr. Tippet explained it.

Main applications so far have been for annual reports, letterheads, newsletters, employee-relations bulletins, envelopes and advertising flyers. This issue of Chem 26 is the first total package application in commercial publishing.

So far, there are two general classifications for the Recycle 100 series—grey-white and buff—but there are several shades in between. "It's not white and we can't even tell you what you will get apart from grey-white or buff, but as we get more runs under our belt we will have better control over this." Mr. Tippet said.

In fact, Bergstrom is working on all the aspects of quality control, a mammoth task considering that it is recycling clays, inks and chemicals as well as the fiber. The problems of control inherent in the diversity of input materials also make it impossible at this stage to specify dyes.

Meanwhile, Bergstrom can take specifications on bulk and pick, and for special situations, the high bulk-to-weight ratio (60-pound Recycle 100 bulks out like 100 pounds) is an advantage where a good "feel" is important.

A disadvantage insofar as larger publishers are concerned is the weight, which adds to mailing costs, but Bergstrom believes the 40-pound sheet it is working on will open up new doors. In the meantime, however, it is not a big problem, since 75 per cent of the company's business is in paper for books which are generally not distributed by mail.

And the potential in many areas is "fantastic" as Bill Thompson commented. "Take AT&T for instance," he said. "They put out 166,200,000 telephone directories but that would only add up to about 1 per cent of the paper produced in the United States. And they are talking about buying recycled paper for all directories."

It was this kind of feeling for the market that got Bergstrom percolating on the 100 per cent series in the first place, but it had no idea at the time just how big a "paper tiger" it had got hold of.

"For about six months we were considering various ways to respond to the interest in recycling and we had a lot of free advice," Mr. Tippet recalled. "We were getting lots of inquiries, and not just from ecologists but from businessmen interested in buying 'ecological' paper, some because of the public relations value, no doubt, but there was enough hard interest to get us thinking.

"Finally, we decided on total recycling—doing it all the way, inks, clays, the lot—and two weeks after the decision we were in business."

It was a decision that turned the spotlight on the Fox River valley and put a paper company in the news in a favorable way—a very unusual situation—but, more important, it proved the marketability of totally recycled paper.

Low profile or not, Bergstrom made waves.

[From CHEM 26, July 1971]

RIVERSIDE'S ECOLOGY LINE

This month, little Riverside Paper Corp. (about 100 tpd) brought into production the only system that can take waxed cartons and turn them into fine printing paper.

It's just a chapter in the history of the system—called the Polysolv—but it is important because it takes the invention from infancy to significant production in one step.

The story goes back to 1946 when the privately held mill on the Fox River in Appleton, Wis. was having trouble getting enough fiber. Meanwhile, there was a cheap, readily available source of good fiber in the form of waste from a nearby carton manufacturer. The problem was that it was unusable, because the fiber was locked in between coatings of wax and polyethylene. That was when the company working on a system to unlock the fiber and eventually, in the 1950's completed a 12 tpd unit to wash away the coatings in super-heated tricholorethylene. But it was not until 1967 that the system was brought up to full production.

Meanwhile, Riverside had taken out a patent and it licensed the Black Clawson Co. to fabricate and sell the Polysolv. The first and only unit was sold to St. Matthews, and that company went out of business. Riverside bought the unit, took delivery in March this year, ran the first tests in June and was in business by July—after building a new floor to take the extra weight and knocking out a door to get the system in.

In the meantime, Riverside in April had introduced its own 100 percent recycled bond, a high-quality de-inked and bleached sheet that had immediate impact, even though the company did not advertise or promote the idea publicly, according to Bob Turek, president.

The reason, perhaps, was the two-pronged emotional appeal of a 100 percent recycled sheet made from wax and poly coated waste. "Bergstrom beat us in publicizing the 100 percent idea, but we're still the only fine paper company using this kind of waste," Mr. Turek noted.

The company began marketing its Ecology line of 100 percent reclaimed paper the second week in April and six weeks later had 47 paper merchants signed up. "It just goes to show that people are serious about trying to solve the waste disposal problem," Mr. Turek said modestly. "I'm very proud about what our people have been able to do."

What they have been able to do isn't anything they have not been doing for some time—just more. There was limited production in the Ecology line up to July because of the capacity limitations of the original Polysolv unit, which has now been been replaced by the commercial-scale unit insofar as marketing production is concerned. The small unit is now used for research.

The Riverside mill makes construction and drawing paper, school items, watermarked bond, mimeo, duplicator, and ledger paper and a wide range of unwatermarked products including vellum text and cover, art and craft, index cards, steno books, etc. Aside from the furnish for the Ecology line, the mill uses Polysolv furnish plus varying percentages of virgin fiber, depending on the product. It plans to get 50 tpd out of the larger Polysolv unit, or almost half total daily tonnage.

Most of the material for Polysolv is manufacturers' waste, mainly supplied by brokers, but the company is planning to tap the consumer "forest" too, with a pilot project starting next year involving local schools and institutions. "If we could get schools, in particular, to collect their milk cartons, it would be another step in the right direction." Mr. Turek said. "The only thing that worries us is that it has to be clean. If we had rubber bands in there it would cause us a lot of headaches."

In the first stage of the process, the waste cartons, cups, etc., are fed into a rotary reactor and are washed and dry-cleaned in three cycles in baths of

super-heated tricholorethylene. The solvent is employed within a counter-current recycling system.

The solvent itself is re-used, with a loss of only 0.5 percent and the cooling water also is in a closed system. In the first bathing, the waste is washed in solvent that has already been used twice. The second wash, which finds the waste partially cleaned, is made in solvent which has been used once. The third wash is in clean solvent. After the cycle is completed, the solvent out of tank No. 1 (which has been used three times by the end of the cycle) is run through a still and condenser to remove contaminations and then is piped into tank No. 3, to become the final bath in the next cycle.

Measured by weight, 90 percent of the original waste food board emerges in the Riverside plant as clean, sanitized fiber. Then, after further washing to remove any ink that may not have been cleaned off in the solvent baths, bleaching and perhaps tinting, the furnish goes through the fourdrinier to become bond.

The remaining 10 percent of the original waste—the wax, adhesive, ink and poly film freed by the Polysolv system—formerly caused a problem because it collected thick jelly and clogged the process. Riverside tried a number of dispersing agents until it finally hit on using ordinary fuel oil. This is now mixed with the jellied residue and the resultant poly-wax fuel is used to help fire the mill's steam power boilers.

Riverside estimates that when the new Polysolv is in full production on Ecology Bond "it will be salvaging for re-use the fiber from 850 pulp wood trees each and every day." It adds: "And this is not the end of the story; once they've done their communications job, Ecology Bond papers are themselves readily recyclable, putting those original trees to work still again and again."

The quotes are from a press release which, Mr. Turek said, he had wanted to hold up on. "We don't want to brag about the good we are doing until we have got rid of our effluent problem," he pointed out.

I would have liked to have held up on the publicity until after we got hooked up into the city system (in about two months), but the thing built up so we had to say something."

The Ecology line sells for about 50 cents a hundredweight below comparable bonds. Mr. Turek said, "but that leaves us a fair margin because we're not having to jockey for price with dozens of other mills which is what happens with a standard product. In other words, it sells for less than the list price of the comparable product, but the list price isn't much of a guide."

He estimates that it is cheaper to use 100 percent Polysolv-treated secondary fiber than a mix of secondary and virgin. "Printability is good on the 100 percent, and performance of this product compares favorably with our top-line grades," Riverside's president said. Like most paper executives who are suddenly being praised for their efforts by erstwhile critics. Bob Turek seems just a bit uncomfortable. "We have all been doing some recycling for years, but we used to hide the fact because the customers didn't like it," he said. "Now suddenly, it's the good thing to do."

STATEMENT OF HON. WILLIAM PROXMIRE, A U.S. SENATOR FROM THE STATE OF WISCONSIN

Mr. Chairman, I am pleased to see this committee considering measures to promote the use of recycled paper in the United States Congress. The two bills put forth by Senator Moss, to use recycled paper for the Congressional Record and to allow the Senate to obtain recycled paper through the regular paper quota system, deserve early and favorable action.

The need for the Federal Government to take steps to encourage recycling is clear: the Federal Government is the largest single purchaser of paper and paper products in the Nation, ordering over 400,000 tons annually. The Government Printing Office, which supplies Congress with its paper requirements, alone uses more than 92,000 tons of paper every year, equivalent to 1½ million pulpwood trees. While this is, of course, only a fraction of the entire amount of paper consumed in the United States each year, it is the fraction which we can most easily and effectively control.

I believe there are three major benefits which will come from using recycled paper: a net saving of pulp trees, a reduction of the solid waste problem, and an economic and psychological boost for recycling generally.

First, for every ton of paper we recycle, we spare about 16 trees. Present indications are that demand for trees will exceed supply by 1985. I believe we have a

responsibility to plan as far in advance as possible for the effective management of our limited natural resources. Now is the time to think about the woodpulp shortages of the future and to act with the means of our command.

Second, the use of recycled paper can provide relief from the solid waste disposal problem. The crisis stage of this problem will be upon us long before we run out of pulpwood trees. Robert D. Vaughan, Assistant Surgeon General and Deputy Assistant Administrator for Solid Wastes in the Environmental Protection Agency, recently stated that within the next two or three years, America's largest cities will be faced with mountains of solid waste and nowhere to dispose of them. Forty to fifty-four percent of that waste is paper or paper products.

It is apparent that in order to head off this aspect of the solid waste crisis, we should plan now to divert paper waste from the trash heaps to the recycling mills.

Third, the Moss legislation would give an economic and psychological boost to the recycling movement. In order to be economically successful, there must exist both a cheap supply of wastepaper for the recycling mills and a market for the recycled paper that is produced.

We are already developing a source of supply of wastepaper and paper products. The General Services Administration in fiscal year 1970, for example, collected almost 44,000 tons of used paper and sold a large part of that to paper mills for a profit of $378,510. The Moss legislation would have the Federal Government take the lead in also providing a market for recycled products.

These bills can also provide a psychological impetus to this effort. People often tend to resist new things. We, in the Congress, can, by leading the way in using recycled paper, help mitigate this psychological resistance.

So directly, through our use of recycled products; and indirectly, by leading the way and instilling confidence in recycled products, the measures proposed by Senator Moss promise admirable results. I hope the committee can act favorably on these measures.

STATEMENT OF HON. JENNINGS RANDOLPH, A U.S. SENATOR FROM THE STATE OF WEST VIRGINIA

Mr. Chairman, I appreciate this opportunity to comment on legislation requiring the use of recycled paper in the printing of the Congressional Record (S. 2267), and legislation requiring that recycled paper be made available for official use of the Congress (S. 2266). These proposals by the distinguished Senator from Utah, Mr. Moss, are commendable.

Only last year the Congress enacted the Resource Recovery Act of 1970, shifting the emphasis of the solid waste program of the Environmental Protection Agency from disposal to recovery and recycling. The Resource Recovery Act reflects a growing awareness that this Nation no longer can afford the luxury of a resource policy conceived on single-use items. The consumption of natural resources is increasing at a rate faster than the increase in population, and the consumer has come to expect the accompanying improvement in life style. Yet, when we look beyond today, this Nation cannot afford the economic and resource implications of a consumer market keyed to use and discard.

Increasingly, we must move to a practical resource policy which encourages multiple use of our resources to the greatest extent practicable.

The paper and paper-product industry has a significant potential for the expanded use of recycled materials; a potential that cannot be ignored.

Testimony before the Committee on Public Works indicates that in 1969 the paper and paperboard industry produced approximately 58 million tons of products. In the process it generated an estimated 30 million tons of paper and paper-product wastes.

Some 80 percent of this production went into single-use, discard purposes. Disposal of the substantial portion of this waste became the responsibility of municipal and commercial waste-disposal systems, representing some 35 to 50 percent of the total amount collected. And, disposal costs for handling this wastepaper are not reflected in the initial purchase price.

A National Research Council *ad hoc* Committee on Solid Waste Management concluded in 1969 that "there are no major technological limitations to the reuse of newsprint and paperboard." This same expert committee noted that the 1969 level of paper and paper-product production is expected to double by 1985 to 100 million tons annually. In turn, it recommended that at least 50 percent of this growth be supplied from increased usage of recycled materials.

Obviously the character of the paper and wood-fiber industry will change

and the industry recognizes this. Less virgin fiber will be required. This means fewer trees cut, less pressure to increase production, and less pressure to clean-cut in order to meet demand.

The industry will continue to grow. The growth will take new forms. Meeting the 1985 requirements for paper and paper products, even with 50 percent of this growth coming from recycled materials, will still require an additional 55 million acres of forest land. This is in addition to the 25 million tons of recycled paper products. Success in achieving this objective would release 91.5 million acres of forest land for other beneficial uses. The savings would be equivalent to 31 million cords of wood or two and one-half times the present annual production of the four leading States: Georgia, Washington, Alabama, and Florida.

The paper and paper-product industry also is developing recycling methods in-house. In testimony before this Committee on August 4, Mr. James R. Turnbull, on behalf of the National Forest Products Association, discussed the recycling of residues from lumber and plywood operations. A striking example of technologic ingenuity, some 80 percent of the residues reportedly can be put to use for new products. Some 13 identified uses were mentioned by Mr. Turnbull, including paper products, building materials, fertilizers and soil conditioners, and chemicals. This effort by industry has done much to abolish the previous practice of burning or burying these residues.

Within the Federal Government, the General Services Administration has had an immediate influence on the recycling of paper products. Specifications have been written for some 14 paper products, representing some $35 million in annual purchases requiring from 3 to 50 percent of the paper content be recycled wood fibers. Specifications affecting an additional $25 million in annual sales are currently under review. These specifications governing Federal purchases of paper products are being recommended to every governor by the Council on Environmental Quality.

The Congress, in enacting the Resource Recovery Act of 1970, established as a national policy the maximum reuse of this Nation's renewable and non-renewable resources. It is incumbent on us to demonstrate our faith in the concept that resource recovery and reuse prepresents both sound resource management practices as well as a sound long-term economic policy. The policy contained in the subject legislation is consistent with the policy in the Resource Recovery Act of 1970, and I support the proposal to print the Congressional Record on recycled paper and to make recycled paper products available for the use of the Congress.

The CHAIRMAN. Congressman Dow is our next witness. Come right up, sir. We are delighted to have you with us, Congressman Dow. You may proceed as you please.

STATEMENT OF HON. JOHN G. DOW, A U.S. REPRESENTATIVE, FROM THE STATE OF NEW YORK

Mr. DOW. Mr. Chairman, I want to thank the committee for giving me this opportunity to testify this morning. It is my hope that I can shed a little light on the subject at hand, recycling, which is, I feel, a very important concept and one that is finding greatly increasing interest in the Congress.

Let me congratulate this committee on being the first committee in either body that I know of to hold hearings on the use of recycled products. I sponsored the Moss bill, S. 2267, in the House, although I changed the definition of recycled paper in my bill to eliminate some problems that have been raised. I want to discuss these problems a little later in my testimony. Since I introduced the first recycling procurement bill on March 18 of this year and highlighted that initial effort with my newsletter which was printed on 50 percent recycled paper, there has been a flurry of activity and a gratifying amount of interest in using recycled paper.

In fact, this testimony printed on recycled paper is an example of the recycled paper that many Members in the House are now using. My original bill on March 18 related to the procurement by the Government of recycled paper in all areas, but I readily understand that our specific subject today relates to the bills for printing the Congressional Record on recycled paper.

What we in Congress have the opportunity to do here is to demonstrate in a most practicable way that recycled paper can be used and that it should be used whenever possible. When I put out my newsletter, I didn't feel that I should have to pay more for this paper. It turned out that 50 percent recycled offset was available then at the same price per ton as virgin paper.

Newsprint, like that used for the Congressional Record, if recycled, is a better buy, I am informed, since 100 percent recycled newsprint costs about $7.50 a ton less than the virgin newsprint. We should be willing to spend what it costs to encourage a better use of our resources, but when we have a monetary saving and a favorable opportunity to purchase recycled fiber, these are all the more reason to do it.

Buying recycled paper creates a market. It is an effective and reasonable way to encourage the growth of recycled products. When I started in this area I was reintroduced to the familiar chicken and egg argument. People that we spoke with in Government said that purchases of recycled paper were not being made because of the lack of supply. Suppliers, on the other hand, asserted that they were not making more recycled paper because the market did not want it.

The Congressional Record uses approximately 5,000 tons of newsprint each year. This is, I understand, the equivalent of a medium-size daily. My research indicates that several prestigious newspapers are using recycled newsprint. Among those newspapers are the Baltimore Sun, Chicago Sun Times-Daily News, the Boston Globe, Newsday on Island Island, New York Post, New York Daily News, Newark News, Poughkeepsie, New York Journal, Newburgh, New York Evening News—both of those are in my Congressional district—and the Washington Post. Also using recycled newsprint are the Gannett newspaper group and the McClatchy newspapers.

I feel that the bill before the committee properly limits the percentum to 50 percent recycled paper. At the present time to require 100 percent would create a sole source procurement since the only producer of 100 percent is a firm called Garden State Paper Co. Before offering the Moss bill in the House, I considered writing a 100 percent recycled content requirement for half of the procurement. However, in order to encourage the industry to move I felt that 50 percent for the percentum of recycled paper is more realistic and will allow other firms to compete for the contracts. I hope that the Garden State Paper Co. will still find customers.

To move into another subject and one which is a key issue in these discussions, let me pose a question: What is recycled paper? I am hopeful that these hearings will go a long way toward resolving this question. Certainly there is a broad spread of definitions going around at this time.

In refining my definition since the original bill I introduced in March, I have altered the language to eliminate two loopholes that

were brought to my attention and to emphasize the view that we are really talking about postconsumptive waste when we speak of recycled material.

The definition I prefer is set out in H.R. 10034. It is:

> The term "recycled paper" means any paper which after sale to, and use by, a consumer of that paper has been (1) discarded or collected as an element of solid waste; and (2) has been recovered in whole or in part and reprocessed into a new raw material for use in the manufacturing process of new papers; except that such term shall not include any waste materials generated by the paper manufacturing process and reused as part of such process.

I am emphasizing postsale because of the solid waste problems we are facing in this country and the direct effect that our domestic paper consumption plays in this area. Fifty percent of our solid waste is composed of paper. The solid waste and disposal business is a major national problem. It now costs an estimated $5 billion per year and is still growing. Our urban areas generate tremendous amounts of waste paper which could be recovered and reused.

I do not feel that the percentage of recycled material should include items that would be allowed under my earlier definition which I worked on with the legislative counsel as these ideas were taking shape.

There are some shortfalls with that definition. It was written to exclude mill broke, that is, those cuttings and wastes generated up to the placing of the manufactured paper on the winder.

The updated definition would not allow the percentage to be computed from subsequent cuttings and other wastes which come from coating the paper. At the time we thought that these cuttings would qualify under the definition of the paper manufacturing process but this is, I have learned, subject to debate.

To be safe, to really spell it out, I have opted for the postsale concept and feel that it offers less chance of maneuvering and hedging than the previous definitions.

In closing, I would like to say that the use of recycled paper by the Congress would, in a productive way, demonstrate that the legislative branch is involved in procuring products which will utilize a resource now creating serious problems as it is discarded. For years both Houses of Congress have sold its voluminous amount of scrap paper assuring that it would be recycled. It is now time for us to become a consumer of recycled products as well as a supplier.

I was pleased to see the GSA news release dated August 2 of this year in which they pay some attention to the problem of recycled papers. They require now the inclusion of postconsumer wastes in the corrugated fiberboard that the GSA buys to line packing cartons. The specification change will require of the 35 percent waste fiber at least 10 percent must be postconsumer waste. So they recognize the postconsumer definition. I am not sure whether 10 percent is adequate but I do not know the corrugated fiberboard business well enough to criticize them. However, I am glad they recognize this concept.

The decision is, I believe, economically sound as well. I continue to be concerned that the definition must be carefully drawn so that producers cannot just hold back interval waste and use it to meet recycling specifications. I would respectfully suggest that this is a key problem which the committee can certainly help to resolve.

Thank you very much for your consideration.

The CHAIRMAN. Thank you very much. That was a very fine testimony. We are delighted to have it.

I have here a magazine entitled "Recycling: Test." This is the first magazine in the United States printed entirely on recycled paper.

I have a letter from John Day, the editor of this paper. We will keep it as a reference along with our hearings.

Mr. Dow. That is splendid.

The CHAIRMAN. Without objection, we will put the letter in the record, but not the magazine. It costs enough per page to print this record.

Mr. Dow. We are all here in the interest of economy.

(The letter from John Day and a letter with enclosed article, subsequently received from Congressman Dow, follow:)

PAPER PROCESSING,
Stamford, Conn., July 29, 1971.

Senator EVERETT JORDAN,
U.S. Senate,
Washington, D.C.

DEAR SENATOR: Please find enclosed a copy of the world's first magazine entirely printed on 100% recycled paper. This represents the first in a series of feasibility tests we will be doing on various grades of 100% recycled publication paper. The idea is to demonstrate the printability of the various sheets and thus, hopefully, remove any fears that other publishers might have on this score and, therefore, open the door to increased purchases of such paper.

As you know, there's been a lot of noise about recycling, but few publishers have had the courage to switch their buying into recycling, which is particularly frustrating to those of our readers who have developed acceptable 100% recycled publication paper and now can't sell it.

I address this to you in your role as chairman of the Senate Committee on Rules and Administration, with particular reference to your hearings on S. 2266 and S. 2267. If I can be of any further assistance, please advise.

Respectfully,

JOHN W. DAY,
Editor.

CONGRESS OF THE UNITED STATES,
HOUSE OF REPRESENTATIVES,
Washington, D.C., August 11, 1971.

Hon. B. EVERETT JORDAN,
Chairman, Senate Committee on Rules and Administration, Old Senate Office Building, Washington, D.C.

DEAR MR. CHAIRMAN: I feel that the approved technical article from the U.S.D.A. Forest Products Laboratory looks carefully at the issues raised on the question of recycled paper. The author considers wood and wood fiber-based material now being destroyed through incineration, landfill, open dumping or natural deterioration.

Solid waste and the economics involved in dealing with it, together with the conservation of wood resources for the future, have prompted the hearings on this bill. Mr. Carr, the author, states the problem clearly and adequately defines his terms. After stating that the energy required to convert waste paper into products is considerably less than that needed to process wood into products, Mr. Carr discusses three factors which have weighed in the decision to assign priorities for the selection of raw materials for the wood and paper industries in the following order: (1) wood, (2) wood residue, and (3) secondary fibers from waste paper.

With a projected supply and demand chart we can see the critical problem that will arise this decade if changes don't occur. This year U.S. paper consumption is 576 lbs. per person. The world average is less than 1/10th this amount. The post-consumptive use of wood fiber which now produces 58 million tons of annual solid waste can be increased to help meet the growing demand.

As the definition of recycled fiber was raised by those testifying at the hearings, I felt some confusion was created. The addition to the supply of secondary wood

fibers from waste paper is not going to change the more efficient management of wood residues now effected by newly developed use techniques. With advanced technology I feel many timber producing states can use more than 80% wood residuals and that there is hope for applying some of that technology to the secondary fiber production from "post-consumptive waste" in an effort to respond to the solid waste problem.

Thus, I request permission to insert the article entitled "Many Problems Involved in Increasing Utilization of Waste Paper" which appeared in the *Paper Trade Journal* on May 17, 1971, in these hearings.

The U.S. Forest Products Laboratory is a very fine example of a government-industry research venture which has had very beneficial results. This laboratory together with its Canadian counterpart has developed products and processes that have contributed heavily to the strength of the paper and wood products industry. In an effort to increase outlet for wood utilization, a typical research note is abstracted below. This 1969 revised publication entitled "Uses for Sawdust, Shavings, and Waste Chips" was first put out in 1947 and again in 1961.

Sincerely,

JOHN G. DOW,
Member of Congress.

[From the Paper Trade Journal, May 17, 1971]

[Approved Technical Article—Forest Service, U.S. Department of Agriculture]

MANY PROBLEMS INVOLVED IN INCREASING UTILIZATION OF WASTE PAPER

(By Wayne F. Carr, Chemical Engineer, Forest Products Laboratory, Forest Service, U.S. Department of Agriculture, Madison, Wis.)

Research is needed on removal of additives from all types of waste paper, separation techniques, and secondary fiber processing methods. Product markets are important considerations if recycling rate is to be raised significantly.

For many years the Forest Products Laboratory and other research organizations have contributed new information and procedures to assist in supplying more paper to consumers at economic prices. Research also has been fruitful in bringing to the market wood species not previously considered suitable for wood fiber production.

In essence a fine job has been done by both scientists and land managers in bringing new wood raw materials into production, and each year we can say, "Well, look, this year paper consumption is 576 pounds per person, and last year it was 540 pounds, and everything is going along very well. We're really utilizing our forest resources well."

But the picture is not that bright. The wood fiber we have generated for the marketplace becomes solid waste, usually after only one use, and this in turn causes environmental problems.

It is generally recognized that disposal of solid waste is an evergrowing problem in the United States. We believe that Forest Products Laboratory research can contribute to solving this problem. The prime purpose of our research in the recovery of wood and wood fiber from various solid wastes is to obtain information and develop procedures to permit the use of secondary fibers in products where virgin wood fiber is now preferred. This will extend the use of secondary fiber and contribute to one of the major missions of the Laboratory—to extend the timber supply, particularly the supply of softwoods.

Only about 19 per cent of the 58 million tons of paper and paperboard consumed last year in the United States was processed for fiber removal and reuse. There are many reasons for this level of secondary fiber use, the problem is how to raise the level.

The overriding goal, of course, is to solve the problem, but it is even more important to solve it properly so that undersirable side effects from changes in our present industrial system are eliminated or minimized. We must not, for example, propose changes that create new environmental problems. To this end, during the past year, we have developed a reasonably effective method of technology assessment to give us early warning of unfavorable effects that could eventually occur from commercial development as a result of our research.

Recycling has captured the public imagination. And the unusual features of every recycling research program are quite naturally the prime material for news headlines. Thus, most reports concerning our research focus on experi-

mental paper containing fiber from household trash and the pilot plant we are setting up in cooperation with the City of Madison to study and demonstrate separation techniques for municipal solid waste.

We indeed are studying material normally disposed of in landfill by the City of Madison, but this is only part of the program. As I will mention later, there are many technical problems involving additive removal from waste paper and there is a need for new products into which secondary fiber can go. We fully recognize that current recycling starts with separate collections of certain grades of waste paper, and that there are those who scoff at scientists "going to the dump" for what is now considered fairly low grade material.

But the fact is that some 40 million tons of paper and paperboard are "going to the dump" every year. Separate collections have never in history been ideal for fiber recovery, and no one has yet proved that they will be in the future. We do not see that "going to the dump" to do research will do anything but enhance development of separate collections and current secondary fiber markets in the next ten years or so.

Any technology we develop on separation techniques will be applicable to secondary fiber mills now depending on hand sorting, and anything we can do mechanically to upgrade fiber from mixed wastepaper suffering the additional complication of being mixed with other materials will apply virtually automatically to processing other types of waste paper.

If we took the opposite approach and confined studies to high strength material such as kraft paper which now must be obtained in separate collections, our results might apply almost exclusively to that material. "Right now" thinking in recycling research will not do very much to solve long-range problems.

There is considerable misunderstanding of what many choose to call "solid waste recycling research" that can be traced directly to confusion regarding definitions of terms.

Keeping in mind that our prime interest is in wood and wood fiber, we see "solid waste" as all wood and woodfiber-based material now destroyed by any means, whether the means is incineration, landfill, open dumping, or natural deterioration. "Municipal solid waste" in any particular community may include waste from households, industry, institutions, office buildings, stores, and various Government units. We intend to study all components of municipal solid waste, not just household trash. Municipal solid waste, which might more properly be termed urban forest material, is getting major attention for conversion to urban forest products, but not all the attention. The program includes work on forest waste and industrial process waste outside urban areas.

We use the term "recycling" because almost everyone does. Actually, we are interested in recycling—obtaining wood fiber from paper and board products and producing new paper and board products with it—and in reclamation—getting fiber from the same sources but producing products other than paper and board with it. Other groups are concerned with "reuse"—extending the life of a paper product after one use, such as by writing a message on the back of an old letter.

RAW MATERIAL PRIORITIES

At first glance it would appear that secondary fiber has important advantages as a raw material over virgin fiber from wood or wood residues. Secondary fiber has already been pulped, purified, and upgraded and should be practically ready for reuse in products. Moreover, the energy required to convert wastepaper into products is considerably less than that needed to process wood into products. This is a very important environmental factor. Why then is secondary fiber not used to a greater extent than it is at present?

Other factors seem to outweigh these benefits in the selection of raw materials: 1) The accessibility of the material, 2) Availability of the material and our ability to predict it, 3) Volume, 4) Predictable composition and quality in comparison with other raw materials, 5) The number of alternative uses of the material.

Roundwood for pulp currently is available in surplus, relatively easy to harvest and transport to the mill, and has reasonably predictable quality. Fiber from virgin softwoods has excellent strength properties, permitting its use in many products. The advent of integrated mills in many areas and other improvements in residue utilization make the same statements tend to apply to virgin fiber from wood residues.

Waste paper does not measure up so well when the same criteria are applied. Mixed waste paper cannot be considered accessible or available at present, the fiber in it is not of predictable composition or quality, volumes in various areas are unknown, and alternative uses for the fiber are minimal.

Thus, the wood and paper industries find it logical to assign raw material selection priorities in this order: (1) wood, (2) wood residues, and (3) secondary fiber from wastepaper. This indicates that what can be done to replace wood and virgin wood fiber with secondary fiber from whatever source can most likely be done also with wood residues. Since it seems more desirable from the industry standpoint to use wood residues than to use secondary fiber, the tendency probably would be to reduce the use of secondary fiber whenever residues become available at favorable prices compared to wood. Thus, changes in timber cut and the use of wood residues should be made only after considering the effect they will have upon the use of secondary fiber from wastepaper and the disposal problems in our cities.

THE PULPWOOD SUPPLY

Figure 1 shows projections of pulpwood production and demand for pulp from the present to 1985. At present, we are producing about 53 million tons of wood pulp per year, and during the mid 1980's we will enter an era of 100 million ton per year production. (American Paper Institute, Pulp Division, Wood Pulp Statistics, 1969.) If the United States continues to recycle at the rate it has maintained for the past 20 years, and to process secondary fiber with little technological change, we are not going to have enough wood, especially softwoods, to supply our needs at prices considered economic by today's standards.

A face value interpretation of Figure 1 tells us that sometime during the mid 1970's, if wood or pulp imports do not increase significantly, the United States simply will not have the supply of the more desirable wood species to meet demand.

Today the supply is here; a reasonable amount of wood pulp is available, and it is relatively inexpensive. This is partly due to companies forseeing increasing demand and building new manufacturing plants. The momentary excess not only lowers the price of wood pulp, it drives down the price of secondary fiber from waste paper as well. This directly affects the waste disposal problems of our cities.

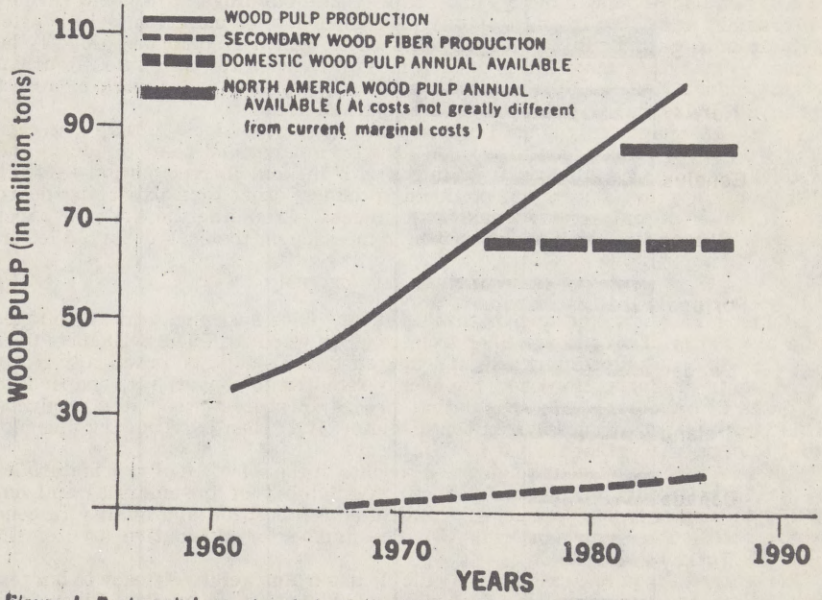


Figure 1. Projected demand and supply for pulping in the U.S.

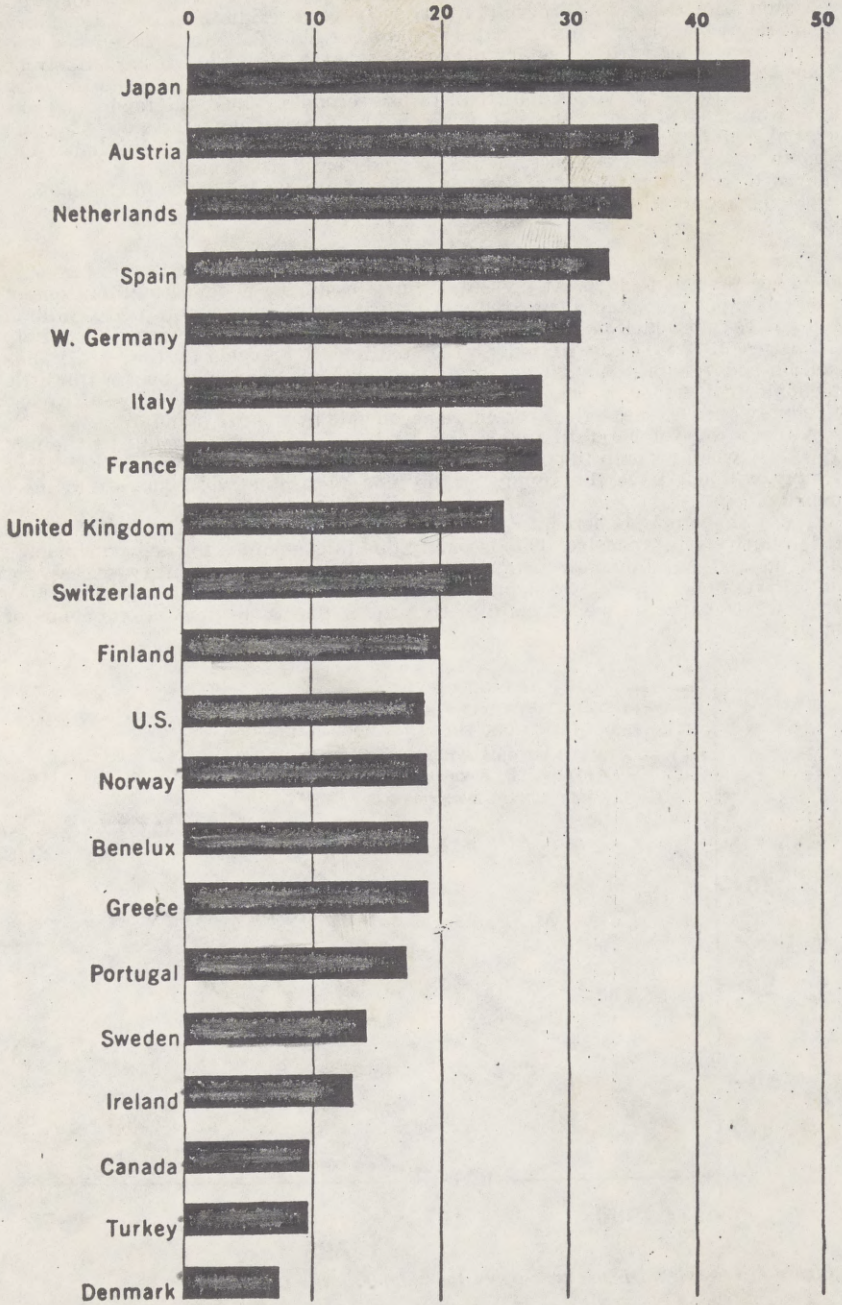


Figure 2. Percentage of wastepaper reused in various countries.

EFFECT OF WASTE PAPER ON DISPOSAL

What effect does wood fiber waste have on solid waste management and disposal problems in the United States.

A high percentage of the 58 million tons of wood fiber products consumed annually ends up in solid waste. It has been estimated that by the year 2000, the waste management costs in the New York region (a 31 county area in New York, New Jersey, and Connecticut), will be some $300 million per year with a 20 per cent paper reuse rate and $120 million per year with an 80 per cent reuse rate. (B. T. Bower *et al.* Second Regional plan for Metropolitan New York "Waste Management: Generation and Disposal of Solid Liquid, and Gaseous Wastes in the New York Regions," March 1968). These management costs include charges for incineration, wet scrubbing, a settling basin, plus landfill of the incinerator residues. We could effect significant reductions in landfill requirements if we would but increase the recycle rate of our waste wood fiber products.

RECYCLING IN U.S. AND ELSEWHERE

Some nations are doing a fairly good job of recovering and reusing wood fiber products. Figure 2 shows the percentages of recycled material used by various nations.

In 1967, Japan was well above the 40 per cent recycling rate, followed by Australia, the Netherlands, Spain, and West Germany. The United States is far down the list at 19 to 20 per cent rate. More recent information indicates that Japan is now near the 50 per cent level, and West Germany has passed 45 per cent. The United States rate decreased slightly in 1968, although secondary fiber tonnage increased. In recent years, United States pulpwood consumption has been rising 4.8 per cent annually, and waste paper consumption has been rising at an annual rate of 1.1 per cent. There has been a dramatic decrease in 20 years in the percentage of secondary fiber used in U.S. products. Many nations considered behind the United States in general development are far ahead in waste paper reuse on a percentage basis.

However, on a weight basis, the approximate 11 million tons now recycled annually in the United States is more than the total tonnage reused by all the other nations represented on the chart.

One of the basic questions that requires an answer if we are to increase secondary fiber use is: Is there a difference in the strength of the fiber in wastepaper reclaimed from household solid waste and mixed wastepaper that has been kept separate from other materials? Tests undertaken by the Forest Products Laboratory to date with milled household waste from the City of Madison indicate that there is no substantial difference in the strengths of the fiber from the two types of waste paper. At this time, waste papers separated from household trash cannot have a greater value than mixed waste paper now available to dealers at zero to $2 per ton. The study of which these tests are a part is in progress and a complete report will be prepared when all data are assembled and analyzed.

The current cost of grading mixed waste paper is prohibitive, and many dealers merely cart much of it to dumps where it becomes part of the fiber we are trying to recover. This indicates that the quality level of wood fiber from waste paper, irrespective of its source, must be upgraded if we are to maintain this material in continued use.

We have also found that much of the better quality wood fiber apparently does not get to our sample point in the City of Madison household trash collection system. Our monthly samples have shown that waste paper recovered from the City's household trash is composed of 59 percent chemically produced fibers and 41 percent mechanically produced fibers. Based on the paper industry's pulp consumption figures for 1969, if disposal follows a normal distribution, total municipal waste paper should be close to 80 percent chemical fibers and 20 percent mechanical.

For all practical purposes, groundwood fiber (newsprint) goes to household waste and this material is easily identified. Thus, we support separate collection of used newspapers as a sound means of getting this material separated from the higher-quality chemical pulp material.

Effective separate collection of newspapers would solve a small part of the problem of waste paper in municipal solid waste because annual newsprint production is about nine million tons of the 58 million ton total.

To further identify waste paper types from households, a separate collection study conducted by the Laboratory resulted in a mix from homes of 47 percent newspapers, 13 percent magazines, 12 percent brown papers, and 28 percent other mixed grades. A complete report of the results of this study is being prepared. Paper industry production figures for 1969 indicate a mix of approximately 16 percent newspapers, 3 percent magazines, 31 percent brown papers, and 50 percent other mixed grades (Table 1). The brown paper group, including bags, container board, and milk cartons, contains a large portion of the better quality softwood kraft fibers. A large proportion of this material, if our separate collection is typical, is not discarded as household waste, but is entering the solid waste pile at some other point.

TABLE 1.—U.S. PAPER CONSUMPTION PER INDIVIDUAL (1969)

Product	Consumption (pounds)	Discard from home (pounds)	Product	Consumption (pounds)	Discard from home (pounds)
Newsprint	87	78	Container board	115	11
Groundwood paper	10	2	Bending board	64	32
Book paper	48	24	Building board	26	
Fine paper	23	8	Other board	30	
Coarse industrial paper	58	25			
Sanitary and tissue	31	15	Total	575	195
Construction	15				

Another question of interest is: What are the strength levels of waste paper fibers in household trash compared to the virgin wood fiber pulps and other fibrous materials that would be competing for the same markets?

Figure 3 shows the strengths of various commercially accepted virgin fiber pulps from roundwood on a scale from 0 to 100. Kraft pulps have the best strength properties, with Douglas fir at the top of the scale with a rating of

100. Even at the lower end of the scale where we find the mechanically produced groundwood pulps, the fibers find markets because of certain characteristics that are in demand for specific products. However, the variety of product outlets available to the groundwood pulps is very limited. Although their original production involves comparatively little pollution and high yields, their reuse possibilities are limited.

Admittedly, this strength factor scale is an over simplification when we consider that pulps have many properties and all must be considered in the complex evaluations necessary to determine optimum use in products. However, this scale does give an indication of the reuse alternatives available now. Generally, the higher rated pulps can be placed in a wider range of products than those at the lower end of the scale.

This figure also shows strength factors of pulps which are competing now for acceptance in the commercial pulp classes. At the higher end of the scale are sawdust kraft pulps from both Douglas fir and southern pine. Increasing emphasis has been placed on using these residue pulps in the past 15 years, and they are now becoming accepted commercial pulps for a number of products.

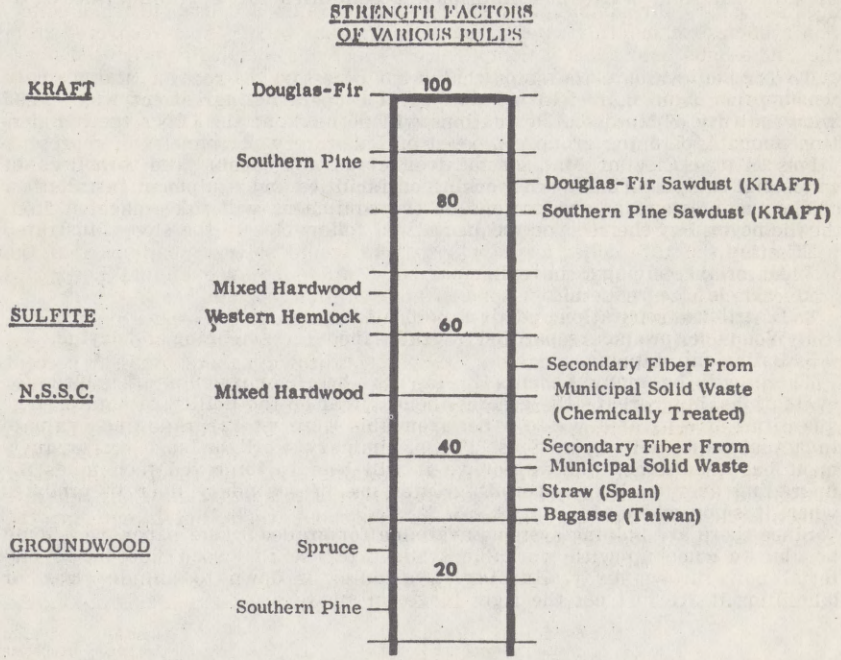


Figure 3. Relative strengths of commercial pulps, fiber from annual agricultural crops, and secondary fibers from mixed wastepaper.

Straw and bagasse pulps are shown at the lower end of the scale. These pulps have had very limited use in the United States, but are used widely in developing nations as commercial pulps for paper products.

The strength factor for the average fiber obtained from Madison household trash after the removal of only the major contaminants is slightly above the strength factors for the annual agricultural crop fibers but well below those for the softwood sawdust residue pulps. The position in the graph indicates that this type of secondary fiber may find uses in the products now made primarily with virgin fiber from the NSSC and groundwood processes. It may also find markets in those developing nations which now use lower strength annual agricultural crop fibers.

Farther up the scale is the same fiber mix from household trash, but after a chlorine type of treatment. This indicates that there are ways of increasing strength. The strength of this chemically treated waste paper pulp approaches that of kraft pulps from mixed hardwoods, but is still well below the strength of the softwood kraft pulps now widely used. A greater upgrading of the fiber is necessary to bring it to the point where it can replace softwood kraft pulps and thus effectively make an impact on our timber supply.

During the past few years we have evaluated various separation methods for recovery of waste paper from municipal solid waste, and have studied methods of upgrading the waste paper and the pulps from these papers. In cooperation with the Bureau of Solid Waste Management and the Bureau of Mines, various air separators were tested. We found that clean separation of light and heavy materials can be accomplished effectively by these means. From work at Stanford University, we learned that used newspaper can be separated from old corrugated boxes, indicating that the mixed waste paper can be upgraded by air classification.

Particle size reduction of municipal solid waste, by hammer milling or other means, yields a uniform material for further processing. Dry screening of shredded soild waste has additional possibilities for upgrading the waste paper.

PROCESS EVALUATIONS

To further evaluate the steps that seem necessary to recover and upgrade waste paper from municipal solid waste, a cooperative agreement was signed with the City of Madison. Evaluations will be made at the City's trash reduction plant. A planning group composed of Laboratory personnel and representatives of the City of Madison, University of Wisconsin, and suppliers of industrial equipment has been working on facilities and equipment installation.

The installation and evaluations of the equipment will take place in 1971. At the beginning, the recovery sequence will follow closely the steps illustrated by Figure 4.

1. Material receiving & conveying.
2. Particle size reduction.
3. Distributor separation and air classification.
4. Wood fiber products separated by grades including screening and drying.
5. Baling and shipping.

There will be many benefits in having these components assembled for evaluations, but perhaps the greatest benefit will be the ability to obtain large quantities of separated waste paper from this source to upgrade and evaluate in actual paper mill operations. The preliminary work on such an arrangement has been done, and we believe it will lead to improved techniques for upgrading fiber quality to permit greater use of secondary fiber in products where it is now excluded.

Since there are pulping systems available for graded waste paper, we should be able to come up with workable systems to use the wood fiber-based material now thrown away. Burning it, grinding it down to minute sizes, or landfilling it are just not the right longterm answers.

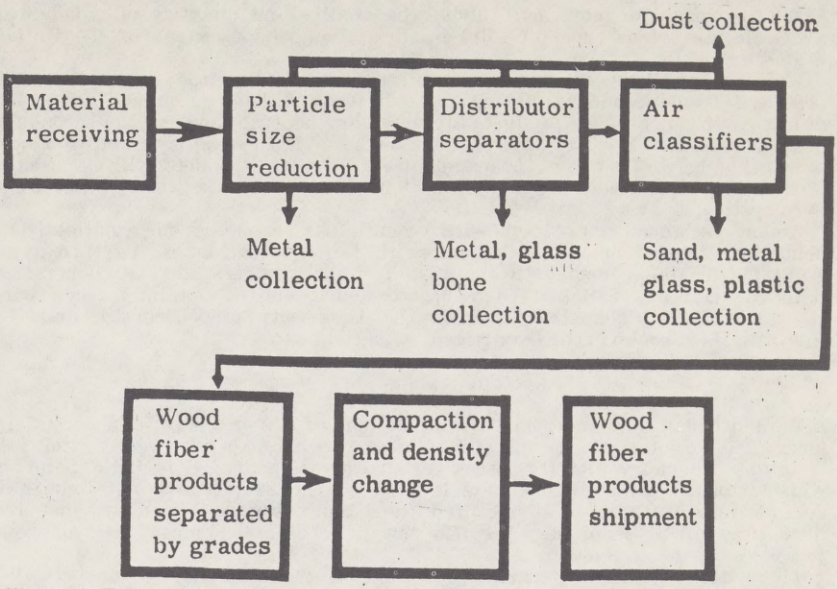


Figure 4. Target system for removing wood fiber products from municipal solid waste.

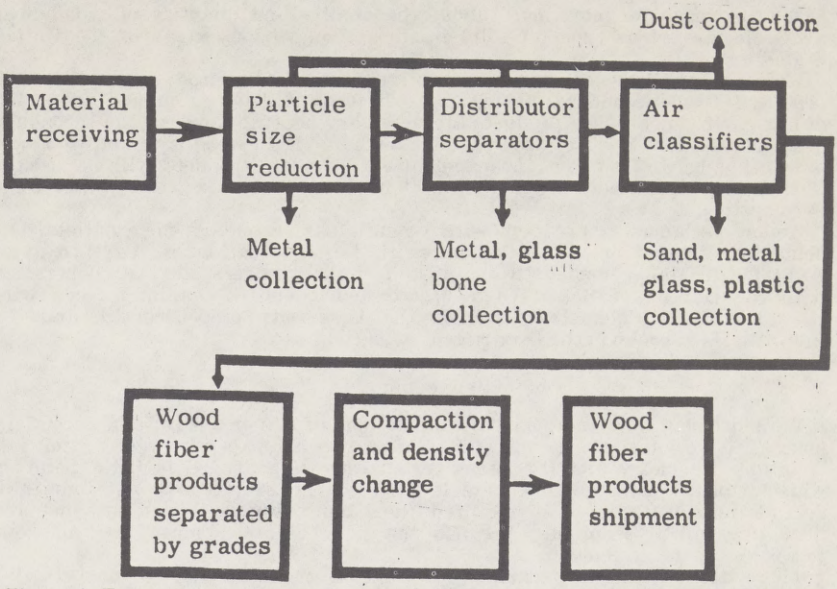
INFORMATION NEEDS FROM RESEARCH

Many of the present recovery systems for waste paper are relatively old. Many appeared during the late 1930's and the World War II years, and many handle 30 to 50 tons of material per day at maximum production. These types of operations are marginal because of the present excess of virgin pulp, and they have little money for plant modernization. They bump right into a major problem every day—much of the waste paper they get contains fillers or other papermaking additives and cannot be processed in their present recovery systems. This paper must be disposed of as waste, resulting in environmental problems.

Thus, many of the additives put into paper and paper products for water resistance, strength improvement, and for other reasons become the contaminants the secondary fiber industry must contend with to reclaim the wood fiber. This industry has been battling contaminants such as latex, wax, plastics, inks, asphalt, and others for years, and fears the new problems that may be coming next. It is important that we learn more about the characteristics of the variety of additives now used in paper production, so that these materials can be reclaimed in some form for reuse, along with the wood fiber. Also, we must develop new kinds of additives that will not interfere with recovery of the fiber from paper products.

If we could effectively separate mixed waste paper by grade, or separate the fiber obtained from it by type, a significant obstacle to increased recycling would be overcome.

We need investigative work on chemical means of separating contaminants from secondary fibers and upgrading the fibers. Chemical methods seem to have the greatest potential for upgrading waste paper fibers to levels now reached only by virgin pulp. Many of the necessary techniques are now part of the European and Japanese waste paper processing systems. We need to learn about these techniques and develop our own technology.



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We also need to know more about the quality and quantity of wood fiber available in various types of solid waste and in various areas of the United States.

Research and development are required to find new products that can be produced from secondary fibers, and whose production minimizes pollution of our environment. New products are necessary because much of the secondary fiber does not lend itself to use in products where virgin wood fiber and wood are now being used. However, the development of such products will be useless if it merely opens new markets in which virgin fiber and wood would want to compete.

Among reclamation products with potential as secondary fiber outlets now being investigated are: (1) Protein, with the cooperation of the Bureau of Solid Waste Management; (2) paint and resin extenders, also in cooperation with the Bureau of Solid Waste Management; and (3) animal feeds with the FPL Wood Chemistry Division, the University of Wisconsin, and the Beltsville, Md., group in the Department of Agriculture.

CONCLUSIONS

We must plan now and begin to execute plans for increased use of secondary fiber. The sociological reasons for increased wastepaper recycling and reclamation are clear, and the pressures are growing. There is little point in waiting until we must launch crash programs necessitated by environmental degradation. Much more is required than improving collection systems and fiber upgrading techniques, because the fiber obtained must find markets, regardless of the systems used.

There are two major technical information needs related to markets. We must find ways of putting secondary fibers that can be upgraded into existing products to supplement softwoods and softwood virgin pulps. Uses that do not lead to greater environmental problems must be found for secondary fibers that cannot be upgraded for utilization in existing products.

For an increase in secondary fiber use to become a reality, a large increase in new plant facilities will be necessary. Sufficient capital flow to accomplish this will not be available unless a real demand for secondary fiber products is apparent to justify the expansion.

Problems of increasing the demand for secondary fiber could be alleviated in a number of ways. For instance, demand could be created through Federal, State, and municipal government purchasing policies, many of which now exclude secondary fiber in specifications for paper and paper products. Changes in this area seem justified, whether they are for sociological reasons or to help build the technical-industrial base of secondary fiber use in anticipation of what will happen inevitably if paper is to continue to play a significant role in our lives.

Another market possibility is export of waste papers that have been degraded to levels that do not permit their ready reentry into United States markets. These fibers could find markets in developing nations that are wood-poor, because they have strength properties better than those of annual agriculture crop fibers now used to manufacture many products in these countries.

The CHAIRMAN. Thank you very much. I appreciate your being with us.

At this time we will be glad to hear from the Committee on Paper Specifications on the study of the use of recycling paper currently engaged in by its Technical Subcommittee.

I might state at this point that this is a matter that has been actively considered for quite some time by the Joint Committee on Printing. It is not new by any means. The Joint Committee last April directed its Committee on Paper Specifications to conduct a comprehensive study of the subject. Because of the collective experience and responsible positions in Government held by its members, the committee is certainly competent to come up with the right answers. We are delighted to have their spokesman with us today.

At this point I wish to recognize the Honorable Adolphus N.

Spence, Public Printer, who will introduce Mr. William K. Wilson, spokesman for the Committee on Paper Specifications.

Mr. Spence, will you kindly proceed with any remarks you may have, and then introduce Mr. Wilson?

STATEMENT OF HON. ADOLPHUS N. SPENCE, PUBLIC PRINTER, U.S. GOVERNMENT PRINTING OFFICE

Mr. SPENCE. Thank you, Mr. Chairman.

As an employee of Congress, naturally I have a definite interest in carrying out the desires of the Congress and certainly I share with the Congress the desire to reduce this unconscionable amount of waste that is being generated throughout the country.

To that extent, I, at the request of the staff director of the Joint Committee on Printing, loaned the services of our top technician in this field, Dr. Hobbs, to work with the Joint Committee on Printing. You, as the chairman of that committee, directed the Technical Subcommittee to advise your committee in this area and I assigned Dr. Hobbs full time. He has been working diligently to come up with a report with the other members of the subcommittee and today I have a member of that group, Mr. William Wilson of the National Bureau of Standards, who has a statement to make on the progress of that subcommittee.

Thank you, sir.

The CHAIRMAN. Thank you very much.

Mr. Wilson, we are delighted to have you with us. Proceed as you wish.

STATEMENT OF WILLIAM K. WILSON, NATIONAL BUREAU OF STANDARDS; ACCOMPANIED BY DR. ROBERT B. HOBBS, GOVERNMENT PRINTING OFFICE

Mr. WILSON. Thank you, sir.

Mr. Chairman, I am William K. Wilson, a member of the staff of the National Bureau of Standards, but today I am representing the Committee on Paper Specifications of the Joint Committee on Printing.

The conservation of trees, the reduction of solid waste, both designed to improve our national and world environment, are goals of obvious merit every person can enthusiastically adopt and promote.

The Joint Committee on Printing, with its statutory responsibility and long experience in establishing standards of paper for the different descriptions of public printing and binding, directed its Committee on Paper Specifications last April 27 to complete a comprehensive study to determine what practicable steps we could take to assist.

Actually, preliminary work in this area had been developing for at least 6 months prior to that date, due to the general interest demonstrated in Congress, in the executive branch, by the American Paper Institute, and by the National Association of Secondary Materials Industries.

When this study was implemented, it was noted immediately that this entire field is very complex. Although the study by the Committee on Paper Specifications is incomplete, the following facts emerge.

In the June 8, 1971, edition of the Wall Street Journal, the first complexity—and it is still with us—is graphically illustrated in the headlines "The Use of Recycled Paper Increases, but What is Recycled Paper Anyway?" Numerous definitions have been evolved, but no consensus has been established.

I wish to deviate from my prepared statement to refer to the press release from GSA yesterday that has been mentioned already this morning. I received a copy this morning.

The present national level of reclaimed fiber use in paper and board manufacturing is approximately 20 percent. This level could be significantly increased through the collection of paper waste in large metropolitan areas, transporting it to paper deinking mills, and processing it through those mills to recover the fibers. This approach usually results in a higher pollution rate than virgin fiber mills, the paper is lower quality than the original paper from which the waste was derived, and the economic advantage is questionable except in certain cases.

Currently, only a few printing and writing paper manufacturers in the United States have wastepaper deinking mills and some of those are multiplant companies that do not use postconsumer wastepaper in most of their mills.

Approximately 20 percent or more of the paper industry's current raw material comes from sawmill chips, slabs, and sawdust which previously was discarded and burned.

Rag content papers, such as the 50- and 100-percent rag stationery used by high-level officials in all branches of the Government, are already made from reclaimed fibers—cotton linters reclaimed from the manufacture of linseed oil and cuttings from garment manufacturers, all of which would be useless and would wind up as solid waste if replaced by any other reclaimed fiber.

Any specification requirement for a definite percentage of recycled or reclaimed fiber is unenforceable since there is no known laboratory or inspection test for this characteristic of paper.

I recognize, Mr. Chairman, that this could be done on a certification basis.

Although the total usage of newsprint by the Government Printing Office is less than one-tenth of 1 percent of the national annual newsprint consumption, it is one of our highest priority paper items by virtue of being needed to produce the Congressional Record.

Running as it does on the very high speed Record web presses, in order to meet congressional delivery needs, it is vital that our newsprint be of an appropriate quality level in order that delays in printing the Congressional Record will not be caused by paper breaks on the printing press.

I think I should add, Mr. Chairman, that the suggestion that the wording of the bill be changed so that both recycled and virgin newsprint could be used would be a step in the right direction.

Finally, the end result of the study by the Joint Committee on Printing will be applicable to the entire Federal Government and can be accomplished within the scope of existing law. I hope that this study, when completed, will be of value to the Congress in helping to set policy in this important area.

Thank you, Mr. Chairman.

The CHAIRMAN. Do you have any definite answers as to the percentage of recycled fibers that would make an acceptable paper for high-speed presses?

Mr. WILSON. No; that would be a matter of experiment. I think that perhaps that could be handled by obtaining trial lots and trying these on the presses that are used to print the Congressional Record.

The CHAIRMAN. It was testified to by Senator Moss a few minutes ago that several of the large daily newspapers are using recycled paper to print their newspapers.

Would they be on a different type press?

Mr. SPENCE. They are roughly parallel. Ours run a smaller sheet which give an additional problem during the production time, but basically they are all web letterpresses. Currently our paper is being bought in a labor distressed area in New England. For the first time in years, it is being bought within the country. I asked the Joint Committee on Printing for authority to place this procurement in a distressed labor area.

Now the intent of that bill, of course, would have me pull that out and go to a sole source of supply, and I think this testimony would indicate that we should go a little slower on it.

The CHAIRMAN. In other words, we cure one problem and create another one.

Mr. SPENCE. That is correct, sir.

The CHAIRMAN. Am I correct that most of our newsprint has been coming from Canada in past years?

Mr. SPENCE. It has, indeed.

The CHAIRMAN. What we have been trying to do is develop a satisfactory source of supply in the United States because we do have the pulpwood and have the paper manufacturers and the people that need jobs.

Mr. SPENCE. That is correct.

The CHAIRMAN. All this is part of our economy we have to figure out.

Mr. SPENCE. That is correct, sir.

The CHAIRMAN. I happen to know that there is a great deal of recycled paper being used now in, for instance, shipping cases. Also as you know, for many, many years some of the service clubs have been collecting newspapers, which is shipped away for reprocessing, a procedure that has been used for quite a long time. This is not a new subject to me because I was quite curious to find out where it all went. I am told that the newspapers are rather easily dissolved—that is not the correct word; I think the material is cooked and so forth, going through vats and tanks before it is put on the paper machine. Some of the paper does not react that easily.

Of course, you also have the deinking process which creates a pollution problem in the water where the ink is taken out of the paper.

At the same time, I am told, deinking materially weakens the paper, because it does have to be bleached and chlorine does not strengthen fabric as a rule. It usually deteriorates the fibers. Is that correct?

Mr. WILSON. Yes, sir; that is correct.

The CHAIRMAN. Its biggest use I know of today is in the packing and corrugated case industry. There is a great deal of it going into that. One of the big problems in recycling is getting the paper back to the places where it can be used, because to a large extent it has not

been worth the freight to gather it up and ship it. That is exactly the case. I know some mills that wanted to sell theirs, but nobody would pay the freight. They had to stop burning it, because that created a smoke problem. Then they had to start burying it. So there you go. It is quite a problem totalwise, but it can be used a great deal and it will be. I am sure the Government will set a good example by its use of recycled materials. I am sure that the Government Printing Office is anxious for the results of the study that has been going on there for several months. It is not a new subject there at all, is it?

Mr. SPENCE. No, sir.

The CHAIRMAN. We have been trying to find a practical answer.

Mr. SPENCE. You directed the study and we are supporting you 100 percent.

The CHAIRMAN. I directed the study months ago. It is not a new subject. We have discussed it many, many times. Fortunately, we have been able to gather together several experts in the field to give us the benefit of their views.

Do you have any other witnesses, Mr. Spence?

Mr. SPENCE. No, sir.

The CHAIRMAN. Thank you, Mr. Spence. I appreciate your testimony very much and having you with us today. Mr. Wilson, I also thank you for your appearance here and your report on the study by the Technical Subcommittee.

Now we have a very fine witness here from the Forest Service, U.S. Department of Agriculture. He is Mr. David B. Johnson, Chief, Wood Chemistry and Fiber Products Research.

Mr. Johnson, we are glad to have you with us. You may proceed as you wish.

STATEMENT OF DAVID B. JOHNSON, CHIEF, WOOD CHEMISTRY AND FIBER PRODUCTS RESEARCH, FOREST SERVICE, U.S. DEPARTMENT OF AGRICULTURE

Mr. JOHNSON. Mr. Chairman and members of the committee.

I am David Johnson from the Forest Service, Department of Agriculture. I am pleased to be here as you requested to present a statement relating to the use of recycled materials by Congress. Since the Department of Agriculture has not supplied the committee with formal, departmental reports on S. 2266 and S. 2267, my comments do not necessarily represent the views of the Department but, relate only to technical aspects in which we have an interest.

The Forest Service has a firm and active interest in wastepaper recycling and in promoting its expansion. Reusing more of our paper and wood wastes will have the effect of extending national timber supplies and enhancing urban environments through the alleviation of urban waste disposal problems.

Current wood supply-and-demand projections indicate that demands for timber are rising more rapidly than supplies under present levels of management. It will be necessary to substantially increase our wood supply base if anticipated needs for housing, paper, and recreation are to be met without drastic rises in wood costs. It has been es-

timated that, potentially, urban wastes equivalent to 20 million tons of wood could be reclaimed annually through recycling.

The problems associated with urban waste disposal are well known. Reclaiming and recycling the wastepaper and wood, which make up a major portion of urban waste, will facilitate improved waste management practices and encourage the recycling of the other components of refuse as well.

The technology is largely available to recycle clean, commercial, presorted paper wastes and it is feasible from a technological standpoint to produce most grades of papers from this type of material and also from waste wood and trees. The Forest Service has concentrated on improving ways of reclaiming the wood and paper in unsorted, nonhomogeneous, urban trash and on developing products made from recycled fiber that both utilizes the waste and supplements timber supplies. Products offering most promise are corrugating medium and building products. Good quality structural boards and light framing members can be made from reclaimed paper and wood fiber.

In summary, we are anxious to see efforts made to increase the demand for recycled forest products. We feel that trends in this direction will enhance timber supplies and help alleviate some of the problems connected with the disposition of forest products. However, the various possible impacts due to increasing demands for recycled products, and the resulting inter-relationships between demands, production, and timing, become complex and have not been predicted.

This concludes my statement. Thank you very much.

The CHAIRMAN. Thank you. I appreciate your testimony very much and having you with us.

You are in a position to know about our forests better than most people. You know the tremendous amount of cuttage in the pulpwood areas—principally, the South. Of course, there is a great deal of replanting going on, but at the same time I think it is true they are still cutting down trees faster than they are able to grow. Ten to 12 years in good land is about the proper length of time for pine to grow. It has to be good land. Trees are just like any other crop. They are planted and cared for just like any other crop.

We are increasing our consumption, as you pointed out, very rapidly. North Carolina is the principal producer of wooden furniture in the world. We furnish a great many things, but that is just one of them. It has been just a few years since all furniture went out crated in wooden crates. Today none of it goes out in wooden crates. It is packaged in corrugated cases of marvelous strength. You can get most any strength cardboard you want for packing cases.

The same thing exists with the handling of a great many other products. It is all paper today. There is a big demand, and it is increasing all the time. Consequently, there is a resulting increased need to conserve our forests.

I happen to be a member of the Committee on Agriculture and Forestry, as you know. One of that committee's major responsibilities is the conservation of our forests. We have to look after them and take care of them, or else we will run out.

Some of the big pulpmills and papermills own tremendous acreages of forest for their own protection. They usually retain some of

the larger trees and cut out the smaller timber for pulp. They also buy from the farmers in the area a great percentage of their pulpwood in order to help the local economy, but they always keep their own forest as a safety valve for their own consumption in case the production of wood pulp on the outside is not sufficient to run their mills. It is a big industry and a big business.

I know that you know a lot about it and I appreciate you being with us today. Thank you.

Mr. Marvin Gersten, Commissioner of Purchasing for the Environmental Protection Agency, was to be our next witness but he is not able to be here today. We will be glad to have his statement for the record, if he wishes to send it.

(The statement referred to, subsequently received by the committee, follows:)

STATEMENT OF MARVIN GERSTEN, COMMISSIONER OF PURCHASE; AND JEROME KRETCHMER, ENVIRONMENTAL PROTECTION ADMINISTRATOR, THE CITY OF NEW YORK

It is a pleasure to submit this statement regarding the proposed legislation designed to stimulate the use of paper made from secondary fibers. The committee is to be congratulated for recognizing the significant role that government purchasing policy can have in encouraging the reutilization of raw materials which are now wastefully clogging the disposal facilities of our cities.

On February 2, 1971—"Recycling Day in New York"—Mayor John V. Lindsay stated his intent to use, wherever possible, New York City's purchasing dollars for environmental ends. Specifically, he announced that the City was preparing purchasing specifications for paper that would require the use of recycled fibers. We would like to discuss briefly New York's motivation in undertaking this environmental purchasing program, and then describe our experiences with the program to date.

MOTIVATION

New York City's solid waste burden is growing rapidly. The Department of Sanitation currently disposes of over 24,000 tons of refuse every day—almost 15 billion pounds last year. Between 1960 and 1970, the City's population remained essentially constant, yet the solid waste load increased 40%. By 1985, our refuse load is expected to grow to 46,000 tons per day—nearly 22 billion pounds per year.

Expenses are rising. It now costs the City more than $36.00 to collect and dispose a ton of refuse. Our total sanitation bill is close to $200 million per year, exclusive of capital expenditures.

New technology for increasing collection productivity, including containerization, is currently being introduced, but these innovations are expected to do no more than slow down the rate of increase in costs. Volume growth is more than offsetting cost per ton savings.

Moreover, we are running out of places to dispose of our solid waste. According to current height regulations, New York City's sanitary landfill areas will be exhausted by 1976. Extension of the landfills is possible, but can only delay the day of reckoning by 10 or 15 years. The traditional alternative to landfill, incineration, will most likely not be satisfactory. The City's Environmental Protection Administration recently announced cancellation of a plan to construct a 6000-ton-per-day incinerator because the capital cost—$200 million, or over $33,000 per daily ton—and the air pollution—more than 3,000 tons of particulates per year even with the most modern abatement equipment—were judged intolerable.

A final solution to the City's solid waste problem is still being sought. It is hoped that recycling will become a major, if not total, part of that solution.

This is the motivation behind the City's environmental purchasing program: to encourage the reutilization of resources which are now wastefully—and at a great expense to all municipalities—thrown away. We hope to help turn the

tremendous tax burden of solid waste collection and disposal into a new source of economic activity and tax revenue. We will now relate how that program has developed, and what the results have been.

SPECIFICATION DEVELOPMENT—DEFINITION OF RECYCLING

Work on the program began last fall, when, at the direction of the Mayor, the staffs of the City's Purchase Department and Environmental Protection Administration began meetings and discussions with various representatives of the paper industry. Out of that study came the following addition to our specification for bond paper for office use:

Recycled bond paper . . . shall contain a minimum of 20% recycled deinked fibres. Such deinked fibre shall be in addition to any use of envelope cuttings, hard white shavings, mill broke or bindery trimmings . . .

We have recently developed another specification, this one for corrugated cases:

Corrugated cases shall contain a minimum of 30% recycled fibres (by weight). For the purposes of this requirement, recycled fibres include fibres from old corrugated, newspapers, mixed papers or other previously used products reclaimed from the municipal solid waste stream, and shall not include waste generated in manufacturing or converting processes, such as mill broke, roll trim, kraft or corrugated cuttings.

This second specification is currently under review and has not yet been adopted. It is included here because it helps to emphasize a very important distinction which is also being made in the legislation the committee is considering. The distinction is between two major classes of waste paper: "Manufacturing and converting waste" and "post-consumer waste".

Our research indicates that existing economic incentives are such that almost all manufacturing and converting waste—including wood residuals such as sawdust and chips, "mill broke", and "cuttings" or "clippings" from envelopes or cartons—are already being reclaimed. For this reason, we decided to focus our efforts upon the post-consumer wastes, including newspapers, containers, and mixed papers (such as office building waste), which constitutes the bulk of the nearly 40 million tons of paper products entering our nation's solid waste stream every year.

AVAILABILITY AND PRICE

On February 2, 1971, Mayor Lindsay announced the beginning of New York City's environmental purchasing program. A few weeks later, the Purchase Department solicited bids for office bond paper, with the recycling requirement included. On March 19, 1971, we received bids from paper distributors representing five paper manufacturers. (Two other bids were received, but the manufacturers did not meet the recycling requirement.)

In order to gain perspective on the price of recycled paper, the Purchase Department requested bids for bond paper with no recycling requirement. On April 5, 1971, we received bids from distributors representing six paper manufacturers. We found the prices to be comparable. The lowest recycled paper bid of $354,177 for 365,000 reams was lower than five of the six virgin paper bids. Among those five was the brand of paper the City had bought in 1970. The lowest virgin paper bid was approximately $30,000 or 8.4% below the lowest recycled paper bid.

Shortly thereafter, the Mayor announced the award of the contract to the lowest recycled paper bidder. The Mayor said:

"Under a program of selective purchasing of environmentally protective, the City's dollars are used for two positive purposes: First, to provide the basic products necessary for carrying on governmental activities, and second, to provide incentives to those sectors of private industry which are helping us to preserve the environment."

QUALITY

To date the City has taken delivery on over 50,000 reams, approximately 250,000 pounds, of the recycled paper, and we have encountered no problems in use.

RESPONSE

The response to the City's actions has been tremendous. We have answered hundreds of requests for information regarding recycled paper, including more than sixty from other government agencies.

The City of Buffalo recently solicited two bids for paper, one using their old specification, the other including the recycling requirement for bond paper quoted above. Buffalo's Purchase Department has reported that the lowest of all bids received was for recycled paper, and a contract has been awarded.

The paper industry is also responding to the environmental concern being voiced around the country. Several new lines of recycled paper have come onto the market in recent months. One paper manufacturer reported that it is reactivating a waste paper deinking system which has been in mothballs for 10 years.

In conclusion, we can say that on the basis of our experience to date, the City is working to expand its program to other products, including corrugated containers mentioned previously. We feel that a strong Federal commitment to purchase environmentally beneficial products such as recycled paper is necessary, if recycling is to expand to levels that will have significant impact on municipal solid waste problems. We applaud and support S. 2266 and S. 2267 and all other measures undertaken to increase the utilization of secondary materials.

(Mr. Gersten has been Commissioner of the New York City Department of Purchase since 1966. The Department of Purchase is responsible for the acquisition of equipment and supplies valued at approximately $170 million for the City of New York every year.)

(Mr. Kretchmer has been Environmental Protection Administrator of the City of New York since early 1970. The New York City EPA includes the Departments of Sanitation, Water Resources, and Air Resources. The EPA employs approximately 20,000 people and has an annual budget of over $300 million.)

The CHAIRMAN. The next witness is Mr. M. J. Mighdoll, executive vice president of the National Association of Secondary Material Industries, accompanied by Edward L. Merrigan of Smathers & Merrigan, and by John Grado, president of the Specialty Paper Group of Litton Industries.

Do you have others with you who will testify?

STATEMENT OF M. J. MIGHDOLL, EXECUTIVE VICE PRESIDENT, NATIONAL ASSOCIATION OF SECONDARY MATERIAL INDUSTRIES; ACCOMPANIED BY EDWARD L. MERRIGAN OF THE SMATHERS AND MERRIGAN LAW FIRM; AND JOHN GRADO, PRESIDENT, SPECIALTY PAPER GROUP, LITTON INDUSTRIES

Mr. MERRIGAN. Mr. Chairman, if you please, could I commence the statement and Mr. Mighdoll will pick it up when he comes back?

I am Edward Merrigan with the firm of Smathers & Merrigan. We act as counsel to the National Association of Secondary Material Industries. We appear here today with Mr. M. J. Mighdoll, executive vice president of the National Association of Secondary Material Industries and some other witnesses I will introduce in just a moment.

Regarding Mr. Mighdoll's statement, Mr. Chairman, Mr. Mighdoll is the executive vice president of the association with headquarters in New York City.

The association represents the recycling industries, that is, those companies throughout the Nation that recover, process, convert, and manufacture waste materials into new raw materials and products.

These industries—in the paper, metals, textiles, rubber, plastics, and related fields—have a proud, if somewhat unrecognized, record, dating back over a number of decades. In years of peace and war, they have succeeded in developing the economic and technological means of transforming industrial and household waste into new paper, new copper, new aluminum, new cloth * * * in short, thousands of American

products which could not be produced as they are today were it not for the availability of recycling firms to recover and reprocess these valuable materials.

In fact, in many commodity areas, recycled materials represent the vital difference between the United States being a "have" or a "have not" Nation. For instance, more of this country's copper, lead, silver, and gold come from recycling sources than is mined from our country's soil. Substantial proportions of other materials—a third of our aluminum, a fifth of our paper, and a fourth of our zinc—also come from recycled materials. Many of the Nation's leading corporations are members of our association because they are either significant producers of recycled materials or users of them in the production of a wide range of new products.

Mr. Mighdoll has arrived, Mr. Chairman, and I am going to ask him if he can continue on at this time.

Mr. MIGHDOLL. Mr. Chairman, thank you. I am sorry for my delay.

(Continuing the statement commenced on his behalf by Mr. Merrigan.)

Therefore, the recycling industries and the science of transforming solid waste into new raw materials and products are not of recent vintage. Fortunately, however, the country has placed unprecedented importance on recycling in view of the Nation's overwhelming solid waste burden and its need to conserve many of our vital natural resources which face depletion in terms of the anticipated requirements for our economy in forthcoming years. The recycling industries now face a major national challenge, and they can only succeed in their mission with national support and encouragement—and these must be initiated by the Congress.

The importance of recycling and the vital need to improve the conditions for achieving expanded recycling have already been recognized by the Congress, the President of the United States, many Government agencies, a number of our States and principal cities, and most certainly, a wide segment of the American public. In passing the Resource Recovery Act of 1970, the Congress recognized and directed Federal attention to the need for Government agencies to remove discriminatory purchasing policies and other barriers to the use of products made with recycled materials. President Nixon stressed the importance of the Federal Government taking the lead in expanding recycling when he directed that the General Services Administration revise its purchasing specifications—many of which have been biased for many years against the use of recycled materials—and provide a recycling incentive by requiring the use of products made with recycled materials. Many Government departments, including the Council on Environmental Quality, the Environmental Protection Administration, the Department of Interior, the Department of Commerce, among others, have not only strongly supported the concept of solid waste utilization through recycling, but have specifically urged that steps be taken to increase the use of recycled materials.

Thus, it is axiomatic that recycling of paper will occur in the same proportion that the market demand for recycled paper is increased. There is no shortage of supply; there is, unfortunately a very inadequate demand.

It is to this essential expansion of demand for recycled paper which S. 2266 and S. 2267 directly address themselves. They help fulfill that

objective, cited by the President in his environmental message to Congress, when he urged that we "reverse the trend" and remove the prohibitions against using paper with recycled content * * * prohibitions which the President said "are no longer reasonable in the light of the need to encourage recycling." The President's reference to reversing the trend underscores the fact that in the midforties we recycled 35 percent of our paper, in 1960 about 24 percent, and today 19 percent.

During recent months, there has been a national focus on recycled paper. Of all the commodities that are recycled, perhaps paper best touches the pulse of the American public. And naturally enough, for each one of us uses almost 600 pounds each year—and then discards a sizable portion of it. We have traditionally discarded paper unconsciously, and few of us have concerned ourselves with what happened then. It was customarily absorbed into our disposal system, and, as a result, each year tens of millions of tons have been buried and burned. But today, there are severe limitations on our ability to bury and to burn solid waste. The overwhelming percentage of incinerators cannot meet air pollution control standards. Much of our Nation's landfill areas are becoming exhausted, particularly in our large metropolitan centers. Open dumping and open burning are now unsatisfactory methods of disposal and are prohibited in many areas.

Is it any surprise then that recycling has come to the forefront of public attention? It represents the constructive response to the solid waste problem; it represents the opportunity to lessen the burden on solid waste disposal, to aid in the conservation of depleting resources, to provide the American public with another economical source of products. In short, recycling of paper represents a resource to our Nation, and there can be no doubt that the mandate is clearly before us to maximize the recycling of paper waste into new paper products. The accomplishment of that objective can only be achieved with Federal leadership in directing new uses for recycled paper, in opening markets that heretofore have been legislatively or administratively closed.

We have been victims of incongruity, prejudice, and apathy.

Is it not incongruous that the Federal Government, the largest single generator and seller of waste materials, still has procurement policies that prohibit the purchase of products using these materials again? Is it not incongruous that the Federal structure does not permit the purchase of a wide range of products that utilize recycled materials when these very same products have been fully accepted in commercial markets? Is it not incongruous that the Federal Government still has not put into operating practice the needed policies that have been clearly defined by the Congress and the administration alike?

Prejudice exists throughout the Federal purchasing system. The General Services Administration found that a substantial portion of its paper product purchasing specifications had distinct biases against the use of recycled fibers. These biases are currently being removed through revision of these GSA specifications. However, even here, we find it difficult to overcome the attempts of some to "expand" recycling statistically by merely broadening the definition of what constitutes recycled material, rather than providing for an increased use of these materials. The two bills being studied today represent an opportunity

to overcome prejudicial Federal policies and actions—and, dramatically enough, they relate to the very products utilized by Members of the Congress. There can be no economic or technical justification for failing to permit paper made with recycled fibers—paper that can fully meet the present qualitative standards—to be used side by side with paper made solely with virgin fibers.

There also has been tremendous apathy. But the day has come when we no longer can afford an apathetic approach to the solid waste problem or the role of recycling. The day has come when we must establish ways and means for recycling to be expanded, to become a more integral part of our economic system, to have the same opportunities for use and consumer acceptance as do products made with virgin materials. This country can no longer afford to accept and encourage the myth that products made with recycled fibers are inferior to those made with virgin fibers. It just is not true; there are hundreds of products in commercial use today which attest to the fact that quality and economically viable products made with recycled fibers are readily available. On the lack of demand, only the limited use presently being made of these products impedes the recycling factor in our country.

Therefore, what reason can there be for the Congress not to exert leadership in the use of products made with recycled materials? There is an adequacy of supply; this country consumes approximately 60 million tons of paper each year and reuses only about 11 million tons. Much more of that discarded and nonrecycled paper can move from the solid waste pile to industrial utilization. There is proven technical qualification for practically all types of paper made with recycled fibers.

A witness from the Garden State Paper Co. will testify on recycled newsprint, a product that firm has perfected and is in use today by many leading publications. It can fully meet the criteria for the paper on which the Congressional Record is printed. With me today is the president of the Specialty Paper Group of Litton Industries, who can speak authoritatively on the high standards of recycled paper in such categories as bond, offset, printing and other business papers used routinely by leading American companies. His company is representative of a number that can meet the paper needs of the Congress, to say nothing of the other elements of Government.

Mr. Chairman, we strongly urge this committee to favorably report and the Senate to approve S. 2266 and S. 2267. They are a vital beginning in directing this Nation to the use of recycled material. These bills also establish accurate, fair and essential terms for the use of recycled paper by Members of the Congress and in the Congressional Record. It is important to note that these terms not only provide for a meaningful amount of recycled material to be included in the makeup of these papers, but also provide specific terminology for what constitutes "recycled material." It is this provision that will specifically direct recycled paper manufacturers to use solid waste materials not currently being utilized.

The emphasis on postconsumer waste is important in that most industrially produced paper waste is presently being used; this industrial waste is generally the preferred quality of recycled fibers and is the first material used in the supply cycle. By requiring a percentage

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of postconsumer waste to be used, this legislation clearly focuses on the need to utilize more of the waste not presently being recycled due to the limited market demand for projects made with recycled materials.

I have brought with me some typical samples of various grades of papers made with recycled fibers, and, for the record, a list of companies that manufacture paper products with varying percentage of recycled materials. Also I would appreciate it if the chairman would recognize Mr. Grado, who is in a position to report on the technical qualifications and available supply of recycled paper.

Thank you, Mr. Chairman.

The CHAIRMAN. We would be glad to hear from the witness you mentioned.

I appreciate your presentation. It was very fine.

When you say fibers, do you also take into account rags, clippings—our underwear mills, for instance, have millions of pounds of clippings left when they cut the garments. That is all bleached and used—some of it now, of course, has synthetic fiber in it—and that now is going into paper practically 100 percent.

Mr. MIGHDOLL. That is true. The use of the word "fiber" infers that element of new raw material extracted from the cuttings and clippings you are referring to.

The CHAIRMAN. You are not trying to say they should not be utilized in recycled paper. This never was paper to start with, but it is a product this year. Now you want to continue to use that. You do not recommend not using it.

Mr. MIGHDOLL. By all means. Otherwise, that too would become solid waste.

The CHAIRMAN. And then you would cut out a market that is very valuable.

You may proceed, Mr. Grado. We are glad to have you.

Mr. GRADO. Thank you, Mr. Chairman. It is a pleasure to be here.

I would like, if I may, to take a few moments to allay some of the misconceptions I feel have crept into the use of the words "recycled paper." I think some of those misconceptions have probably been brought about by ourselves.

For instance, many people would look at this paper I have before me, which I will leave with the committee if you so desire, and consider that recycled paper. This is called white recycled paper by some companies.

In our opinion, that is a misconception. I can show you why. We have two papermills in our company. One in Louisiana and one in Massachusetts. Both of them use recycled fiber.

The CHAIRMAN. Totally?

Mr. GRADO. Not totally; no, sir. We use percentages anywhere from 25 percent to 80 percent.

The CHAIRMAN. What products do you make at those mills?

Mr. GRADO. The products I will show here are No. 5 bond, offset printing papers, tablet papers, greeting card papers, technical papers such as those used for blueprints, that type of thing. My purpose is to show that with a broad range of papers recycled fibers can be used without sacrifice of quality or appearance.

The CHAIRMAN. You are going to have to excuse me a minute.

There is a vote. I will be right back. The committee will stand in recess.

(Recess.)

The CHAIRMAN. The committee will please come to order.

I am sorry to have interrupted you. You may proceed.

Mr. GRADO. That is quite all right, sir.

Mr. Chairman, with all due respect, I would like to take exception to some of the remarks that were made here earlier concerning the lower quality of recycled paper.

As I mentioned, these specific papers will back up my statement, and I would like to hand them to you for your examination, and hopefully you would in some way put them in the record, or use them in the committee, anyway you see fit.

The CHAIRMAN. We will keep them for reference as we consider this legislation.

Mr. GRADO. All right.

This paper, which is printed, is a book paper which is made by our Fitchburg mill and contains 50 percent recycled fiber.

The CHAIRMAN. What are they?

Mr. GRADO. Deinked board, deinked papers back from carton plants. All deinked stock coming back from outside of our company, furnished to us by wastepaper dealers.

The CHAIRMAN. Newsprint?

Mr. GRADO. No, these would not contain ground wood. I am speaking more to S. 2266 concerning bond papers, tablet papers, and printing papers.

The CHAIRMAN. That would be a waste from printing plants, is that right?

Mr. GRADO. Printing plants, box board plants, that type of thing.

This is also 50 percent recycled paper. It is an offset printing paper. This is a 50 percent recycled paper which is a greeting card paper. I might say that this has to be very high-quality paper, and it is so, with 50 percent recycled fiber.

The CHAIRMAN. Are these wood fibers?

Mr. GRADO. Wood fibers.

The CHAIRMAN. That is one of the things we are thinking of, conserving the forests.

Mr. GRADO. Right.

Now I will submit this whole batch together. These are all book papers and offset printing papers and greeting card papers. These are marked. The first sample contains 80 percent recycled fiber, 26 percent recycled fiber, 60 percent, 23 percent.

The CHAIRMAN. Why the different percentages? I am just asking for information.

Mr. GRADO. Well, these were made as a result of the ground swell that is coming for recycled fibers. All papers are made to meet certain specifications. Some customers want as much recycled fiber in there as they can get. Others want specifications met which we meet by using as much recycled fiber as we can. Many of our papers are tailor made to the customers' specifications and to the end requirements.

But in any case—we feel that we can make any paper within our broad range by using over 25 percent recycled fiber with absolutely

no sacrifice of strength characteristics, brightness or any of the quality characteristics.

We have been told, by our technical people, that they feel they can go as high as 70 percent by making certain changes in other parts of the formulation.

The only property that we feel we might have to change by using recycled fiber, when we get to 70 percent, is that we must put in something like a chemical called blancfor, to make up for the brightness that might be lost after 70 percent recycled fiber.

The CHAIRMAN. The strength would be all right?

Mr. GRADO. We can keep the strength by changing the other parts of our formulation.

The CHAIRMAN. In all the cases you are talking about wood fibers.

Mr. GRADO. Yes, so far.

The CHAIRMAN. Where do you get most of this paper that you use to recycle?

Mr. GRADO. We buy that paper from waste paper dealers.

The CHAIRMAN. What does it consist of?

Mr. GRADO. Scraps from board making, pamphlets. We have used in the past magazine type papers that have been printed.

The CHAIRMAN. Corrugated board?

Mr. GRADO. No. They would be bleached board. Fiberboard.

The CHAIRMAN. The board that goes down into your kraft section largely?

Mr. GRADO. We make all high quality white paper. We would have to bleach that kraft, in addition to taking the ink off of it, which we do not do at Fitchburg. We do deinking at Fitchburg. Therefore, it has to be white paper or board to start with, before it was printed.

At our Valentine mill in Louisiana, we could bleach, and have bleached, corrugated containers to get white recycled fiber, from containers and corrugated board.

The CHAIRMAN. Do you know what you use for bleaching?

Mr. GRADO. We cook it in caustic to remove the ink. I am talking now about deinked.

The CHAIRMAN. I understand.

Mr. GRADO. In Louisiana, when we bleach corrugated, it would be a soda process, which would be a caustic cook, and then bleach it with chlorine and chlorine dioxide.

The CHAIRMAN. Do you run into pollution in the wash water?

Mr. GRADO. There is pollution. That is one remark I think should be elaborated on a little bit.

The CHAIRMAN. Caustic is a very big offender going into streams.

Mr. GRADO. Yes, sir; but the paper mills are taking care of their pollution. Both our plants are already taking steps. Our Louisiana mill has no pollution. It has already taken care of it. Our Fitchburg mill just signed a joint agreement with the Weyerhauser Paper Co. and with the city of Fitchburg, Mass., to put in a pollution control plant which will take care of that. It is a $5 million plant. That is all part of the cost of doing business.

I think we have to look at what this deinked fiber replaces, because it is replacing pulp. Making pulp is also a polluting situation. I daresay that deinking is no more—and may not even be as much—a pollutant as making raw pulp from wood.

The CHAIRMAN. I went to a papermill facility not long ago. You know, it has a little odor. They said, "It is perfume. We like that odor."

I know that is also a problem.

Mr. GRADO. Yes, sir.

Now this is a technical paper which you may have seen in blueprints. These have been coated and printed. This is called direct process paper. There are not many mills in the country that make it. It is a fairly technical grade, a fairly hard grade to make. We are the only papermill making this paper that does not make pulp. We are selling this in competition with virgin mills, meeting the quality specifications, and meeting the price. We are a major factor in this market, and this paper contains 30 percent recycled fiber.

The CHAIRMAN. Do you use any newsprint at all?

Mr. GRADO. No, sir; because in our type of mill we could not use ground wood. Newsprint is made from ground wood. For these types of papers, we cannot use ground wood. It has to be a cooked pulp.

Now these are papers that are made from agricultural waste at our mill in Louisiana. That is the waste after sugarcane has been used to make sugar. Currently that waste is being burned. It is causing fly ash pollution problems, air pollution problems in Louisiana and Florida. All those sugar mills are under great pressure right now to desist from burning bagasse. We are the only papermill that is making paper from it. It is made in all parts of the world, and in many countries it is the only source of paper, but in the United States there is only one mill using it, and that is ours. We are probably using 10 percent of the available bagasse fiber right now to make paper. This is clearly a postconsumer fiber. It has been used once to make sugar and the alternative to what we are doing with is to burn it and produce air pollution.

The CHAIRMAN. In previous years a lot of that has been going into wallboard; has it not?

Mr. GRADO. Some.

The CHAIRMAN. A great deal of it.

Mr. GRADO. If you go down through Louisiana, you see great stacks of this bagasse sitting there that has been earmarked for board, by a certain company which I will not name. I have been going by that same stack for 5 years now and I have not seen any change.

The CHAIRMAN. Maybe it grows. You know sugarcane will sprout. [Laughter.]

Mr. GRADO. This is a package of 8½ by 11 No. 5 bond paper which is used in great quantities in the Government, and it meets all the Government specifications for No. 5 bond paper. It contains 80 percent recycled fiber, this being the sugarcane waste and agricultural wastes.

The CHAIRMAN. Does the percentage of recycled fibers determine the cost of the paper? Does it have something to do with the cost of it?

Mr. GRADO. In using bagasse, no, because there we are on an equal cost footing with virgin woodpulp.

In our Fitchburg mill, where we buy deinked paper, it is a little bit more expensive right now, and it varies according to how the cost cycle goes between pulp and waste paper. One problem with using this deinked waste is somewhat of a lack of consistency in the raw materials. It does not affect the paper that gets out of our mill because

of the quality control we exercise, but we have to take great care to separate out any waste paper that might have polyethylene, or plastic, or that type of contaminant in it. The care that we have to exercise, and the current price level is what makes it a bit more expensive.

The CHAIRMAN. You say you do not do any deinking at your Fitchburg plant.

Mr. GRADO. At Fitchburg, we do do deinking. At Louisiana, it is all bagasse, or sugarcane waste.

One more sample and then I am through, Mr. Chairman. These are printed samples of checks that are used in a California bank, made by our Louisiana mill. If you are familiar with the processing of checks, you know what type of beating they take. They take magnetic ink, and they are processed through readers and computers. This paper meets all the specifications. This is 80 percent recycled fiber.

One last point I would like to make is this: In the last 3 years, our combined Fitchburg and Louisiana mills have sold 40,000 tons of paper to Government agencies, meeting virgin paper specifications and prices, and there was never any mention of recycled fiber. It just happened that we were in that business of using recycled fiber, and that paper contained anywhere from 25 to 80 percent recycled fiber, met all the specifications, and was sold to the Government agencies as low bidder.

Thank you, Mr. Chairman. That is my statement.

Mr. MIGHDOLL. Mr. Chairman, I appreciate your hearing the technical information Mr. Grado presented.

He is representative of a number of papermills that can make products with recycled fiber.

I would like to, with your permission, insert into the record a list we have compiled of companies throughout the country—we think it is quite a comprehensive list—of the various companies producing varied types of paper products running the whole range of the paper industry and paper board industry with large quantities of recycled fiber.

I would appreciate that going into the record.

The CHAIRMAN. Without objection, it will be included in the record.

(The document mentioned above follows:)

COMPANIES UTILIZING RECYCLED MATERIALS IN THE MANUFACTURE OF PAPER PRODUCTS

Some of the leading business paper manufacturers utilizing secondary paper fibers for: bond, book, business forms, cover, duplicator, envelope, index, ledger, mimeo, offset, printing, xerographic. (Note: Practically all of the companies listed manufacture a full range of the products indicated.)

Allied Paper Corp., Kalamazoo, Mich. 49003
Bergstrom Paper Co., Neenah, Wisc. 54957
Fitchburg Paper Co., Fitchburg, Mass.
Hennepin Paper Co., Little Falls, Minn.
Kimberly-Clark Corp., New York, N.Y. 10017
Newton Falls Paper Co., Newton Falls, N.Y.
Oxford Paper Co., Richmond, Va.
Rising Paper Co., Housatonic, Mass.
Riverside Paper Corp., Appelton, Wisc.
J & J Rogers Co., New York, N.Y.
St. Regis Paper Co., New York, N.Y.
Simpson Lee Paper Co., Kalamazoo, Michigan
Tileston & Hollingworth Co., Boston, Mass.
Ward Paper Co., Merrill, Wisc.

Some of the leading tissue and toweling manufacturers utilizing secondary paper fibers:

Berkshire Tissue Mills, New York, N.Y. 10017
Fort Howard Paper Co., Green Bay, Wisc.
Hudson Pulp & Paper Co., New York, N.Y. 10022
Kimberly-Clark Corp., New York, N.Y.
Marcal Paper Mills, East Paterson, N.J.
Patrician Paper Co., New York, N.Y. 10020
Romar Tissue Hills, Inc., Wheelwright, Mass.
Scott Paper Co., Philadelphia, Pa. 19113
Swanee Paper Corp., New York, N.Y. 10019
Wisconsin Tissue Mills, Inc., Menasha, Wisc.

Some of the leading container manufacturers utilizing secondary fibers for folding boxes, set-up cartons, and other containers are listed below. Since approximately 80% of all waste paper that is presently recycled is used in the manufacture of "combination board" (paperboard products using a combination of waste papers), an extensive group of manufacturers produce these products from recycled materials.

Boxboard cartons:

Alton Box Board Co., Alton, Ill.
Austell Box Board Corp., Austell, Georgia
Beloit Box Board Co., Beloit, Wisc.
Beveridge Paper Co., Indianapolis, Ind.
Bird & Son, Inc., Walpole, Mass.
Brown Company, New York, N.Y.
Carolina Paper Board Corp., Charlotte, N.C.
Columbia Corp., Chatham, N.Y.
Consolidated Packaging Corp., Chicago, Ill.
Consolidated Papers, Inc., Wisconsin Rapids, Wisc.
Container Corp. of America, Chicago, Ill.
Crown Zellerbach Corp., San Francisco, Calif.
Diamond National Corp., New York, N.Y.
Downingtown Paper Co., Downingtown, Pa.
Federal Paper Board Co., Inc., Montvale, N.J.
Fibreboard Corp., San Francisco, Calif.
Fleming & Sons, Inc., Dallas, Texas
Flintkote Co., White Plains, N.Y.
Georgia-Pacific Corp., Portland, Oregon
Hoerner Waldorf Corp., St. Paul, Minn.
Lowe Paper Co., Ridgefield, N.J.
Macandrews & Forbes Co., Camden, N.J.
Mead Corporation, Dayton, Ohio
Michigan Carton Co., Battle Creek, Mich.
Packaging Corp. of America, Evanston, Ill.
St. Regis Paper Co., New York, N.Y.
Simkins Industries, Inc., New Haven, Connecticut
Stone Container Corp., Chicago, Ill.
John Strange Paper Co., Menasha, Wisc.
Tennessee Paper Mills, Inc., Chattanooga, Tenn.
Union Camp Corp., Wayne, N.J.
United Board & Carton Corp., Ridgefield Park, N.J.
Westvaco Corp., New York, N.Y.
Whippany Paper Board Co., Inc., Whippany, N.J.

Corrugated shipping containers:

Alton Box Board Co., Alton, Ill.
Bird & Son, Inc., East Walpole, Mass.
Boise Cascade Corp., Boise, Idaho
Consolidated Packaging Corp., Chicago, Ill.
Consolidated Papers, Inc., Wisconsin Rapids, Wisc.
Container Corp. of America, Chicago, Ill.
Continental Can Co., Inc., New York, N.Y.
Crown Zellerbach Corp., San Francisco, Calif.
Diamond National Corp., New York, N.Y.
Federal Paper Board Co., Inc., Montvale, N.J.
Fibreboard Corp., San Francisco, Calif.
Fleming & Sons, Inc., Dallas, Texas
Flintkote Co., White Plains, N.Y.
Hoerner Waldorf Corp., St. Paul, Minn.

Inland Container Corp., Indianapolis, Ind.
Mead Corporation, Dayton, Ohio
Menasha Corp., Neenah, Wisc.
Owens-Illinois, Inc., Toledo, Ohio
Packaging Corp. of America, Evanston, Ill.
St. Regis Paper Co., New York, N.Y.
Simkins Industries, Inc., New Haven, Conn.
Stone Container Corp., Chicago, Ill.
Time Container Corp., Chicago, Illinois
Union Camp Corp., Wayne, New Jersey
United Board & Carton Co., Ridgefield Park, New Jersey
Weston Paper & Mfg. Co., Terre Haute, Indiana
Westvaco Corp., New York, New York

Solid fibre shipping containers:
Alton Box Board Co., Alton, Ill.
Bird & Son, Inc., East Walpole, Massachusetts
Consolidated Packaging Corp., Chicago, Illinois
Consolidated Papers, Inc., Wisconsin Rapids, Wisconsin
Container Corp. of America, Chicago, Illinois
Continental Can Co., Inc., New York, New York
Fibreboard Corp., San Francisco, California
Inland Container Corp., Indianapolis, Ind.
Mead Corporation, Dayton, Ohio
Menasha Corporation, Neenah, Wisconsin
Packaging Corp. of America, Evanston, Illinois
St. Regis Paper Co., New York, New York
Stone Container Corp., Chicago, Illinois
John Strange Paper Co., Appleton, Wisconsin
Union Camp Corp., Wayne, New Jersey
Westvaco Corporation, New York, New York

Moulded pulp containers and trays:
Alton Box Co., Alton, Illinois
Bemis Co., Inc., Minneapolis, Minnesota
Diamond National Corp., New York, New York
Hawley Products Co., St. Charles, Illinois
Keyes Fibre Co., Waterville. Maine
Packaging Corp. of America, Evanston, Illinois

NOTE.—Many products used for industrial and home construction purposes are also made from recycled material—insulation, construction board, roofing, sound absorbing material, padding, etc. If any of these should be purchased by you directly from the manufacturer, ask him to identify his content of recycled material.

Some of the leading Fine Paper and Specialty Paper Manufacturers utilizing cotton fiber content papers:

Eagle-A Paper Mills, Holyoke, Mass. 01042
L. L. Brown Paper Company, Adams, Mass. 01220
Crane and Co., Inc., Dalton, Mass. 01226
Esleeck Manufacturing Company, Turners Falls, Mass. 01376
Fox River Paper Corp., Appleton, Wisc. 54911
Gilbert Paper Company, Menasha, Wisc. 54952
The Harding-Jones Paper Co., Middleton, Ohio 45042
Hawthorne Paper, Kalamazoo, Michigan 49003
Howard Paper Mills, P.O. Box 982, Dayton, Ohio 45401
Millers Falls Paper Co., Millers Falls, Mass. 01349
Neenah Paper Div., Kimberly-Clark Corp., Neenah, Wisconsin 54957
Parsons Paper, Holyoke, Mass. 01042
Rising Paper Co., Housatonic, Mass. 01236
Rochester Paper Co., Adams, Mass. 01220
Simpson-Lee Paper Company, San Francisco, Calif. 94104
Southworth Company, West Springfield, Mass. 01089
Strathmore Paper Company, West Springfield, Mass. 01089
Byron Weston Company, Dalton, Mass. 01226.
Whiting-Plover Paper Company, Stevens Point, Wisc. 54481

NOTE.—What about the container or box used for your household products? To learn whether the package is made from recycled materials, we suggest you write to the product manufacturer and ask him to confirm the content of such materials in his packaging.

Mr. MIGHDOLL. I also have a sample of paper made by the Kimberly-Clark Co. which won the bid in New York City under the first specification let in that city, based on recycling content. It is bond paper.

Also, Mr. Chairman, you referred earlier to papers made with textile waste elements. Our own association letterhead is made of 100 percent recycled fiber, all various grades of cotton waste, and also we use a grade of letterhead with 25 percent recycled paper waste.

So, to prove your point, it can be done both ways equally well.

Also, I think mention was made earlier by Senator Moss of various companies using recycled paper.

A.T. & T. management pamphlet and the Bank of America's annual statement are representative of the type of paper now in commercial use.

Mr. Merrigan suggests that I mention that both these companies, among a number of others, indicated they plan to continue it in their full range of consumer oriented mailing pieces.

The CHAIRMAN. Are all those mills in that list you just submitted now using or capable of using recycled fibers?

Mr. MIGHDOLL. Yes. They all now are using recycled fibers in some proportion and most of them have the capacity to expand that by quite a bit.

The CHAIRMAN. Is there sufficient raw material in the form of paper coming back from the cities where you get paper to supply your demand and the demand of other mills that now do recycling?

Mr. MIGHDOLL. Yes. Supply is no problem.

As a matter of fact, this is a pull demand industry. Demand action, such as the action taken just yesterday by GSA in requiring an element of postconsumer waste to be included in the new GSA specifications, this will create the kind of demand for recycled paper and will pull at the municipal waste pile.

That pile is being ignored because most of the waste required to meet the types of raw materials Mr. Grado's mill and other mills like it need, can be pulled from industrial waste sources.

Very little municipal waste is today finding its way into paper mills. It is our hope that the kind of demand S. 2266 would create would help to not only continue to use the industrial waste now being used but to pull at the municipal waste pile, the postconsumer waste.

The CHAIRMAN. You don't want to cut back on the industrial waste, do you?

Mr. MIGHDOLL. No.

The CHAIRMAN. If you do, somebody has to burn it. There is a market for it also.

Mr. MIGHDOLL. It will continue to be the first waste used.

Now we are hoping enough demand will get at the postconsumer waste.

The CHAIRMAN. Isn't the bulk of wastepaper coming from any large town largely kraft bags such as you get at the grocery store?

Mr. MIGHDOLL. No. The bulk grades are three: Newsprint, office waste, such as we have on our table here, and old corrugated, the type of corrugated boxes generated in supermarkets and department stores.

They constitute approximately 80 percent of all the paper waste in the country.

The CHAIRMAN. Is a big part of the corrugated-box waste coming back now, or is it going to the incinerators?

Mr. MIGHDOLL. More is not used than is used.

The CHAIRMAN. And it can be used.

Mr. MIGHDOLL. Yes. They are a quality grade of material in the manufacture of new paperboard products.

The CHAIRMAN. And they can be bleached. Of course, they would have to be, because they are not bleached to start with.

Mr. MIGHDOLL. Unless they go into other corrugated products.

The CHAIRMAN. And grocery bags and such things could be used over that way, couldn't they?

Mr. MIGHDOLL. The grocery bag has yet to stand the test of some technical work. When paper gets wet, it sometimes performs better with a higher content of virgin fibers than with recycled fibers. There is experimentation going on now to determine at what percentage can recycled fibers be introduced into the bag and not take away from its strength characteristics.

The CHAIRMAN. I am just judging by my own household. The biggest amount of paper around our house comes from the supermarkets when you bring groceries home. Then you have newspapers. I expect the newspapers weigh more than the bags.

Mr. MIGHDOLL. The other witness, Mr. Chairman, Mr. Grado, in our remarks so far and the GSA announcement which I would also like to have contained in the record, this is talking about paper and paperboard markets and is talking in terms of what we waste other than newsprint.

There has been a great technological breakthrough in recent years in using old newsprint, the newspapers that pile up in our garages and basements, into new newsprint. The Garden City Paper Co. has an expert here today and I would appreciate if he could be recognized to talk on that issue referring to S. 2267 in the Congressional Record.

Mr. MERRIGAN. Before that witness appears, could we please have inserted in the record this GSA news release dated August 2, 1971, entitled "GSA Takes New Steps To Spur Paper Recycling"?

The CHAIRMAN. Yes; without objection, it will be included.

(The GSA news release referred to, and a letter subsequently received from Mr. Merrigan follow:)

[GSA News Release, Aug. 2, 1971]

GSA TAKES NEW STEPS TO SPUR PAPER RECYCLING

The Federal Government is taking still another step in its drive to encourage the use of recycled waste paper, the General Services Administration announced today.

Administrator Robert L. Kunzig of GSA, which does most of the Government's buying, said that effective immediately his agency will require the inclusion of "post-consumer" wastes in the corrugated fiberboard it buys to line packing cartons.

The specification change will require at least 35 percent waste fibers. Of this at least 10 percent must be post-consumer wastes, which include materials which have passed through their intended use and been collected from homes, offices, factories or municipal solid waste. The remaining 25 percent will be manufacturing wastes, forest residues and other wastes.

In announcing the change, Kunzig said, "GSA's new definition will be applied to only one product at this time. If this first step is successful, the requirement

for a minimum percentage of post-consumer wastes will be continued and expanded to other specifications wherever possible."

This program is in furtherance of the President's program to promote recycling of post-consumer wastes and thereby help alleviate already overburdened municipal waste disposal systems. It also encourages the maximum utilization of forest residues and manufacturing wastes.

GSA also announced that on all paper specifications requiring reclaimed fibers a statement of the types of wastes used in the product will be required in accordance with the new definitional breakdowns attached.

Kunzig also said, "We laud the paper industry's efforts in this area to date, but much more needs to be done. Therefore, we will work closely with industry and other concerned agencies in revising all our specifications to spur the maximum use of post-consumer wastes and all other wastes consistent with our capacity to utilize them."

GSA DEFINITION

The paper stock shall contain not less than 35 percent by weight of reclaimed fibers as listed in Part I and Part II, but not less than 10 percent by weight as listed in Part I. A certificate shall be submitted with each bid indicating compliance with these requirements. The certificate should identify the types of reclaimed fiber to be used in the material listed in the invitation.

PART I

A. Paper, paperboard and fibrous wastes from factories, retail stores, office buildings, homes, etc., after they have passed through their end-usage as a consumer item including:

1. Used corrugated boxes;
2. Old newspapers;
3. Old magazines;
4. Mixed waste paper;
5. Tabulating cards; and
6. Used cordage.

B. All paper, paperboard and fibrous wastes that enter and are collected from municipal solid waste.

PART II

A. Dry paper and paperboard waste generated after completion of the papermaking process * including:

1. Envelope cuttings, bindery trimmings and other paper and paperboard waste, resulting from printing, cutting, forming and other converting operations;
2. Bag, box and carton manufacturing wastes; and
3. Butt rolls, mill wrappers and rejected unused stock.

B. Finished paper and paperboard from obsolete inventories of paper and paperboard manufacturers, merchants, wholesalers, dealers, printers, converters or others.

C. Fibrous by-products of harvesting, manufacturing, extractive or woodcutting processes, flax straw, linters, bagasse, slash and other forest residues.

D. Wastes generated by the conversion of goods made from fibrous materials; i.e., waste rope from cordage manufacture, textile mill waste and cuttings.

E. Fibers recovered from waste water which otherwise would enter the waste stream.

SMATHERS & MERRIGAN,
ATTORNEYS AND COUNSELLORS AT LAW,
Washington, D.C., August 11, 1971.

Hon. B. EVERETT JORDAN,
Chairman, Senate Rules and Administration Committee,
Old Senate Office Building, Washington, D.C.

DEAR CHAIRMAN JORDAN: On behalf of the National Association of Secondary Material Industries, Inc. (NASMI), please let me thank you so very much for the courtesies which you extended to Mr. M. J. Mighdoll, Mr. John Grado, Mr. William Hancock, and myself at your Committee's hearings last week on S. 2266

*The papermaking process is defined as those manufacturing operations up to and including the cutting and trimming of the paper machine reel into smaller rolls or rough sheets.

and S. 2267. We appreciate your deep interest in legislation which would help to lead our country toward a balanced and sound recycling policy.

We understand that the American Paper Institute (API) may file a supplemental statement which in essence advocates amending the words "recycled material" in both bills introduced by Senator Moss to effectively eliminate any incentive which the Government may provide for the recycling of "post-consumer" solid waste. Specifically, API apparently supports a definition of reclaimed fiber which reads as follows:

"Fiber obtained from solid waste or from waste collected as a result of a manufacturing or agricultural process but not including materials generated from and re-used within a plant as a part of its own paper making process."

I. *We are surprised that any such position would be taken by the American Paper Institute and we strongly oppose such a step for the following reasons:*

A. *Such a backward step would be contrary to the progressive steps already taken by the Federal government to increase recycling of post-consumer solid waste.* Such a definition was recently abandoned by the General Services Administration after consultation with the Council on Environmental Quality and the White House. Surely the American Paper Institute which was fully aware of these discussions must realize that this definition has now been replaced. On August 2, 1971, Administrator Robert L. Kunzig of GSA said that "the Federal government is taking still another step in its drive to encourage the use of recycled paper . . . effective immediately GSA will require the inclusion of *post-consumer waste*" in Federal paper purchases. Furthermore, Administrator Kunzig said that "the requirement for a minimum percentage of post-consumer waste would be expanded to other specifications wherever possible."

In view of the fact that the American Paper Institute itself during these hearings lauded and supported this August 2 announcement, we are at a loss to understand why they now wish to eliminate the use of post-consumer solid waste by the Government.

B. *Such an amendment would virtually eliminate the legislative purpose of S. 2266 and S. 2267.* The legislative purpose of S. 2266 and S. 2267 could not be more clear. In accord with the Resource Recovery Act, President Nixon's February, 1971 Environmental Message to Congress, and Administrator Kunzig's August 2 announcement, these two bills seek to increase the use of *post-consumer solid waste.* It is post-consumer waste not industrial waste which urgently needs legislative attention. Of the approximately 60 million tons of solid waste paper generated in this country annually, only 15% of post-consumer solid waste is being recycled. On the other hand as much as 85% of high value industrial waste is currently being utilized. Agricultural by-products of the paper making process, such as sawdust, wood chips and various residues are the first-line source of supply for paper manufacturers. These industrial by-products are usually located near the factory and are ready to be pulped at virtually any time. Post-consumer solid waste merely accumulates into vast unsightly mountains across our countryside. API's suggested language would not provide for any use of post-consumer solid waste and, therefore, would not attack the most important part of this Nation's solid waste problem.

II. *NASMI strongly supports S. 2266 and S. 2267 as introduced because these bills are directed toward the use of post-consumer solid waste.*

The most important part of our Nation's solid waste problem is the lack of demand for post-consumer solid waste. The Congress, therefore, must change its procurement policies to increase the demand for the use of such waste. Any definition of recycled fiber should contain the legislative intent of Senator Moss's bills which define recycled fiber as including the highest possible percentage of post-consumer solid waste. The Committee will want to consider that the Executive Branch has already taken the lead in this direction by requiring in GSA's August 2 announcement a percentage of post-consumer solid waste of at least 10%. Senator Moss's legislation would place this figure at 50%. Since the post-consumer solid waste demand problem is so much more serious than the industrial waste demand problem, we urge your Committee to provide the highest possible percentage of post-consumer solid waste and require an amount of that waste which would at least be commensurate with any amount of industrial waste which your Committee may consider requiring.

Finally, it has been suggested by the American Paper Institute that there is already a backlog of demand for recycled fibers and that any further demand would merely overload production capacity of existing mills. This argument is specious. If the demand for recycled fiber were so much in excess of supply why are we virtually buried alive under an ever-growing mountain of solid

waste, and why has the percentage of paper which this country has been recycling been dropping steadily over the past 20 years.

Again, Mr. Chairman, please let us thank you so much for this opportunity to supplement the record and we look forward to legislation which would show that the Congress is truly concerned about utilizing solid waste which is not already being recycled by private industry.

Sincerely,

EDWARD L. MERRIGAN.

Mr. MERRIGAN. I would like to present Mr. Hancock. He is on the witness list.

Mr. Chairman, the president of Garden State, Mr. Rich, was going to appear, but since Mr. Hancock, who is with the same company, was here to appear, Mr. Rich asked that he simply be substituted for him.

The CHAIRMAN. Yes. We have you pretty far down the list and will wind up not hearing some people if we don't move along here.

Go right ahead, Mr. Hancock. We will hear your testimony.

Mr. MERRIGAN. Thank you very much, Mr. Chairman. We hate to impose on your time.

The CHAIRMAN. Mr. Hancock, please just summarize your statement. We will insert in the record any pertinent parts of your formal statement you don't cover.

STATEMENT OF WILLIAM E. HANCOCK, DIRECTOR, PAPER STOCK PROCUREMENT, GARDEN STATE PAPER CO., INC., ACCOMPANIED BY FRANK W. LOREY, CORPORATE TECHNICAL DIRECTOR, GARDEN STATE PAPER CO., INC.

Mr. HANCOCK. There are a lot of charts and graphs connected with this presentation. The actual part I want you to hear is very short.

My name is William E. Hancock and I am testifying for the Garden State Paper Co., Inc., of which I am director of paper stock procurement. Garden State is a subsidiary of Media General, Inc. At the outset, I would like to express my firm's appreciation for being permitted to present our views here today, and to express the regrets of our board chairman and president, who were unable to attend and have asked Mr. Frank W. Lorey, our corporate technical director, to join me in making this presentation.

I would like to briefly relate the history of the recycled newsprint manufacturing process, which is not quite 10 years old, and then discuss four major areas of concern to potential consumers of recycled newsprint. These areas are availability, pollution abatement associated with the newsprint recycling process, technical quality of the product, and finally the cost of the product itself.

The Garden State process was developed in the late 1950's by Richard B. Scudder, publisher of the Evening News of Newark, N.J. Our first mill was built in Garfield, N.J., in 1960, and we produced our first roll of saleable newsprint in the fall of 1961. We added a second paper machine in Garfield in 1966, and constructed our Pomona, Calif., mill in 1967. In 1968, we entered into a joint venture with Field Enterprises in Chicago, and built the FSC Paper Corp., which Garden State operates, using our process.

The Garden State process utilizes 100 percent old newspaper as its sole raw material furnish, and we currently consume nearly

400,000 tons of old newspaper annually. This makes Garden State the largest single consumer of old newspaper in the world.

The CHAIRMAN. Would that include some of the newspapers which Senator Moss mentioned this morning?

Mr. HANCOCK. Yes, sir.

The availability of recycled newsprint today is in direct proportion to the availability of raw material and the availability of customers in a given area. A one-machine newsprint mill must have 300 tons of old newspaper daily in order to produce a minimum of 80,000 tons of newsprint annually or the operation is not economical. In addition, besides this, a capital expenditure of approximately $25 million is required, in addition to roughly 30 acres of land and adequate sewage treatment facilities and water supplies.

After 3 years of investigation and study, we are convinced that an adequate supply of old newspapers currently exists in the country to support our mills and that this raw material supply is sufficiently abundant to support considerable expansion of our existing operation.

At the present time, our existing mills are geared to gradually increase their production and we are assured by past performance that we have the capacity to meet normal increases in demand in our local mill areas for recycled newsprint, without making large capital expenditures in new equipment. However, in the event there should be a sudden increase in demand for recycled newsprint, we feel confident that we could meet that need provided the economics were feasible.

I should like to note here that our Pomona mill was operating just 12 months after groundbreaking and that the Chicago facility took 14 months to build despite the inclement weather of the Midwest.

The CHAIRMAN. You have mills in California, Chicago, and New York?

Mr. HANCOCK. That's right. I have been remiss in mentioning here that the Chicago mill is the FSC Paper Corp. and is identified as such in some of our charts. It is also referred to as Garden State Alsip, which is the suburb of Chicago where, in fact, it is located.

The CHAIRMAN. You put these plants there because you have a freight-rate or truck-rate problem, or whatever it might be, to get the paper to you.

Mr. HANCOCK. Transportation is one of our—savings in transportation is one of our advantages. We are located close to our source of raw material and close to our customers.

The CHAIRMAN. That is a big item today in any business. Transportation. The cost went up again this week. If you don't believe that, just try to haul something. The settlement with the railroads will produce another hike in freight rates. Truckers, likewise.

Mr. HANCOCK. I would like to discuss pollution abatement associated with our process. There has been much discussion of the pollution associated with the papermaking processes and the problems faced by recycling mills. Most of our Nation's recycling mills are very old and are indeed faced with water and effluent treatment problems which are not easily overcome.

As I mentioned earlier, Garden State is a young company, and as such, has had the opportunity to take advantage of many of

the pollution abatement techniques offered to industry in recent years.

At all three mills, waste water goes to municipal sewage treatment systems, and Garden State pays its fair share of the treatment costs. No waste process water is discharged directly into a river. The requirements for quality and quantity of waste water differs in all three mills. Pomona has a quantity restriction which was met by installing clarification equipment in the mill and reusing 60 percent of the water. Alsip, being on inland waterways, has a very strict quality restriction as well as a quantity limitation, and much money was spent in water treatment equipment to successfully meet the standards. The mill effluents contain no toxic substance, and are easily treated when mixed with domestic sewage.

The function of municipal sewage treatment systems is to collectively treat domestic and industrial effluents. Each day, Garden State's Pomona mill for instance, uses 3 million gallons of fresh water and 3 million gallons of effluent go into the municipal sewer, but as I mentioned earlier, the effluent is nontoxic and treatable, and is a small part of the 500 million daily gallons processed by the treatment plant.

Garden State burns low sulphur fuel at all three locations—gas at Pomona and Alsip, and oil at Garfield. The Garfield powerhouse was a coal-burning facility that was formerly owned by a textile mill, and conversion to oil was made to significantly reduce air pollution, although with coal an effective scrubbing system was used to minimize fly ash emission.

Other than water vapor, there is no gas emission of any kind from the papermaking process.

The paper mills are not noisy operations, and in general render sounds no worse than the hum of motors and the sound of turning rolls. The worse noise situation is the sound of escaping steam which happens only on upset conditions, and silencers have been installed on all steam vent lines. The three mills have proved to be good neighbors, and in Garfield where all stacks are equipped with silencers, a row of new houses were built directly adjacent to the mill property after the mill started operation.

This is an area I trust will be of some enlightened value. The quality of newsprint, recycled newsprint.

The characteristics of newsprint made from 100 percent deinked newspaper differ somewhat from those of virgin newsprint, but most of the differences are a plus factor to the consumer. In the end result, the key characteristic is pressroom runability which the newspapers report as breaks per 100 rolls or rolls per break. Recycled newsprint manufactured by our process ranks very well with virgin newsprint as Mr. Lorey will explain by use of the attached reports.

We won't go through all of them. No newsprint manufacturer has a perfect runability record in any pressroom and naturally Garden State has a problem similar to those confronting other newsprint manufacturers. But you will see from Mr. Lorey's figures and from the reports supplied by the American Newspaper Publisher's Association itself, that recycled newsprint ranks well above the national and regional averages in printability, opacity and tearing strength, the latter being recognized by the industry as the most critical strength property.

We have not identified the pressrooms from which these reports emanated because we did not feel it proper to place a particular publisher in the position of criticizing publically his other suppliers. However, I will be happy to supply that information to the committee on a confidential basis.

The CHAIRMAN. May I ask you a question at this point?

How many times can newspaper be recycled and still have usable fiber?

Mr. HANCOCK. Well, I can answer that question two ways.

It is inconceivable for us to imagine a situation in which you would get back an appreciable amount of your own product. We are only 4 percent of the newsprint market. In a given area, let's say the New York City area, where we manufacture about 160,000 or 170,000 tons a year, New York City alone consumes 1 million tons.

Besides this, we draw raw material from as far north as Boston and as far south as Richmond, Va. Most of the paper that we get back is not ours.

The CHAIRMAN. Suppose it was?

Mr. HANCOCK. In laboratory conditions, our best mill, our newest mill, has approximately a 12-percent shrinkage. If you were to put a pound of recycled newsprint into a vacuum situation and recycle it, you would lose 12 percent just in moisture, the loss of the weight of the ink and of the small fibers which are washed away.

I think 12 would go into 100 about 7 or 8 times.

The CHAIRMAN. I was thinking about ultimately getting all material recycled and keeping it going around. Paper has a fiber just like anything else. That is the reason you get better fibers out of cotton waste than other things, because you start with long fibers. The shorter they get, the weaker the strength, and the more problems you have making paper out of them, too.

Mr. HANCOCK. Mr. Lorey will be able to show you or explain to you what happens in the recycling of newsprint, for instance——

Mr. LOREY. May I answer this question?

Mr. Chairman, we know that we could recycle 25 percent of our own paper back into the mill. We don't know that we could recycle more than that. We think we could recycle upward of 50 percent.

The CHAIRMAN. All right, proceed.

Mr. HANCOCK. Now I would like to ask Frank Lorey to briefly discuss some of the charts here.

We will not go over them all.

Mr. LOREY. Will you give me some idea as to how much time I would have? Three minutes? Five minutes?

The CHAIRMAN. Five minutes. We have several other witnesses.

Mr. LOREY. All of our data is in the report we have here.

The CHAIRMAN. Without objection, all pertinent parts of your report will be included in the record. It will be available.

Mr. LOREY. There are a few things we would like to emphasize.

I have some charts. I would like to stand over there so possibly the audience could see the charts as well as yourself.

The CHAIRMAN. Certainly.

Mr. LOREY. Thank you.

(Exhibit 1 follows:)

EXHIBIT 1

RECORD OF RUNNING BREAKS PER 100 ROLLS—1970

Mill											Total
Garden State:											
January	11.2	2.4	0.8	6.0	5.3	6.2	2.8	1.5	5.5	6.2	4.1
February	3.3	3.2	0	3.6	3.5	0	4.2	2.9	3.4	3.3	3.1
March	1.5	3.2	.2	5.4	3.7	14.2	4.1	4.4	2.9	3.2	3.7
April	0	2.3	0	5.1	4.4	1.8	3.5	1.9	3.2	3.2	3.2
May	0	3.9	0	4.4	2.9	0	4.8	.8	2.4	2.0	2.6
June	0	3.1	0	4.0	2.4	3.1	3.2	1.3	1.5	1.0	2.3
July	0	2.6	0	3.7	1.4	1.0	4.6	.5	1.7	4.0	2.0
August	0	2.8	0	3.1	2.9	2.0	0	1.4	1.7	0	2.1
September	0	2.3	0	4.2	3.5	6.1	5.0	2.9	1.6	7.6	3.5
October	0	6.1	.5	6.0	3.8	2.4	6.8	6.0	1.5	0	4.3
November	0	3.7	.3	4.3	5.0	0	3.1	3.9	1.2	2.4	3.3
December	0	5.4	1.9	6.2	4.8	5.8	4.1	3.8	4.0	6.8	4.7
Cumulative:											
January	11.2	2.4	.8	6.0	5.3	6.2	2.8	1.5	5.5	6.2	4.1
February	7.8	2.8	.4	4.6	4.3	6.2	3.6	1.8	4.2	4.6	3.6
March	5.9	3.0	.3	4.9	4.1	9.7	3.8	2.6	3.5	4.2	3.7
April	5.9	2.8	.3	4.9	4.2	6.3	3.7	2.4	3.5	3.9	3.6
May	5.9	3.1	.2	4.8	3.9	4.9	3.8	2.0	3.2	3.4	3.4
June	5.9	3.1	.2	4.6	3.6	4.2	3.6	1.9	2.8	3.0	3.2
July	5.9	3.0	.2	4.5	3.4	3.0	3.8	1.8	2.6	3.0	3.0
August	5.9	3.0	.2	4.3	3.4	2.7	3.5	1.8	2.5	3.0	2.9
September	5.9	2.9	.1	4.3	3.4	3.9	3.7	1.9	2.4	3.1	3.0
October	5.9	3.3	.1	4.5	3.4	3.6	4.1	2.1	2.3	3.0	3.1
November	5.9	3.3	.1	4.5	3.6	3.6	3.9	2.2	2.1	3.0	3.1
December	5.9	3.6	.3	4.7	3.7	3.6	4.0	2.4	2.3	3.0	3.1

The most important test for newsprint is pressroom runability. The first chart is actually a copy of a large New England pressroom which has 10 suppliers, nine of which are virgin newsprint and one recycled. This chart simply shows the lower line on exhibit 1 which is the accumulative data for the year 1970.

Of all the paper used in 1970, the running breaks per 100 rolls of the recycled newsprint was 0.3 running breaks per 100 rolls, which means with Garden State newsprint, there was one break for every 300 rolls used.

The next nearest competitor, all being virgin mills, was 2.4 running breaks per 100 rolls, which is one break every 40 rolls used.

The average for the pressroom was 3.1. The performance record of the recycled newsprint was 10 times better than the average for the whole pressroom. The whole pressroom average includes the Garden State newsprint. This is a large pressroom with 10 suppliers.

(Exhibit 2 follows:)

EXHIBIT 2

RECORD OF RUNNING BREAKS PER 100 ROLLS—1971

Mill									Total
Garden State:									
January	3.22	1.08	4.69	7.18	4.92	1.38	0.49	5.80	4.68
February	6.59	.33	6.66	6.52	6.77	5.82	3.07	7.33	5.92
March	4.53	.94	5.90	4.47	7.28	3.73	5.22	5.08	4.48
April	3.84	.76	5.38	3.29	6.20	6.41	3.79	5.47	4.34
May	4.04	1.40	2.02	2.05	0	3.47	2.08	3.56	2.82
June	3.46	0	4.27	2.44	0	3.70	3.06	4.19	3.27
July									
August									
September									
October									
November									
December									
Cumulative:									
January	3.22	1.08	4.69	7.18	4.92	1.38	0.49	5.80	4.68
February	5.61	.69	5.68	6.84	5.84	4.59	1.12	6.50	5.33
March	5.17	.81	5.77	6.17	6.14	4.07	3.72	5.90	4.99
April	4.87	.80	5.63	5.64	6.16	4.31	3.74	5.77	4.82
May	4.67	.87	5.04	5.21	6.06	4.05	3.19	4.99	4.41
June	4.36	.72	4.84	4.69	5.93	3.98	3.16	4.86	4.18
July									
August									
September									
October									
November									
December									

To show that this was no fluke, these are the data for the same pressroom for the first 6 months in 1971, which takes us up to 1 month ago. In this period, the Garden State runability was 0.72 running breaks to 100 rolls, whereas the pressroom average was 4.18 running breaks per 100 rolls. We do not run nearly this well in all pressrooms.

(Exhibits 3, 4, and 5 follow:)

EXHIBIT 3

PRESS WEB BREAKS, MAY 1971

Newsprint supplier	Number of breaks	Rolls used	Percent per 100 rolls
Company A [1]	17	349	4.9
Company B	10	233	4.2
Company C	12	312	3.8
Company D	0	20	0.0
Company E	0	22	0.0
Company F	3	78	3.8

[1] Denotes Garden State.

EXHIBIT 4

The average number of paper breaks per 100 rolls consumed during the month of May 1971, was as follows:

MILL	"A"	2.1
GARDEN STATE		2.3
MILL	"C"	5.1
MILL	"D"	2.1
MILL	"E"	1.0
MILL	"F"	1.4
MILL	"G"	.6

A total of 24 breaks occurred with the use of Garden State newsprint, 19 of which were caused by "out of roll" defects, 3 by "mill pasters" and 1 each resulting from a "lapover" and a "slime hole".

EXHIBIT 5
BREAK REPORT FOR THE MONTH OF JUNE 1971

	June 1971	6 months 1971
Mill:		
1	65.3	96.4
2	139.2	96.3
3	263.0	78.9
4	121.8	75.0
5	89.0	71.4
6	73.7	71.4
7	74.4	67.3
8	44.0	53.4
9	322.0	50.5
10 [1]	93.8	46.7
11	66.0	41.0
Average	89.7	57.0

[1] Denotes your position.

Exhibits 3, 4, and 5 show pressrooms where we were average. In some pressrooms, we are slightly under average. This is the same newsprint as we sent to the pressroom where we ran very well, by the way.

I think the best indication we have in pressroom runability is a large midwestern pressroom. This pressroom uses 180,000 tons per year of which we supply 60,000 tons, or one-third.

(Exhibit 6 follows:)

EXHIBIT 6

Rank	Total rolls	Web breaks due to defective newsprint	Number of rolls per web breaks	Breaks per 100 rolls
June 1971:				
Mill B	1,619	17	95.2	1.05
FSC	6,762	87	77.7	1.29
Mill C	4,011	77	52.1	1.92
Mill E	1,317	26	50.7	1.97
Mill D	2,017	56	36.0	2.78
May 1971:				
Mill E	1,231	21	58.6	1.71
FSC	5,737	105	54.6	1.83
Mill C	6,254	116	53.9	1.85
Mill B	972	20	48.6	2.06
Mill D	2,147	61	35.2	2.84
April 1971:				
FSC	7,002	122	57.4	1.74
Mill C	4,660	94	49.6	2.02
Mill D	3,051	72	42.4	2.36
Mill B	1,265	35	36.1	2.77
March 1971:				
Mill E	516	4	129.0	0.78
FSC	7,071	108	65.5	1.53
Mill D	371	6	61.8	1.62
Mill C	5,226	108	48.4	2.07
Mill B	2,424	56	43.3	2.31
February 1971:				
Mill E	492	0	----------	0
FSC	5,645	96	58.8	1.70
Mill A	295	7	42.1	2.37
Mill C	5,090	135	37.7	2.65
Mill B	2,047	56	36.6	2.74
Mill D	294	13	22.6	4.42
January 1971:				
Mill A	1,399	26	53.8	1.86
FSC	6,122	153	40.0	2.50
Mill D	1,854	50	37.1	2.70
Mill C	3,709	101	36.7	2.72
Mill B	908	25	36.3	2.75
December 1970:				
Mill D	2,833	65	43.6	2.29
Mill C	4,027	93	43.3	2.31
FSC	6,684	191	35.0	2.86
Mill A	2,077	71	29.3	3.42

We have data here, exhibit 6, which shows the runability in this pressroom for the last 7 months. For the first 6 months in 1971 we were no worse than second in this pressroom. These data show the various five suppliers. This is the FSC mill. Five suppliers here.

The first column shows the total rolls of paper used. The FSC was the largest, 6,762 rolls. The others ranged from 4,000 rolls down to 1,300 rolls. Here again we were not No. 1. Our runability was one break every 77.7 rolls. The best supplier was one break every 95.2 rolls. The worst was one break for every 36 rolls.

What we are trying to show is that we feel the runability of our newsprint is equally as good as virgin newsprint.

The CHAIRMAN. Would you like to leave those charts with us?

Mr. LOREY. Yes, sir; if you would like.

The CHAIRMAN. We would be glad to have them.

Mr. LOREY. Yes, sir.

The CHAIRMAN. Thank you.

(Exhibits 7, 8, 9, 10, 11, and 12 follow:)

EXHIBIT 7

PAPER TESTING RESULTS OF NEWSPRINT FROM NORTHEASTERN UNITED STATES AND EASTERN CANADA

Manufacturer	Virgin newsprint									Garden State Garfield	
	A	B	C	D	E	F	G	H	I	No. 1	No. 2
Green reflectance (percent):											
Wire	66.4	69.1	67.0	67.5	64.5	64.7	66.4	66.2	66.5	64.8	64.7
Felt	65.6	67.8	66.4	67.1	63.5	63.9	66.4	64.9	65.4	64.0	63.5
Blue reflectance (percent):											
Wire	58.7	63.1	60.4	61.9	58.7	58.1	58.0	59.1	59.4	58.9	58.9
Felt	57.4	62.3	59.8	61.1	57.0	56.9	57.5	57.2	.....	57.9	57.4
Printing opacity (percent)	95.2	95.6	96.3	96.4	96.1	96.5	95.5	95.4	96.5	96.2	96.9
Saturation (percent):											
Wire	7.8	5.8	6.8	5.5	6.0	6.8	8.8	7.1	7.3	6.1	5.9
Felt	8.4	5.4	6.9	6.0	6.9	7.4	9.2	8.0	.....	6.2	6.4
Dominant wavelength (mu.):											
Wire	580	579	582	579	580	580	582	579	581	580	578
Felt	580	580	582	580	580	580	581	580	.....	578	578
Physical test data corrected to 32.0 lbs./ 3,000 sq. ft. basis weight:											
Caliper (mils)	2.88	3.65	3.19	3.14	3.72	3.62	3.33	3.37	3.44	3.28	3.40
Bursting strength (p.s.i.)	12.5	8.6	7.6	9.6	9.9	9.7	9.0	10.2	7.7	7.0	7.9
Tear resistance (grs.) CD	22.6	32.0	21.9	22.0	23.9	23.1	21.8	23.9	25.6	30.4	31.5
Tensile strength (kgs.) MD	3.92	3.43	3.25	3.56	3.44	3.38	3.59	3.69	2.96	3.01	3.19
Basis weight (lbs./3,000 sq. ft.)	31.8	31.9	33.3	33.9	32.6	34.4	32.7	32.3	33.3	32.7	31.8
Tensile energy absorption (0.1-in. gr.) MD	7.1	8.9	6.6	7.3	6.0	5.6	6.7	7.8	6.5	6.1	6.6
Stretch (percent) MD	.86	1.13	.93	.89	.84	.78	.88	.97	.98	.88	.93
Porosity-Gurley (sec./100 cc.)	86	14	50	62	24	19	31	16	33	13	18
Softness-Gurley (sec./25 cc.–0.34 lb. wt.)	13	30	23	17	20	28	21	20	21	27	22
Stiffness-Gurley:											
MD	69	109	85	86	106	132	99	94	88	79	88
CD	37	43	31	29	32	33	37	38	36	28	40

EXHIBIT 8

PAPER TESTING RESULTS FOR WEST COAST NEWSPRINT

Manufacturer	Virgin newsprint					Garden State	
	J	K	L	M	N	Pomona	Pomona
Green reflectance (percent):							
Wire	79.8	70.8	67.7	65.0	70.6	66.1	65.6
Felt	69.3	69.6	66.4	64.0	69.4	64.4	63.5
Blue reflectance (percent)							
Wire	61.5	60.2	58.0	55.7	59.9	57.1	57.6
Felt							54.9
Printing opacity (percent)	93.8	95.4	94.8	94.6	95.0	96.2	96.4
Saturation (percent):							
Wire	8.8	10.1	9.6	9.7	10.3	9.0	8.2
Felt							9.1
Dominant wavelength (mu.):							
Wire	579	579	578	579	579	578	579
Felt							578
Physical test data corrected to 32.0 lbs./3,000 sq. ft. basis weight:							
Caliper (mils)	3.41	3.47	3.36	3.41	3.61	3.33	3.36
Bursting strength (p.s.i.)	8.6	5.9	9.0	8.9	6.1	6.7	7.1
Tear resistance (grs.) CD	37.8	30.5	39.4	32.5	36.4	42.9	42.3
Tensile strength (kgs.) MD	3.37	2.69	3.86	3.99	2.68	2.84	2.99
Basis weight (lbs./3,000 sq. ft.)	32.5	31.4	32.2	32.2	32.8	32.4	32.2
Tensile energy absorption (0.1-in. gr.) MD	8.3	5.1	9.0	8.9	6.0	7.2	6.6
Porosity-Gurley (sec./100 cc.)	29	28	29	21	20	15	16
Softness-Gurley (sec./25 cc.–0.34 lb. wt.)	14	19	12	14	16	15	19
Stiffness-Gurley:							
MD	70	51	61	65	62	46	62
CD	23	14	17	16	21	13	36
Smoothness-Sheffield:							
Felt	107	88	118	117	116	89	104
Wire	109	88	124	120	120	95	105
Taber abrasion (mg., 5 revs.)	3.3	5.1	2.9	4.8	4.7	6.4	----------
pH of paper	6.6	4.5	5.8	5.8	5.4	6.0	----------

EXHIBIT 9

Test identification code

1. Moisture	Percent.
2. Basis weight	Pounds per ream.
5. Smoothness (felt side)	Cubic centimeter per minute.
6. Smoothness (wire side)	Do.
10. Printability (felt side)	Percent.
11. Printability (wire side)	Do.
16. Printing opacity	Do.
21. Tear (cross machine direction)	Grams.
26. Newsprint brightness (luminance)	Percent.

EXHIBIT 10

ANPA/RI NEWSPRINT TEST PROGRAM CUMULATIVE DATA

MILL NUMBER 63

Garden State - Garfield

TEST NO.	TEST LOW SUM OF AVGS.	TEST HIGH SUM OF AVGS. SQ.	TEST AVG. N	LOW LIMIT SUM OF AVGS. SQ.	HI LIMIT	SIGMA
1	4.36	8.85	6.77	4.15	9.39	1.30
	94.87		14		665.2167	
2	28.40	32.80	31.27	29.06	33.49	1.10
	437.88		14		13712.2415	
5	50.00	225.00	96.64	28.59	164.69	34.02
	1352.99		14		145808.3199	
6	53.00	300.00	121.24	10.48	232.01	55.38
	1697.49		14		245697.1899	
10	59.90	73.00	67.21	61.24	73.17	2.98
	940.95		14		63358.8799	
11	60.40	72.00	67.45	61.78	73.13	2.83
	944.41		14		63813.8523	
16	94.80	97.60	96.57	95.48	97.65	0.54
	1352.03		14		130574.1907	
21	25.00	38.00	32.45	25.87	39.03	3.28
	454.39		14		14889.1799	
26	59.70	64.90	62.14	59.61	64.66	1.26
	870.00		14		54086.2433	

1/70 THRU 12/70

ANPA/RI NEWSPRINT TEST PROGRAM CUMULATIVE DATA

SECTION NUMBER 1

Northeast

TEST NO.	TEST LOW SUM OF AVGS.	TEST HIGH SUM OF AVGS. SQ.	TEST AVG. N	LOW LIMIT SUM OF AVGS. SQ.	HI LIMIT	SIGMA
1	3.08	12.47	6.95	4.50	9.41	1.22
	7091.72		1019		50894.2919	
2	28.40	35.20	31.85	30.44	33.25	0.70
	32455.69		1019		1034235.1945	
5	18.00	318.00	98.71	33.80	163.61	32.45
	100587.19		1019		11001180.3125	
6	23.00	381.00	114.07	39.01	189.14	37.53
	116246.19		1019		14695162.1523	
10	56.30	76.20	66.83	61.02	72.64	2.90
	68108.67		1019		4560891.3730	
11	53.20	76.80	67.08	61.18	72.98	2.95
	68360.05		1019		4594835.0898	
16	91.70	98.60	95.88	93.88	97.89	1.00
	97709.65		1019		9370188.8125	
21	18.00	49.00	28.51	20.05	36.97	4.22
	29056.79		1019		846751.6330	
26	57.30	73.90	64.68	60.25	69.11	2.21
	65913.53		1019		4268573.7656	

1/70 THRU 12/70

EXHIBIT II

ANPA/RI NEWSPRINT TEST PROGRAM CUMULATIVE DATA

MILL NUMBER 75

FCC - Alsip

TEST NO.	TEST LOW SUM OF AVGS.	TEST HIGH SUM OF AVGS. SQ.	TEST AVG. N	LOW LIMIT HI LIMIT	SIGMA
1	5.10	9.41	7.28	5.04 9.52	1.12
	211.26	1574.1921	29		
2	30.40	33.60	31.75	30.59 32.92	0.58
	920.95	29256.6615	29		
5	51.00	180.00	92.22	58.16 126.28	17.02
	2674.50	254772.8498	29		
6	42.00	228.00	125.47	76.01 174.92	24.72
	3638.69	473675.6696	29		
10	62.80	73.00	68.47	64.91 72.03	1.78
	1985.67	136051.7230	29		
11	63.10	72.40	67.96	65.05 70.86	1.45
	1970.89	134005.6306	29		
16	96.10	98.40	97.31	96.52 98.10	0.39
	2822.12	274639.4744	29		
21	21.00	38.00	32.43	25.70 39.16	3.36
	940.59	30825.2199	29		
26	57.30	64.60	61.81	58.67 64.96	1.57
	1792.75	110896.2508	29		

1/70 THRU 12/70

ANPA/RI NEWSPRINT TEST PROGRAM CUMULATIVE DATA

SECTION NUMBER 1
Northeast

TEST NO.	TEST LOW SUM OF AVGS.	TEST HIGH SUM OF AVGS. SQ.	TEST AVG. N	LOW LIMIT HI LIMIT	SIGMA
1	3.08	12.47	6.95	4.50 9.41	1.22
	7091.72	50894.2919	1019		
2	28.40	35.20	31.85	30.44 33.25	0.70
	32455.69	1034235.1945	1019		
5	18.00	318.00	98.71	33.80 163.61	32.45
	100587.19	11001180.3125	1019		
6	23.00	381.00	114.07	39.01 189.14	37.53
	116246.19	14695162.1523	1019		
10	56.30	76.20	66.83	61.02 72.64	2.90
	68108.67	4560891.3730	1019		
11	53.20	76.80	67.08	61.18 72.98	2.95
	68360.05	4594835.0898	1019		
16	91.70	98.60	95.88	93.88 97.89	1.00
	97709.65	9370188.8125	1019		
21	18.00	49.00	28.51	20.05 36.97	4.22
	29056.79	846751.6330	1019		
26	57.30	73.90	64.68	60.25 69.11	2.21
	65913.53	4268573.7656	1019		

1/70 THRU 12/70

EXHIBIT 12

ANPA/RI NEWSPRINT TEST PROGRAM CUMULATIVE DATA

MILL NUMBER 71
Garden State - Fomona

TEST NO.	TEST LOW SUM OF AVGS.	TEST HIGH SUM OF AVGS.	TEST AVG. N	LOW LIMIT HI LIMIT SUM OF AVGS. SQ.	SIGMA
1	7.38	9.69 117.56	8.39 14	7.35 9.43 990.8473	0.51
2	31.10	33.60 449.38	32.09 14	30.82 33.37 14430.3594	0.63
5	42.00	190.00 1189.90	84.99 14	33.18 136.80 109857.6700	25.90
6	56.00	200.00 1335.50	95.39 14	43.43 147.34 136169.9500	25.97
10	64.20	71.40 958.45	68.46 14	65.13 71.78 65653.4979	1.66
11	62.70	71.90 964.63	68.90 14	65.18 72.62 66511.4319	1.86
16	93.70	97.60 1348.96	96.35 14	95.18 97.52 129982.5130	0.58
21	39.00	53.00 645.50	46.10 14	39.28 52.92 29913.3300	3.41
26	59.70	67.20 867.15	61.93 14	58.74 65.13 53745.1661	1.59

1/70 THRU 12/70

ANPA/RI NEWSPRINT TEST PROGRAM CUMULATIVE DATA

SECTION NUMBER 2
Northwest

TEST NO.	TEST LOW SUM OF AVGS.	TEST HIGH SUM OF AVGS.	TEST AVG. N	LOW LIMIT HI LIMIT SUM OF AVGS. SQ.	SIGMA
1	4.36 1628.18	12.85 7.60 214	5.41 9.79 12643.4906	1.09	
2	29.50 6818.75	34.90 31.86 214	30.70 33.02 217340.2236	0.57	
5	42.00 22860.39	335.00 106.82 214	34.56 179.08 2720102.6572	36.13	
6	37.00 25141.69	350.00 117.48 214	34.16 200.80 3323471.3027	41.66	
10	54.60 14090.83	72.90 65.84 214	60.49 71.19 929334.3027	2.67	
11	53.40 14194.55	72.60 66.32 214	60.60 72.05 943267.9951	2.86	
16	90.00 20184.60	97.60 94.32 214	92.09 96.55 1904089.4926	1.11	
21	24.00 8443.19	64.00 39.45 214	25.35 53.54 343698.7392	7.04	
26	59.70 14156.34	71.60 66.15 214	62.62 69.67 937119.5573	1.76	

1/70 THRU 12/70

Mr. LOREY. We also have some data which show our test results. We also have some data here which show the results of the ANPA—the laboratory of the American Newspaper Publishers Association. This laboratory collects samples of newsprint from the pressrooms. The pressrooms send in the samples of newsprint. The suppliers do not.

We have the data here for 1970, and we are comparing our Garfield sheet and our Alsip sheet, the FSC sheet, with the northeast average.

In the northeast for the year they tested 1,019 samples. Of those, 14 were Garfield and 29 were FSC.

This shows how these two mills compare with the northeast average. The moisture content is shown here in red. The northeast average was 6.95 percent. We averaged 6.77, 7.28. Very close.

Basis weight, next. Very close.

These are the tests the ANPA feel are the most critical tests for newsprint evaluation.

Next they have smoothness. We compare well in felt side smoothness, slightly better. The lower values are the best.

Wireside smoothness, we are slightly worse.

Printability is one of the key characteristics of our sheets. Consistently, we are higher than the industry average as shown here for printability felt side. The northeast average was 66.83. Garfield was 67.21. FSC was 68.47.

Wireside printability, the average was 67.1. Garfield was 67.5. FSC was 68.

I would like to point out that with the California paper which is also shown in the ANPA data but which we do not have charts for, we are consistently 2 percent better in printability than the west coast average. Printability is a key point.

Opacity is another key point. We are consistently higher in opacity than the industry average.

As shown here, 95.9 was the average for the northeast. Garfield was 96.6. FSC was 97.3.

ANPA considers tear strength to be the most critical strength characteristic for runability. If this is so, our sheet should run better than the virgin sheet, not worse.

The industry northeast average is 28.5. We are consistently about 15 percent higher in tear strength than the virgin sheets; 32.5 and 32.4.

Brightness, generally we are low by 1 to 2 percent. In the ANPA values here, it shows an average of 2.5 lower and 2.8 lower.

The CHAIRMAN. Thank you very much.

We will have your charts inserted in the appropriate places in your testimony.

Mr. HANCOCK. I would like to give you two copies of the Allentown, Pa., Evening Chronicle, which happens to be printed 100 percent, the entire paper—most papers do not use 100 percent—one section might be recycled, but this is a completely recycled newspaper.

The CHAIRMAN. Thank you very much.

Mr. HANCOCK. The New York Times has on one occasion run a test and printed entirely 100 percent recycled paper.

Finally, I would like to advise the committee that recycled newsprint is sold well below the listed price of virgin news, under ordinary circumstances.

I trust our presentation has provided the committee with information not previously made available to it. Mr. Lorey and I would be happy to answer as many of your questions as we possibly can at this time.

Thank you.

The CHAIRMAN. I am convinced you make a pretty good piece of paper. [Laughter.]

But I do not buy such paper and I do not run a printing press, but I am sure you do make a good paper.

I have no complaint whatsoever with recycled paper. I know it has a place and that it is being used and is good paper. There has never been any question in my mind or in the Public Printer's mind or by the Joint Committee on Printing about not using recycled paper, if it meets the specifications and standards that we need.

Thank you very much.

Our next witness is Mr. John Darrow, vice president of the American Paper Institute. You may proceed, Mr. Darrow.

STATEMENT OF JOHN F. DARROW, VICE PRESIDENT, AMERICAN PAPER INSTITUTE

Mr. DARROW. Before I proceed, if it would be of any help to the committee, even though I came from New York, I would be willing to return tomorrow rather than rush the committee's proceedings today.

I realize that time is running out. I know this.

The CHAIRMAN. I can stay a little while longer. I want to accommodate every one of you that I can. It takes an effort to come down here.

Mr. DARROW. I understand. I want to cooperate.

I am vice president of the American Paper Institute, the national trade association of the pulp and paper industry. Our 200 member companies produce more than 90 percent of the pulp, paper, and paperboard made in the United States. I am appreciative of the opportunity to testify briefly today on certain aspects of S. 2266 and S. 2267.

At the outset I would like to make it clear that the American Paper Institute recognizes the seriousness of the solid waste problem and is in favor of appropriate steps which would solve this problem, including the recycling of paper. To this end we are joint sponsors of the paper industry's solid waste council. We are also one of 12 members in support of the national center for Solid Waste Disposal and we are constantly cooperating with various Federal and other Government agencies on this subject.

When the U.S. paper industry was established in 1690, its entire raw materials was drawn from solid waste: rags. We still use rags today to make the finest papers.

We have also been recyclers of paper for many years. At present, approximately 22 percent of our fiber supply is waste paper. Wood residues, such as sawdust, chips and slabs, which come from lumber or plywood mills, constitute another 21.4 percent while other waste fibrous materials, such as flax, bagasse, old rope, rags, cotton linters and textile mill waste constitute 1.6 percent. The percentage of reclaimed fibers our mills use depends upon the particular product and the range is from 100 percent reclaimed fibers on down.

While we certainly agree with the objectives of S. 2266 and S. 2267,

we believe that both bills contain defects which could cause undesirable results. The most important defect is the definition in each of these bills of "recycled material."

Contrary to the reply Mr. Mighdoll gave you when you asked him the question, the proposed definition would exclude all fibers recovered from the solid waste stream except paper as defined. Excluded would be all wood residues as well as rags and other fibers previously mentioned, such as flax, bagasse, et cetra, these would be excluded under the definition in the bills.

The CHAIRMAN. In recent years this has become a very valuable part of the lumber industry, the chips and slabs which used to be burned. This would exclude that.

Mr. DARROW. Yes, sir.

The CHAIRMAN. Many mills would go out of business if they didn't sell those to the paper mills.

Mr. DARROW. In Oregon about 65 percent of the wood pulp is made from wood residues and in Washington the figure is over 90 percent. They can't even burn it anymore. It is against the law I understand.

The CHAIRMAN. That has been complete waste.

Mr. DARROW. Yes.

The CHAIRMAN. And now you cannot burn it because that is against the law. It should not be burned, anyway, because it has a useful purpose.

Mr. DARROW. It is a valuable fiber.

The CHAIRMAN. It would be a complete waste if it were not used.

Mr. DARROW. Some of it is used for other purposes.

I do not believe that the committee intended to exclude papers made from all of these solid waste sources. Indeed, Senator Moss in his earlier remarks referred to other waste products, that is, other than paper.

Since last year various Federal Government agencies, such as the General Services Administration, the Council on Environmental Quality, and the Department of Commerce have been studying the subject of a proper definition of recycled/reclaimed fibers. One of the prior witnesses, Mr. Wilson, has participated in such studies and discussions.

I would recommend to this committee the definition issued by the GSA and now being used by it, because it reflects the broad aspects of the solid waste problem and represents, in our judgment, a sound approach to its solution.

It recognizes, sir, not only post consumer waste but all the other solid wastes such as rags and chips and sawdust. The definition in these two bills would not recognize those wastes. We would recommend very strongly consideration of a definition similar to the one GSA is now using which I believe Mr. Merrigan, of the National Association of Secondary Materials Industries, Inc., previously introduced in the record because that organization believed it was a good definition.

My second concern is with respect to the specific application of S. 2266 which is "All or any part of the stationery, blank books, tables, forms, and other necessary paper furnished for official use * * *"

Certainly, many of these paper items could contain 50 percent recycled/reclaimed fibers, using the definition concept we recommend. However, I believe that this phrase is too broad and vague.

There are many different kinds of papers and many varying uses. Some papers require a high degree of strength; others must be dura-

ble and last for many decades as a part of our permanent records while others are discarded immediately after use. Each of these paper characteristics requires a different specification for the desired result.

The Joint Committee on Printing of Congress has recognized that the end use of the paper it buys determines the kind of paper it needs and, through continued and careful technical study, maintains some 85 specifications for its paper requirements.

It is my recommendation that the same kind of careful approach be made with respect to the purchase of papers containing recycled fibers. The present wording of S. 2266 does not permit this, in my opinion.

In this brief statement I have indicated to you the paper industry's support of reclaiming and reuse of fibers from the solid waste stream and our continuing and substantial involvement in recycling as it prevails today. I have also pointed out our objections to the proposed definition and have suggested a preferable alternate.

The American Paper Institute and its members are deeply involved in the subjects of recycling, reclamation, and solid waste. We have many knowledgeable individuals in these various fields.

If we can be of any assistance to the committee, or provide you with any additional information, we would be pleased to do so.

The CHAIRMAN. Thank you very much.

Our linter fibers or flax fibers today come from the cottonseed, is that correct? We get the linters from the seed?

Mr. DARROW. The linter fibers come from the oil mills.

The CHAIRMAN. If that were knocked out by this definition, that would be another waste now being put to good use because linter fibers are very good in making paper.

Mr. DARROW. They would have to be burned. I believe that at the present time of the total production of linters by the cottonseed oil mills in any one year—as you know, it varies considerably depending on the cotton crop—we consume about 10 percent of the total linters.

The CHAIRMAN. I am thinking largely about the flax production in this country. The fiber from the stalk is used in making paper also, isn't it?

Mr. DARROW. Yes. Two paper mills in the United States use the flax tow in order to make paper. One is located in North Carolina—Ecusta, at Pisgah Forest.

The CHAIRMAN. To make cigarette paper.

Mr. DARROW. Yes. That, by the way—that is flax—would be excluded from this definition as well. The other company is the P. J. Sweitzer Division of Kimberly-Clark.

The CHAIRMAN. So it could destroy the farmer's ability to sell his stalk.

Mr. DARROW. Yes; because if he didn't sell this, it would have to be burned. If you go to Minnesota, South Dakota, and North Dakota, where it is grown, that flax tow not bought must be burned in the open fields. It is a pretty terrible air pollution problem.

The CHAIRMAN. I recognize that and knew that.

Thank you very much.

I appreciate your testimony. If we should need more information, I will call on you.

Our next witness is Mr. James R. Turnbull, executive vice president of the National Forest Products Association. Mr. Turnbull, we are glad to have you with us.

STATEMENT OF JAMES R. TURNBULL, EXECUTIVE VICE PRESIDENT, NATIONAL FOREST PRODUCTS ASSOCIATION

Mr. TURNBULL. We are a federation of some 21 trade associations, all in the solid wood products field all across the United States and Alaska, and the member firms of these federated associations would number in the thousands, mostly small sawmills, but including about 300 plywood plants in addition.

There are quite a few in your State, Mr. Chairman.

Because other witnesses have touched on the points that I wanted to make, I am going to submit my statement for the record and just make a brief oral presentation.

The CHAIRMAN. Without objection, it will be included in its entirety.

(The above-mentioned statement follows:)

STATEMENT OF JAMES R. TURNBULL, EXECUTIVE VICE PRESIDENT, NATIONAL FOREST PRODUCTS ASSOCIATION

Mr. Chairman and members of the committee, my name is James R. Turnbull. I am Executive Vice President of the National Forest Products Association which is a federation of 21 regional, species and products organizations representing manufacturers of lumber, plywood and other wood products throughout the United States.

Some observers might wonder why manufacturers of lumber, plywood and other solid wood products seek to be heard at hearings related to the recycling of paper. Their answer lies in the excellent definition for recycled materials for paper-making which was released just yesterday by Robert L. Kunzig, Administrator of the General Services Administration.

I ask, Mr. Chairman, that Mr. Kunzig's statement to the press on this subject and the GSA definition be placed in the hearing record at this point. (The GSA news release here referred to was submitted earlier for the record, and may be found at page 54.)

Mr. Kunzig's statement goes directly to the point of the use of residual materials generated in the process of primary wood products manufacture. My segment of the forest products industries endorses the GSA definition and Mr. Kunzig's clear explanation. He said:

"Post-consumer wastes include materials which have passed through their intended use and have been collected from homes, offices, factories, or municipal solid waste. The remainder will be of manufacturing wastes, forest residues and other wastes."

This last reference is the key to my appearance here today. The GSA definition, at Paragraph C of Part II, includes:

"C. Fibrous by-products of harvesting, manufacturing, extractive, or wood-cutting processes, flax straw, linters, bagasse, slash and other forest residues."

This definition takes full cognizance of the fact that the pulp and paper process affords a principal outlet for residues from lumber and plywood manufacture and enables the conversion of valuable wood fiber into useful secondary products. I urge that this Committee similarly recognize the importance of using wood and forest residues.

In the Pacific Northwest, the sawmills and plywood mills generate wood residues in the form of bark, shavings, chips and sawdust which are the principal raw material to support a growing pulp and paper manufacturing industry. Even in the South which enjoys an abundance of round wood to meet the demands of pulping facilities, residues from sawmill and plywood mills constitute 20 percent of the total raw material consumed in pulp and paper processes.

Residues from lumber and plywood operations used to be a serious disposal problem. Accumulated wastes either had to be burned or buried because there were relatively few economic uses to absorb them. Today forest industry efficiency and technology has advanced to the point where in many timber producing states more than 80 percent of these residues, which were formerly a disposal problem, are put to use. Examples of these new products, in addition to a wide range of paper products, are particleboard, hardboard, roofing materials, molded products,

plastic fillers, fertilizers, soil conditioners, decorative ground cover, chemicals, fuels, agricultural litter, charcoal, insulation and concrete additives.

It is clear that the forest products industries are already deeply involved in the disposal of waste in a positive and effective manner which not only overcomes pollution, since wood products and their residues are biodegradable, but which extends the timber resources harvested for the manufacture of essential basic materials such as lumber and plywood.

The GSA definition of recyclable materials properly takes into account the wastes from sawmills and plywood plants as well as the substantial quantities of wood fiber which are increasingly recovered from branches, limbs, stumps, bark and even needles which were previously left on the ground after harvest.

It is my hope that this Committee will adopt the GSA definition for recyclable paper products.

Any legislation which would oblige papermakers to depend heavily upon waste paper as the basis for their production would simply be transferring pollution problems from the wastebaskets of the nation to the yards of sawmill and plywood manufacturers. Accumulations of waste wood fiber which now move into pulp and paper consumption would literally inundate mill sites. The only options would be to revert to the primitive practices of burying or burning this valuable wood fiber. Such a course in times when the nation is deeply aware of the need to conserve its resources to the utmost would not be in the public interest.

It must be recognized as well that burning of these wastes, which was until recently an accepted practice in most areas of the country where volumes were excess to potential consumption, has now been severely restricted by Federal, state or local air pollution regulations.

Residues from sawmill and plywood operations have, moreover, become a substantial source of revenues for individual companies for the nation as a whole. In 1953 the State of Oregon was able to use only about six percent of sawmill residues for paper and composition boards; by 1967 that percentage had risen to 60 percent and the total volume for domestic and export use rose to six million tons. Two years later the volume was eight million tons. These residues have become a cash crop from wood manufacturing operations.

The direct cash benefit to the nation as a whole must not be overlooked. The export of wood residues in the form of chips have become a significant factor in the U.S. balance of trade picture. In 1969 about 1.7 million tons of wood chips were exported to Japan from Oregon alone and helped substantially to alleviate the American deficit trade position.

While the exclusion of wood residues from the recycling definition for paper manufacture might accelerate the flow of chips to foreign markets it would not be in sufficient volume to offset the reduction in usage domestically. Thus your Committee action might only transfer a pollution problem from one location to another.

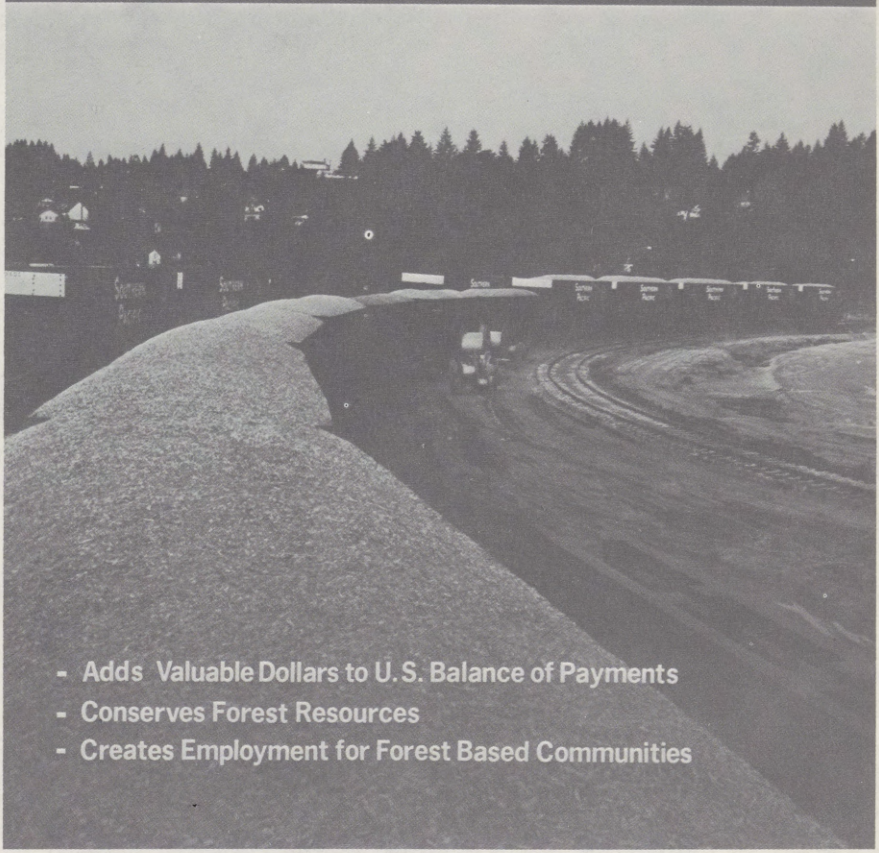
In summary, I want to urge this distinguished Committee to take into account the direct relationship between solution of the pollution problems involving waste paper and the daily generation of thousands of tons of wood wastes which are overcome by having pulp and paper operations as a market for economic utilization. The stretching of our timber resources by putting this former waste material to good use is of obvious benefit. The significant contribution the wood chip market makes to our balance of trade picture can be adversely affected if the volume of disposable chips mounts to a point where the export market is glutted and the value of the chips diminishes to a point where actual income to the United States might decline even though the volume of chip exports rises.

I have had my staff prepare a brief brochure which illustrates the scope and significance of wood residues in these three critical areas and I ask that it be made a part of this hearing record.

Mr. Kunzig, the Administrator of General Services Administration, and his staff have developed a wholly sound definition for recycled wood materials usable in paper. I urge this Committee to incorporate it in any legislation it adopts on this subject.

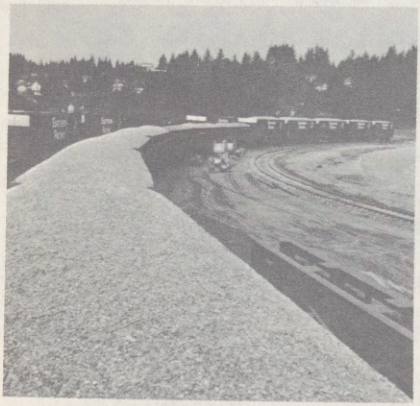
Thank you.

Increased Wood Utilization Offsets Pollution



- Adds Valuable Dollars to U.S. Balance of Payments
- Conserves Forest Resources
- Creates Employment for Forest Based Communities

A man-made mountain of wood chips was created from sawmill, plywood plant and timber harvesting wastes that once were burned creating air pollution problems. Now these wood chips become useful products for export or for domestic manufacture. Particleboard, hardboard, roofing materials, molded products, plastic fillers, fertilizers, soil conditioners, chemicals, insulation and scores of other products use wood waste materials.



A train of wood chips moves from an Oregon mill to deliver chips to pulp and paper mills. Oregon's pulp and paper industry gets half its wood requirements from chips made from the leftovers in lumber and plywood manufacture. Disruption of rail service can deal a serious blow to the forest industries.

Not many years ago, only a small proportion of residues accumulated in the processing of wood were utilized as by-products. Today the forest industry's efficiency has reached the stage where in many timber-producing states more than 80 percent of these residues are put to use.

Bark, shavings, sawdust and other leftovers no longer are disposed of by burying or burning. Burying takes up valuable space. Burning is wasteful and contributes to pollution of the air.

Instead, wood residues now are utilized in new forms, contributing not only to the efficiency of the industry, but to conservation of resources, to enhancement of the environment, and to the U.S. balance of payments through export trade.

Examples of these new products include paper products of all kinds, particleboard, hardboard, roofing materials, molded products, plastic fillers, fertilizers, soil conditioners, decorative ground cover, chemicals, fuels, agricultural litter, placing materials, charcoal, insulation and concrete additives.

Based on the processing of 40 billion board feet of timber annually, mills in the United States

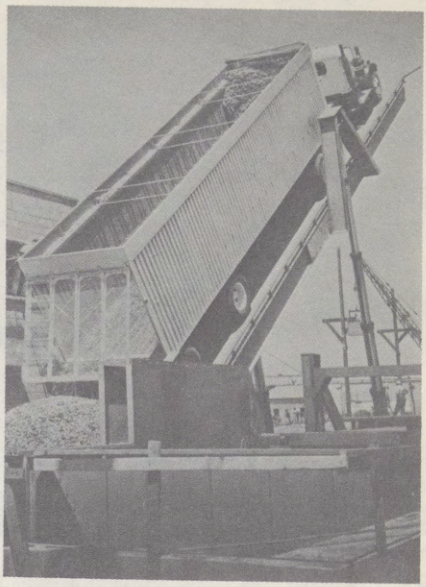
each year produce some 14–16 million tons of bark, six million tons of sawdust, 2.5 million tons of planer shavings and 20 million tons of coarse residues, including trimmings and slabs.

Finding uses for bark has increased at a slower rate than those for wood fiber. But even here, a third of this type of residue is put to use as fuel and another five to 10 percent as soil conditioners, mulch and decorative ground cover.

The manufacture of particleboard is often the first possibility considered by a manufacturer in facing the task of utilizing his wood residues. The market for this material has grown tremendously since the first American plant was established in 1945.

The rate of expansion in particleboard manufacturing has been explosive due to fast developing technology and new uses for the product. Particleboard is made from a spectrum of wood residues ranging from dry sawdust to green solid wood in chip or flake form. The bulk of particleboard is used by the furniture trade and as core material for the manufacture of hardwood veneer and plywood.

Consumption of wood chips similarly has increased tremendously. High quality wood chips are used for both paper and hardboard.



Trucks are picked up bodily to deliver their loads of chips.

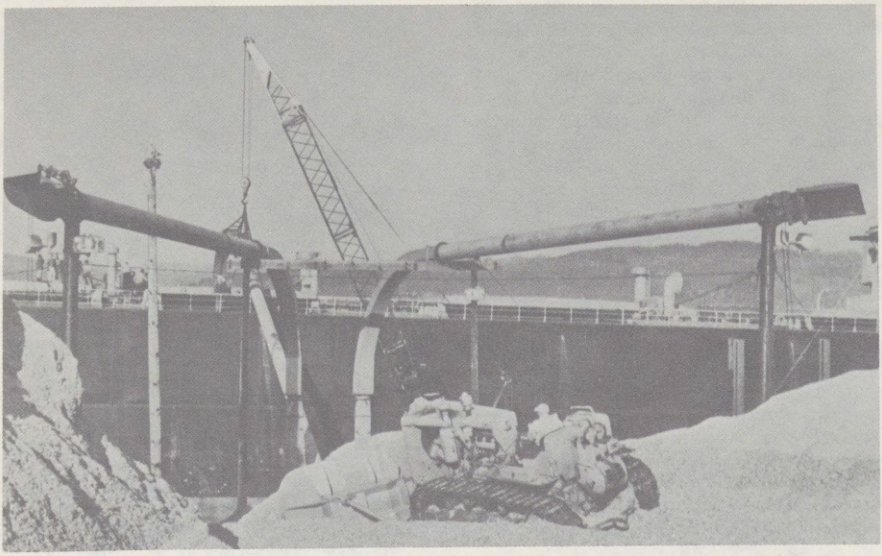
Railcar containing more than 70 tons of wood chips can be unloaded with this modern roll-over unloader in 90 seconds.

Nationwide, mill residues account for about 30 percent of the 64 million cords of domestically produced virgin fiber consumed in pulp mills. In the South, mill residues account for 20 percent, and in the West, mill residues are the major supply to pulp mills.

Finding new uses for wood residues is part of the progress that has been made in the past three decades to use more of the total tree. This drive has accelerated since portable barkers and chippers have been taken into the woods. At the mills, too, barking the logs and chipping slabs and trim means greater revenue along with elimination of the disposal problem.

The extent of utilization of residues has grown tremendously in recent years.

Nationwide, in 1967, by-products made from wood residues, not including bark, totaled the equivalent of 2,362,171,000 cubic feet of hard-



A bulldozer cruises in a sea of wood chips at ship loading point. Chips bound for export make a substantial contribution to U.S. balance of payments and employment at mills and port facilities.

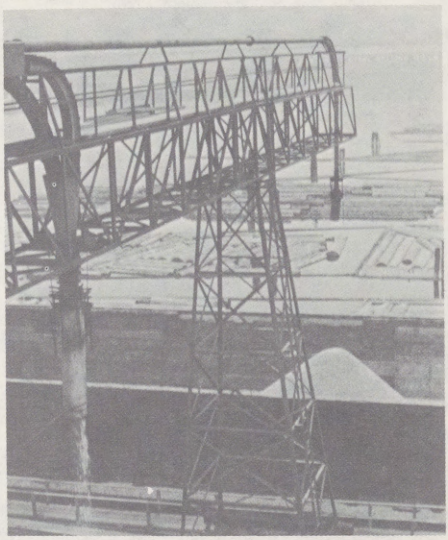
woods and softwoods. Unused residues, which had to be disposed of by burning or other means, totaled 886,349,000 cubic feet or only about one-third of all nonbark residues.

The Southern California lumber industry has attained a utilization record hard to beat. By 1968, utilization of both wood fiber and bark there had reached 99 percent. The Lower Columbia area of Washington State used 94 percent of its wood fiber residue that same year.

The forest products industry is drawing close to the time when it can say it uses everything in the timber but the whine of the saw.

The National Industrial Pollution Control Council has stated that increasing utilization of residues is among the most important factors in the reduction of solid wastes.

For example, the State of Oregon in 1953 was able to utilize only about six percent of sawmill residues for paper and composition



Barges, too, are used to move chips, here being loaded for transport. Dock strikes can have serious economic consequences.

Chips are propelled into position for storage. There is constant movement as an inventory of wood residues await utilization as pulp, kraft paper and container board for export and for domestic manufacture into bags, containers and wrapping paper.

boards. By 1967, some 60 percent of residues were utilized when the rise of domestic use and exports reached six million tons. This total reached approximately eight million tons in 1970.

In 1969, about 1.7 million tons of wood residues were exported to Japan from Oregon alone. This export trade points up another advantage resulting from increased utilization of residues – it gives a substantial boost to the nation's balance of trade. Export of chips and other wood residues means more money coming into the United States.

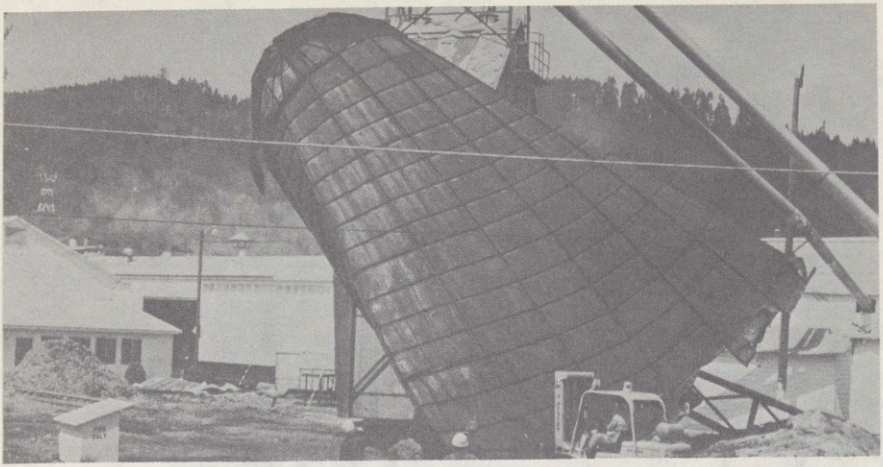
The volume of chips and wood residues amassing at sawmills and other forest products installations is so great at any one time that delays in shipments can have a disastrous impact.

Interruption of the normal flow of traffic out of a wood industry plant by rail, ship, barge or truck can cause a shutdown of the entire operation. Accumulation of the residue in time exhausts scarce storage space. With storage space gone, no more lumber or plywood can be produced. In addition, many mills face deficit operations by not being able to move their chip production.

Just such a predicament occurred with the West Coast port shutdown by a longshoremen's union strike and by the United Transportation Union's strike against the railroads. Chips could not be moved from sawmills via the rails and could not be moved from port cities to overseas markets.

The simultaneous labor disputes literally gave the wood industry, in boxing parlance, the old one-two. The forward-looking forest products industry will bounce back but the seriousness of the situation underscores the threat to the economy posed by breakdowns in the labor negotiation field.

The industry, however, looks to new and more complete utilization of forest products and their residues in the future through further technological advance and more efficient operation. This will include utilization of limbs, branches and defective trees now left at the harvest site.



"Crunch" went this "wigwam" waste burner as it was pulled down. This was a typical sight in the Pacific Northwest several years ago as the forest products industries fought pollution. New uses have been found for wood residues which formerly were burned. In two Oregon counties the mill waste volume was reduced 77 percent from 1955 to 1965. Another Oregon county had 200 burners operating in 1956 and only 11 remained in 1970.

Prepared by:

FOREST INDUSTRIES COUNCIL

1619 Massachusetts Avenue, N.W., Washington, D.C. 20036

Mr. TURNBULL. I hope you have at your desk a copy of this illustrated brochure which will help to describe the magnitude and economic significance of the problem that I am addressing myself to. That is the use by the paper industry of sawmilling and veneer plant wastes.

These wastes, during recent periods of depressed economic conditions have represented in terms of their ability to be sold, the difference between profit and loss for many of the smaller solid wood products operations. I, too, would join in commending to you the GSA definition which takes full recognition of these wood wastes as recyclable materials.

Beyond that, I would point out that the chairman himself made note this morning of the fact that decisions reached in the Congress on legislation such as the two bills before you can inadvertently have the effect of transferring the problems from one place to another, but without really solving the problem.

The physical magnitude of the problem of either burning or burying these solid wood wastes if they cannot move into the paper manufacturing stream is enormous and I doubt if it would be capable of accomplishment.

I would recommend that in your deliberations you add to your definition of a recyclable waste, a very simple term which Mr. Mighdoll brought up. He pointed out that unless they are reused, municipal wastes, consumer wastes, must be buried or burned and neither practice is any longer acceptable.

The same definition, bury or burn, would be true of the sawmilling wastes if they cannot move into the papermaking stream. I urge that you keep that in consideration as you consider this legislation.

Thank you, Mr. Chairman.

The CHAIRMAN. Thank you.

Mr. TURNBULL. Mr. Chairman, you spoke earlier to the effect that we are overcutting our forests. I commend to you the work of the Southern Forest Resource Council and the Forest Farmers of the South in their third forest campaign, which was a remarkable accomplishment in forest regeneration.

Across the United States we are currently growing about 30 percent more wood than we are harvesting, but in the South the percentage of growth over harvest is considerably higher than that, and this is a result of the great cooperation between industry, between the State foresters, the U.S. Forest Service, and the forest farmers.

Thank you.

The CHAIRMAN. Timber has become a big crop, as we call it in the South, and is a very valuable crop, too.

Thank you very much.

As I understand your testimony, the forest products interest has already made significant progress in utilizing the residue of forest harvest and product manufacture. That's the sawdust and so forth.

Mr. TURNBULL. The round wood, whether in the form of saw logs or other, and that leaves the harvest site and goes to the mill. We are well up in the 90-percent utilization of all that wood fiber. The only problem we have on which we are working and the Forest Service is working is the disposal of the bark for which we have some uses but not enough.

We still have a problem which is going to be of increasing concern, both in the technical sense of a wasted material and in the esthetic sense of public attitude toward it, and that is in the tops and the branches that are left on the ground after the harvest at the harvest site.

It does look as though it will be both technically and economically possible in the future to utilize more of that material rather than leaving it to rot or having to burn it.

The CHAIRMAN. There are portable chippers, you know, that go right in the forest along with the sawmill that can use up the small branches. The only problem is the chipper gets the bark also, which they don't like in making paper.

Mr. TURNBULL. But we are working on methods of increased bark utilization even in the paper stream, too.

The CHAIRMAN. They are using a lot of it now for putting around the plants as mulch. It makes very good mulch, too.

Mr. TURNBULL. Some is made into charcoal also.

The CHAIRMAN. From the conservation standpoint, is your industry utilizing all the residue and byproducts of the forest harvest?

Mr. TURNBULL. I would say that our only problem today is the amount of bark generated, for which we have uses but not enough. Bark is used primarily as a fuel. As long as we can use it as a fuel, it is a good fuel, but we do have some smoke generation problems in burning bark.

The CHAIRMAN. Fine. Thank you very much. I appreciate your testimony.

Now, Mr. Howard Willets, director of marketing, Great Northern Paper Co. We will be glad to hear from you.

STATEMENT OF HOWARD WILLETS, JR., DIRECTOR OF MARKETING, GREAT NORTHERN PAPER CO.

Mr. WILLETS. Thank you.

Our statement is brief.

The enactment of S. 2267 which we are speaking to exclusively here—we are not speaking to S. 2266 simply because we are not involved with the manufacture of the grade of paper to which it refers.

However, we are the suppliers, as referred to before, of paper for the Congressional Record.

It would disqualify virgin pulp and paper mills—the historical suppliers of paper for the Congressional Record—as suppliers of paper for the Congressional Record by not providing for an adequate period of time for engineering, equipping, and constructing facilities for recycling fibrous waste material. We therefore suggest that the percentage requirements for recycled material in paper in the Congressional Record be initiated at a low level and gradually raised over a period of years. This will allow for the development of collection systems and processing systems for introduction of fibrous waste material in a practical and economically feasible manner.

We also believe that the definition of the term "recycled material" in bill No. S. 2267 is too restrictive. The definition issued May 18, 1971, by the GSA covering reclaimed or recycled fibers is more viable in that it makes possible a wider use of fiberous waste material such as saw-

dust, rags, etc., and we understand that the May 18, 1971, definition is now being used by GSA and we feel it is a good one.

We understand Mr. Darrow, who just spoke a minute ago before us, was scheduled to speak last. He has spoken to this subject and Great Northern Nekoosa Corp., the parent company of Great Northern Paper Co., would like to go on record as supporting the position of API.

The CHAIRMAN. I was asked if you have a definition you would recommend.

Mr. WILLETS. Yes.

The definition is the asterisk at the bottom of the page.

"The paper stock shall not contain less than blank percentage of——"

The reason that percentage number is blank there is that the percentage would have to be determined for the individual use to which the paper was going to be put, the end use.

* * * "by weight, of fibers reclaimed from solid waste or waste collected as a result of a manufacturing process but shall not include those materials generated from and reused within a plant as part of the papermaking process."

The CHAIRMAN. What do you mean by that?

Mr. WILLETS. In the manufacturing of all grades of paper, not just newsprint, there are trims and there is culling of off quality rolls for one reason or another, which are put back into the breaker and reused in the process of manufacture. That is what is referred to there as generated from or reused within a plant.

The CHAIRMAN. Would this bill prohibit the use of that?

Mr. WILLETS. This statement in the GSA definition prohibits that kind of recycled fiber. In other words, it would not be included. But we feel that the definition of S. 2267, which other people have spoken to today, is highly restrictive in that it would eliminate the use of rag materials or any other—for instance, sawdust or chips.

The CHAIRMAN. If a papermill were not allowed to use the waste it creates—spoilage, trimming, et cetera—and run it back in, that would run the price of paper up and would create a problem of burning.

Mr. WILLETS. It wouldn't prohibit the use of it. It would just prohibit the definition of it as a recycled material.

The CHAIRMAN. I see. In other words, you couldn't call that recyclable?

Mr. WILLETS. No.

The CHAIRMAN. I see.

I was wondering, because I have been in papermills and there is quite a little bit of that spoilage.

Mr. WILLETS. There is quite a little bit of that.

I might say, speaking away from the statement, that we, too, are just as much interested in protecting the growth of our woodlands and the forest as anybody else is.

This is our life's blood. If we don't protect those trees to see to it that we have a continuing source of raw material, virgin pulp, we are out of business. We have a vested interest in this that is very much a practicable one.

The CHAIRMAN. Are the mills you represent now doing any recycling?

Are they equipped to do it?

Mr. WILLETS. At the moment, we do not have what you would call a deinking operation. This means we do not collect from waste dealers bales of material which are sent back to the mill and are introduced on a continuing basis into the manufacture of paper.

We have had underway a research project looking at various techniques for deinking so that we could go into this business and become a part of it.

The logistical problem, as you indicated before, you understand full well, is great. We are located some 70 miles north of Bangor, Maine, which is not exactly in proximity to a high density population. [Laughter.]

The problem of getting the raw material back to the mill is large. We have, however, very recently run some tests to determine the feasibility of introducing proposed printed material back into our operation without the deinking. We have met with some success. We hope to expand this over a period of time. The process of engineering and the purchase of equipment requires quite a long lead time, as you know.

The CHAIRMAN. I know of no company that buys newspapers or any other paper that has been printed on, which deinks it, and then bales it and sells it to a mill free of the ink. Each mill has to do its own deinking if it will be profitable for them to use the paper.

Mr. WILLETS. Yes. It is considered number one news and it has a market price today which is quoted publicly, and it is about $22 a ton at the point of collection. It is sorted, then chopped up and rebaled then. That is the price we quoted of number one waste news.

The CHAIRMAN. Thank you very much, I appreciate your testimony.

Mr. WILLETS. Thank you for the opportunity.

The CHAIRMAN. Without objection, I am going to put this GSA news release into the record also.

(The GSA news release referred to follows:)

[GSA News Release, May 18, 1971]

GSA ADMINISTRATOR CITES WASTE RECYCLING PROGRESS

WHITE SULPHUR SPRINGS, W. VA.—The Federal Government is taking major steps to encourage more recycling of solid waste materials, the head of the U.S. General Services Administration said today.

Addressing a group of paper industry executives, GSA Administrator Robert L. Kunzig said "the current 20 per cent figure of waste paper recycling must be greatly increased if we are to meet the growing needs of our environment."

Kunzig made his observations here in a speech before the Paperboard Group of the American Paper Institute.

At the urging of President Nixon, Kunzig said, GSA sat down with industry and revised 14 Federal specifications to require a minimum of 3 to 50 per cent recycled material.

These specifications represent over $35 million per year in the purchase of paper by GSA, which does most of the Federal Government's buying. The products include towels, toilet tissue, napkins and paper used in shipping containers and other packaging and packing materials.

"GSA's present annual paper procurement, however, is slightly less than one percent of the industry's production of 58 million tons," Kunzig said.

Accordingly, he said that Government and industry, by joining forces, "can expand markets for waste paper and develop new ones, thereby increasing the demand for the material."

Kunzig noted that GSA is working closely with the Council on Environmental Quality and the Environmental Protection Agency in solving solid waste problems. In one of the agency's programs, GSA is seeking ways to increase the demand for recycled materials, while in another it will examine the possibilities of

using recycled materials in construction of all Federal buildings and determine if Federal Housing Administration regulations can be revised to encourage the use of recycled materials.

Kunzig said he is confident that breakthroughs in recycling are iminent. "They will be breakthroughs not only in the recycling program but in the equally important areas of pollution abatement, inflation control and economic advancement through many and various new business opportunities," he said.

REMARKS OF ROBERT L. KUNZIG, ADMINISTRATOR, GENERAL SERVICES ADMINISTRATION, WHITE SULPHUR SPRINGS, W. VA., MAY 18, 1971

I am delighted to have this opportunity to be with you today, for we clearly have much in common. GSA, as the Government's business arm, has many responsibilities, and one of them involves paper. We buy it for Federal agencies, we use it and we dispose of it.

The adage that "the only thing that is constant is change" is truer today than ever before in the history of man. The transition from fruit-picking by Adam and Eve to sophisticated agriculture was once regarded as speedy, but it is static when compared to accomplishments of the past 70 years. During this period the conditions of life and our life styles have undergone more changes than in the previous 2,000 years.

And change from ignorance to knowledge, from ineptitude to skill, is a tremendously refreshing experience—especially when such change is so highly essential to survival. But change brought about by scientific research, by jumps in technology, by the new affluence in the great part of our society, presents new problems, not the least of which is pollution.

Today, solid waste, and what to do with it, ranks high on the list of complex ecological problems which challenge our society. Solutions to this problem can serve a variety of purposes, but if solid waste is not utilized to the best of our technological capabilities, it will continue to be a choking threat to our urban communities.

Further, it represents a loss of valuable raw material which can be recycled back into the productive industrial stream. In a very real sense, the mountains of solid waste we are piling up as a result of our affluence can be viewed as a "natural resource" now that we have the technological capability to develop and execute a truly meaningful recycling program.

Environmental authorities who have studied the solid waste problem point out that we must reshape our economic thinking and practices to make recycling work. This calls for new attitudes as well as a change of values by consumers. The development and expansion of markets for recycled materials will encourage more extensive collection of solid waste materials needed in the recycling process.

We must agree that there is a strong inter-relationship between economics and recycling—and serious consideration must be given to related problems such as reclamation allowances, Government subsidies, tax incentives, dep'etion allowances, freight tax equalization, and the removal of the public's prejudices against purchasing items composed partly of recycled material.

Extensive recycling of non-ferrous scrap metals has proved successful simply because there is a good economic basis for utilizing recycled scrap metal.

The glass industry is making tremendous strides in building new markets for its recycled products. In addition to being used in the production of new glass, recycled glass is being used in other new products, such as road-building materials and reflector beads in highway paints.

Waste paper, however, represents the largest volume of solid waste material, and the current 20 per cent figure of waste paper recycling must be greatly increased if we are to meet the growing needs of our environment. By joining forces, Government and industry can expand markets for waste paper and develop new ones, thereby increasing the demand for the material.

President Nixon, in his Environmental Message of 1970, stressed the need to encourage more recycling of solid waste materials and he directed the Council on Environmental Quality to develop proposals in this area.

In his 1971 Environmental Message, the President announced the achievement of the first major step toward this goal—the revision of 14 Federal specifications to require minimum amounts of recycled materials.

GSA sat down with industry and changed the specifications to require a minimum of 3 to 50 per cent recycled material. These specifications are used in about $35 million worth of annual purchases by GSA.

The specifications we revised include:

Industrial and institutional wiping towels, and plastic-wiping towels, which now require a minimum recycled content of 5 per cent.

Prepacking trays and boards, which require a minimum recycled content of 20 per cent.

Cellulosic cushioning material, which requires a minimum recycled content of 50 per cent.

Toilet tissue, napkins, fiberboard boxes and bags, which require a minimum recycled content of 3 per cent.

In addition, we are reviewing other specifications representing $25 million in annual purchases, so that in total this would account for about one-half of GSA's paper procurement.

Since we have not yet been able to obtain a clear consensus as to the maximum amounts of recycled fibers which can be used, we are trying several other methods to test the market.

We have issued invitations to bid for definite quantity contracts for toilet tissue and box board requiring a minimum of 8 per cent recycled content, up from the former 3 per cent.

We have also issued invitations to bid for *term* contracts for all three items requiring 50 per cent recycled content for toilet tissue, 25 per cent for box board and 5 per cent for grocery bags.

GSA's present annual paper procurement, however, is slightly less than one per cent of the industry's total production of 58 million tons. Our procurement of fiberboard sheets and boxes represents an even smaller portion of that industry's production.

But looking at these statistics is like looking at the tip of an iceberg. The Government's effect on the overall picture is by no means limited to direct paper procurement. For example, while our direct purchase of corrugated sheets and boxes is only about 30,000 tons, far more is used in packaging other items bought by the Government.

In other words, when the Government buys tools, clothing, food, electrical equipment and household appliances, the specifications also cover the corrugated board required for the packaging.

It is for this reason that GSA's revision of the specifications for all corrugated board to require a significant percentage of recycled fibers is of mutual importance to the Government and the Paper Industry.

National industry figures show:

In 1956, approximately 8,800,000 tons of waste paper were recycled.

In 1966, the tonnage increased to about 10,200,000.

And in 1969, some 11,500,000 tons, or approximately 20 per cent of the nation's paper consumption, were recycled.

Of all the corrugated boxes produced in 1969, about 25 per cent were collected and recycled. Of all the newspapers printed during the same year, some 23 per cent were returned for recycling. Simple arithmetic tells us that we are still wasting the greatest part of our waste paper and, at the same time, contributing to pollution through burning and dumping.

As an initial step in attacking the recycling problem, the Council on Environmental Quality and the Environmental Protection Agency created an Interagency Task Force and recently instructed nine individual task groups to make in-depth studies in their respective areas.

GSA is directly involved in two of these task force efforts. One is Government Procurement, whose objective is to create a demand for recycling materials. This group will evaluate items that can be recycled for use in automobiles and construction and packaging materials. It will also evaluate contaminants in products which limit recycling—such as adhesives that are not soluble in water—and explore the possibilities of using more items like retread tires and returnable beverage containers.

The second group is studying Recycled Materials for Construction use. Some wastes already are used in construction materials, but Federal specifications and regulations could be changed to require broader use of recycled wastes, thereby increasing the overall demand. Specifically, this task force will examine the possibilities of using recycled materials for all Federal buildings and determine if Federal Housing Administration regulations can be revised to encourage the use of recycled materials.

Other Task Forces in the Interagency Group are concerned with:

1. Tax incentives and examination of the impact that such incentives as in-

vestment tax credit, industrial development bonds, interest subsidy and accelerated depreciation would have on the economy.

2. Food packaging restrictions and the removal of such restrictions in the interest of helping to create a demand for recycling.

3. Sludge and other waste utilization—the reuse of sludge as a much-needed soil nutrient. Federal lands which are arid and non-productive may prove ideal for recycled sludge materials.

4. Transportation rates and the development of a program to remove the rate biases of scrap iron, paper, rubber, textiles, waste oil and other materials.

5. Interstate labeling requirements to evaluate the extent to which labeling for recycled materials is not desirable, to determine if standardization of recycling labeling is required, and possible requirements for recycled quantities to be noted on key items.

6. Standards evaluation to appraise current waste categories to determine their coverage and adequacy, and development of new categories, testing procedures and performance standards to facilitate quick and efficient commerce in recycled materials.

7. Recycled materials for highway construction and the evaluation of problems that could result from using more recycled glass and rubber in road building.

President Nixon, in his environmental Message last February, directed the Chairman of the Council on Environmental Quality to work with the Governors to review State purchasing policies and, where possible, encourage revision of the policies to require recycled paper.

To assist in this effort, the President directed me to establish technical liaison to provide the States with the revised Federal specifications and other pertinent information as a step toward broader use of procurement policies to encourage recycling.

I am confident that industry's advanced technological capabilities to process these materials, together with Government's concern with making the processing work in the overall recycling scheme, will bring about important breakthroughs. They will be breakthroughs not only in the recycling program but in the equally important areas of pollution abatement, inflation control and economic advancement through many and various new business opportunities.

I thank you.

The CHAIRMAN. Congressman Dow introduced H.R. 10034. Are you familiar with his bill? He has a definition of recycled paper that I wish you would study and let me hear from you on that. Could you do that?

Mr. DARROW. I will, at a very early opportunity. I have the citation.

The CHAIRMAN. He has a definition which might be helpful to us.

(The information referred to above, subsequently received by the committee, follows:)

AMERICAN PAPER INSTITUTE,
New York, N.Y., August 6, 1971.

Hon. B. EVERETT JORDAN,
Chairman, U.S. Senate, Committee on Rules and Administration, Old Senate Office Building, Washington, D.C.

MY DEAR SENATOR JORDAN: I want to thank you for the opportunity of testifying on S. 2266 and S. 2267 on August 3, on behalf of the American Paper Institute. I also want to compliment you on your broad knowledge and understanding of the paper industry.

As the hearing was being concluded you asked if I would study the definition proposed by The Honorable John G. Dow in his testimony before your Committee and to give you my comments.

The definition proposed by Mr. Dow, as contained in H.R. 10034, is as follows:

"The term 'recycled paper' means any paper which after sale to, and use by, a consumer of that paper has been (1) discarded or collected as an element of solid waste; and (2) has been recovered in whole or in part and reprocessed into a new raw material for use in the manufacturing process of new papers; except that such term shall not include any waste materials generated by the paper manufacturing process and reused as part of such process."

The proposed definition in H.R. 10034 is essentially the same as that contained

in S. 2266 and S. 2267. Both definitions would exclude sawdust, chips, slabs, rags, linters, flax, bagasse, and textile mill waste. Either of these would exclude fibers from any solid wastes except certain specified paper wastes.

Since I frequently cooperate with the staff of your Joint Committee on Printing and its Technical Subcommittee, and have done so for many years, I am aware of many studies which they perform. The Technical Subcommittee, under the Chairmanship of Dr. Robert Hobbs of the Government Printing Office, has given very careful consideration to what would be an appropriate definition for recycled material. I understand that it has recommended the following definition:

"Reclaimed fiber: fiber obtained from solid waste, or from waste collected as a result of a manufacturing or agricultural process, but not including materials generated from and re-used within a plant as part of its own papermaking process."

I believe that the above definition is a very good one and would recommend it to you. It includes all fibers which we believe should be included. It is almost identical with the GSA definitions referred to at the hearing and has the added virtue of being concise as well as precise.

During the hearing various references were made, including some by myself, to the current use of waste paper by the paper industry. For your background information, I am enclosing two tabulations, two graphs, and a short commentary on this particular subject.

Please be assured that if you require any additional information or assistance, I would be more than pleased to be of service.

Meanwhile, with continued best wishes,

Sincerely,

JOHN F. DARROW,
Vice President.

Enclosures.

COMMENT ON TABULATION ENTITLED: PAPER AND PAPERBOARD PRODUCTION AND WASTE PAPER CONSUMPTION—1970

Paper: Newsprint.—Through 1970 and so far in 1971 the one manufacturer of newsprint from old newspapers operated on a full 7 day week and produced 11% of domestic production and 4% of U.S. consumption (the U.S. imported 6,600,000 tons of newsprint in 1970, mostly from Canada). The three mills of this manufacturer cannot use additional tonnage of news unless they add to their capacity.

Printing, Writing and Related (including uncoated groundwood, coated paper, uncoated book, writing and related, bleached bristols).—Mills producing these grades did not operate at capacity in 1970 nor to date in 1971. Mills with de-inking facilities, however, have built backlogs due to increased demand for recycled content paper. Thus, little if any additional high grades could be used, except as noted in the next paragraph.

Availability of high grades is limited. Upper Wisconsin mills report some more high grades could be collected. Northeast, South and Pacific Coast report tight supplies and increasing prices. If the supply of high grades is made available and the demand continues strong, maximum additional usage could be 30,000 tons.

Unbleached Kraft Packaging, Industrial Converting, Special Industrial and Other.—Kraft bag and sack paper cannot use waste paper and maintain strength. Special industrial grades use the rather small amount of waste paper in this category. Specialty mills have not been running seven days due to limited demand for such grades as wire insulating, gasket, pressboard, etc.

Tissue (facial, toilet, toweling, napkin, sanitary and other).—Tissue mills using high grades are seven-day mills and do not have additional running time. Their full de-inking capacity is being used. They could replace some purchased pulp with pulp substitutes if the proper quantity and quality were available and demand remained strong. This would mean using another 35,000 tons.

Paperboard: Solid Woodpulp.—Several unbleached kraft (linerboard) mills with the necessary equipment are using corrugated clippings and in some cases old corrugated boxes up to 10 to 15% and maintaining quality. Mills so equipped today might use another 100,000 tons by cutting back on woodpulp and substituting waste paper, but in at least some cases this would increase costs.

Semi-Chemical mills use about 15% corrugated clippings and carefully sorted old corrugated. If they used up to 20% more corrugated waste and cut back on woodpulp, these mills could use some 170,000 additional tons of waste paper.

However, if the harvesting of the woodlands on which these mills depend brings in more hardwood (which can only be pulped in the semi-chemical process), additional waste paper utilization might be limited because there would be no other use for the hardwoods already cut. If hardwoods are not cut at the same time as the softwoods, they tend to inhibit the growth of the remaining or newly planted softwoods.

Bleached Packaging mills use virtually no waste paper.

Combination Paperboard mills ran at 86% of their capacity in 1970 and have been running at 87% in 1971 to date. The main problem here is demand which is particularly sensitive to the overall level of the national economy. Under the right conditions these bills could use between an additional half a million and a million tons of bulk grade waste paper.

Construction paper and board mills run full when building activity is high and shutdown when demand is weak. The sharp growth in home building in 1971 has increased their use of waste paper. In 1970 waste paper provided 35% of the total fiber requirements for making the construction grades. In 1971 a 5% to 10% increase is expected due to higher building activity, causing consumption of another 100,000 tons.

Paper & Paperboard Production and Waste Paper Consumption - 1970

(In Thousand Tons)

	1970 Production	1970 WASTE PAPER CONSUMPTION					
			Bulk Grades			High Grades	
		Total	Mixed Papers	Old Corrugated Boxes & Clippings	Newspapers	Pulp Substitutes	De-ink
PAPER							
Newsprint	3,309	400			400		
Printing, writing & related	10,845	695				465	230
Unbleached Kraft Packaging, Industrial Converting, Special Industrial and Other	5,318	179	5	52	25	77	20
Tissue	3,671	690		30	40	340	280
Paper Sub-Total	23,143	1,964	5	82	465	882	530
PAPERBOARD							
Woodpulp paperboard (unbleached kraft, solid bleached and semi-chemical)	18,511	810		792		18	
Combination Paperboard	6,982	7,856	1,840	3,282	1,629	884	221
Paperboard Sub-Total	25,493	8,666	1,840	4,074	1,629	902	221
CONSTRUCTION PAPER AND BOARD, WET MACHINE AND MOLDED PRODUCTS	3,960	1,370	761	202	298	91	18
GRAND TOTAL	52,596	12,000	2,606	4,358	2,392	1,875	769

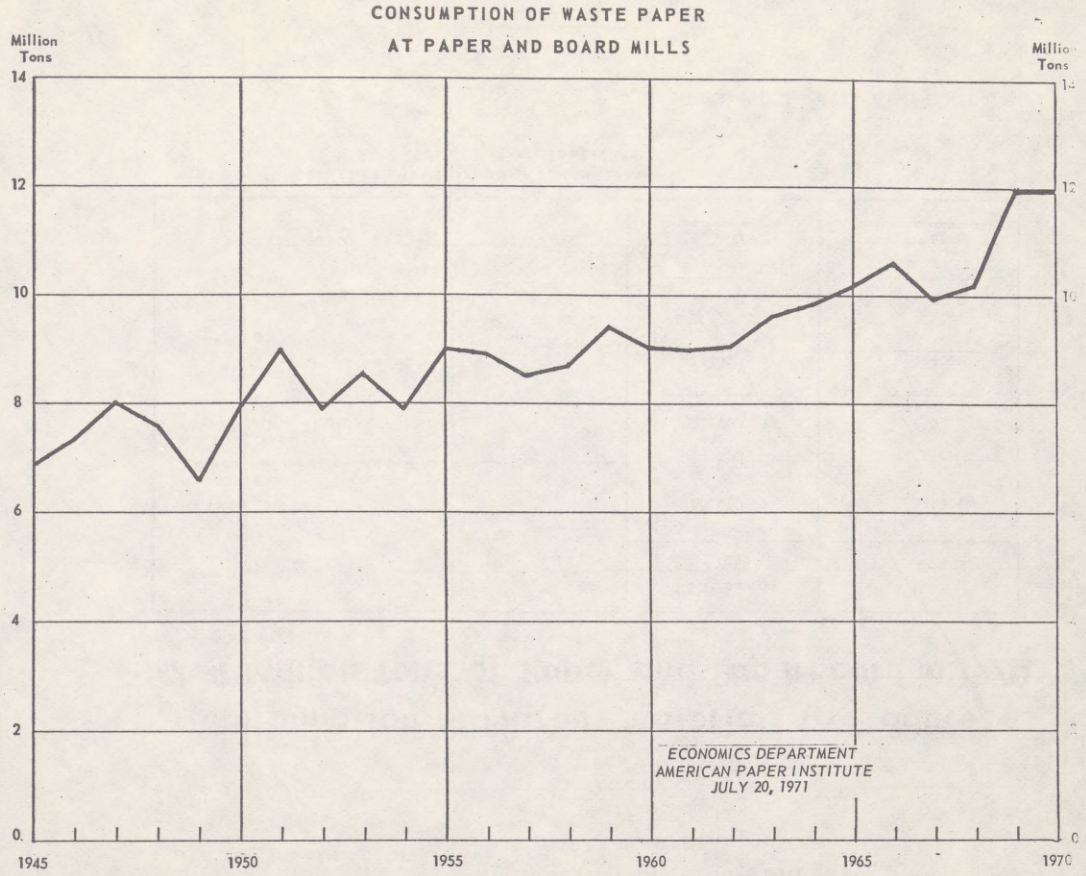
American Paper Institute - July 20, 1971 JRE:mrb

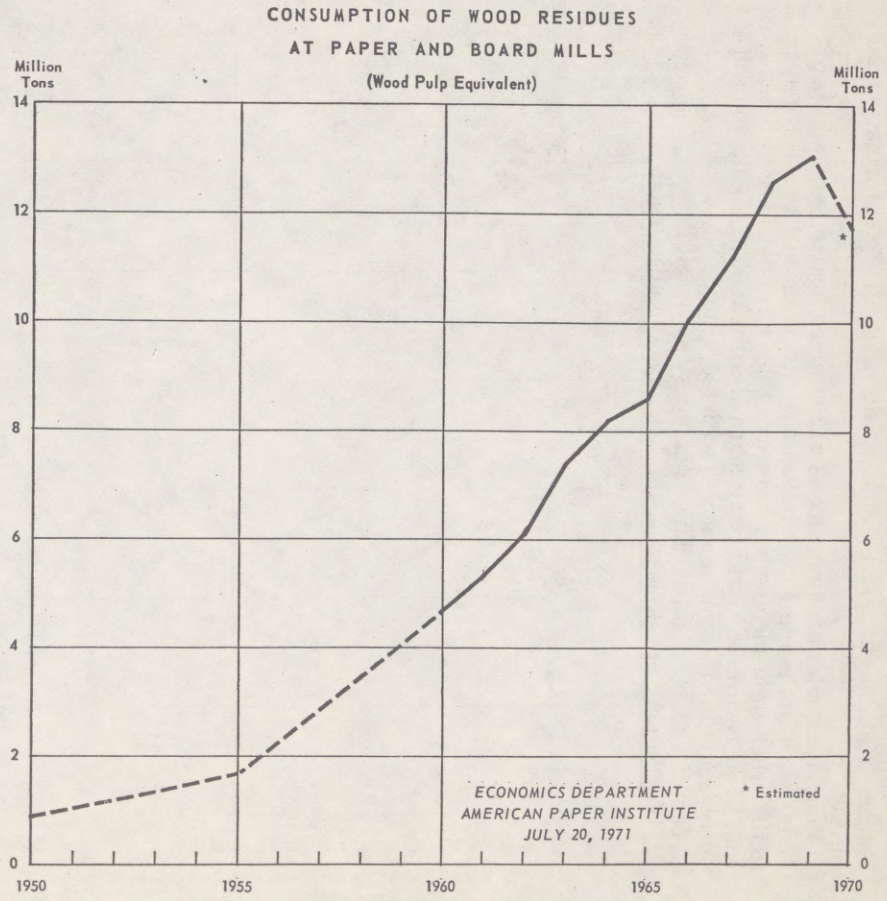
Consumption of Fibrous Materials to Produce 52.4 Million Tons of Paper and Paperboard in 1970

	Thousand Tons	% of Total
Waste Paper	12,000	22.0
Other Fibrous Materials	900	1.6
Wood Residues	11,700	21.4
Sub-Total	24,600	45.0
Woodpulp from Roundwood	30,000	55.0
Total	54,600	100.0

Source: American Pulpwood Association and American Paper Institute

July 20, 1971


CONSUMPTION OF WASTE PAPER
AT PAPER AND BOARD MILLS
Million Tons
14
12
10
8
6
4
2
0
1945
1950
1955
1960
1965
1970
ECONOMICS DEPARTMENT
AMERICAN PAPER INSTITUTE
JULY 20, 1971


CONSUMPTION OF WOOD RESIDUES
AT PAPER AND BOARD MILLS
(Wood Pulp Equivalent)
Million Tons
Million Tons
14
12
10
8
6
4
2
0
1950
1955
1960
1965
1970
ECONOMICS DEPARTMENT
AMERICAN PAPER INSTITUTE
JULY 20, 1971
* Estimated
*

The CHAIRMAN. Gentlemen, I appreciate your patience. We managed to hear all of our witnesses. If anyone has anything that they would like to add later on, I will keep this record open for at least 1 week so you might insert it, but we do want all the information we can get.

You have made very fine witnesses. I enjoyed hearing you and profited by it. I am going to try to sell the advantages of recycled paper to the other eight members. I am sorry they were not here to listen to you. They certainly would have learned a great deal about your industry and the problems connected with recycling.

Thank you very much. This concludes the hearing.

(Whereupon, at 12:30 p.m., the hearing was adjourned.)

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