Discussion by

P. G. Marsh
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Since I was intensively involved with the development of the Black Clawson Fibreclaim System, I was particularly interested in the article "Paper Pulps From Municipal Solid Waste" by Messrs. Nollet and Sherwin.

I believe the approach to presorting paper prior to shredding and/or pulping is sound and is the next best thing to sorting at the source (by hand). I also have no doubt that the authors’ system will produce paper-rich streams. However, some further discussion and clarification are in order:

1. It should be noted that the wet pulped fiber from Franklin, Ohio, was not only used in roofing felt but was also experimentally processed in tonnage lots into boxboard and a semi-bleached product used in offset paper. This work demonstrated that cleaning of fiber extracted from whole pulped refuse was technically feasible. The cylinder-grade board was found to contain no more PCB’s and heavy metal than cylinder boards made from wastepaper.

2. As the authors pointed out, the Flakt System uses a dry process and is one alternative to the wet pulping process. It should be noted that the approach of balling the plastic film by applying controlled heat in a dryer is patented in the U.S. by Forest Products Laboratory.

3. The authors’ statement on FDA’s restrictions should be reinforced. It really makes no difference if the chances of toxic contamination are great or slight, the fact that the user of wastepaper is responsible for the safety of his product and that the burden of proof is on him to show product safety presently makes the use of this paper in food packaging impractical in the United States. Even when garbage derived fiber is used in nonfood products, it might find its way to food products on the next reuse cycle. I believe that fiber products can be made safe; however, more proof is necessary and a change in the FDA’s approach is required.

4. The so-called “news” Fraction from AENCO apparatus when applied to garbage would undoubtedly have to be sold as mixed wastepaper because it would be contaminated with other paper in uncontrolled amounts and would be too dirty to use back in newsprint.

5. As the wastepaper supply becomes short and the price increases, the number of corrugated boxes in the garbage will probably decrease to a trace. This is because corrugated containers can easily be segregated by hand prior to ultimate disposal. This has already happened in Europe where wastepaper is recycled in larger quantities.
Discussion by

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We agree that by shredding the paper as the first step, glass and putrescibles are impacted on the paper and will remain as a contaminant throughout the entire processing. The Aenco approach involving air separation and trommelng as the first step is therefore correct in our opinion.

We would like to clarify one thing about the Flakt 3-K System: The authors mention that the first step in the Flakt System is shredding. Although some of our literature describes the first piece of equipment in the Flakt 3-R System as a Shredder, it is important to point out that we use a Flail Mill and that the primary purpose of this component is to open up bags and “liberate” the incoming solid waste in order to facilitate further processing. We have experienced on several occasions that the glass bottles go through this flail mill without breaking, but if they break they are not pulverized and impacted on the paper, as in the case of a Hammermill shredder.

The first Flakt 3-R System processing 130,000 tons/year of municipal solid waste went into operation in Wijster, Holland in February, 1980. The system produces paper in two qualities, one consisting of newsprint and the other of Kraft fibers. Both qualities are remarkably free from impurities.

The second 3-R System will start operation in Stockholm, Sweden in June, 1980.

The authors further discuss the economic feasibility of producing secondary paper from municipal solid waste. The most important aspect to emphasize is:

A. The final product must be clean and free from impurities and contaminants.

B. A separation of chemical fibers (Kraft) and mechanical fibers (newsprint) must be attained. Otherwise the price of the product would be adversely affected.

Although we agree that the Ahlstrom Fibre Flow Drum is an excellent piece of equipment for separating impurities from cellulosic pulp, the paper produced in a Flakt 3-R System is so free from impurities that it can be processed in any type of conventional cleaning and screening system for secondary fibers.

AUTHORS’ REPLY

We are grateful to P. G. Marsh and J. Hedenhag for commenting on our paper. We generally agree with the thrust of their comments.

P. G. Marsh provided some information on the quality of paper pulps extracted at Franklin, Ohio that was unknown to us. We were happy to note that the cylinder-grade board manufacturer from the Franklin pulp contained no more PCB’s and heavy metals than did board made from wastepaper.

We agree that the FDA restrictions on the use of wastepaper should be changed. We concur in the opinion that the fiber products we described can be made safe. But only a long-term, relatively high-coverage pilot operation could supply enough data to cause FDA to modify their stand.

We hope that Mr. Marsh is incorrect in stating that one could not manufacture newsprint from the “News-Rich” pulp that we described. However, we have no data one way or another on the usefulness of this pulp for that purpose. We also hope that Mr. Marsh’s prediction that the number of corrugated boxes in the waste stream will decrease to a trace will also prove to be incorrect. If this happens, it would be foolish to invest much money in a method of extracting Corrugated-Rich Pulp.

We have no quarrel with the comments of Jorgen Hedenhag. It will be particularly interesting to learn about the performance of the new 130,000 TPY Flakt 3-R System in Holland. In Holland there is much less paper in the waste stream than there is in the United States—because the Dutch already recycle a very high fraction of their paper through source separation. If the Flakt 3-R System is an economic success in Holland, then the potential of recovering paper fibers from U.S. mixed waste will be bright indeed.