

## Recycling Paper Recycling

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What do you do after a product has served its function and is no longer needed? Ideally, you recycle it. What do you do if people have neglected or forgotten so much of what has been learned in recent years about paper recycling? Well, one of the things that someone can do is to write a book. Very little of the contents of such a book may be new. But the book itself can be highly valuable, representing a lot of effort to select and organized material that will be helpful for the current and upcoming generations of papermaking technologists. This editorial describes a new book by Dr. Pratima Bajpai entitled *Recycling and Deinking of Recovered Paper*. Readers who deal with the recycling of paper will probably want to have a copy of it on a handy shelf.

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### Paper Recycling is Big Business

Paper recycling is huge. According to the CEPI, recovered fiber accounted for almost 60% of the worldwide manufacture of paper and paperboard in 2010. That means, in a sense, that operations related to the repulping and de-inking of recovered paper have outpaced the kraft pulping process as a source of fibers for papermaking. But you might never guess at the high importance of wastepaper recovery and recycling in our economy if you were to merely look at such indicators as research grant activity, publications, and marketing hype. So it's about time that someone should come along and shine some light on the topic of recycling and deinking of recovered paper.

And that someone is Dr. Pratima Bajpai. Dr. Bajpai has written *Recycling and Deinking of Recovered Paper* (Elsevier Insights), which is the kind of book that I really like. I think that it is a volume that many readers will appreciate to have near to their desk. It is well-organized, quite comprehensive, but also highly readable and concise handbook about paper recycling and deinking. About the nearest thing to Dr. Bajpai's book is the 2000 book *Recycled Fiber and Deinking*, which is volume 7 from the *Papermaking Science and Technology* series published in Finland. Also there is some wonderful information in a 1995 book edited by McKinney called *Technology of Paper Recycling* (Blackie Academic and Professional). Dr. Bajpai's book has three key advantages: (a) It is written by a single highly capable author, so it is somewhat less repetitious, (b) the author's point of view and tone of expression are more unified throughout the text, and (c) a lot has happened since the year 2000, and much of this is reflected in the contents of the Bajpai book.

### **Challenges that Lie Ahead**

Someone not too involved with the details of recycling of paper might have the impression that the major challenges inherent in the recycling of used paper products have already been solved. If that were true, then all one would need to do is to open a handbook, look in the index, and then read instructions on how to address each of one's daily challenges in turning discarded paper into a high-value, highly uniform web of product. I have a hunch that the future will be quite different than that. Here are some trends that are likely to pose some significant challenges, requiring a lot of engineering and scientific effort in the coming years:

- Declining quality of low-cost used paper supplies
- Intensified competition (including exporting of recovered paper and its use for energy, for insulation, *etc.*), leading to higher costs of used paper supplies
- Increases in customer expectations regarding the quality of recovered fibers
- Increasing complexities related to multiple types of fibers, multiple types of inks, and various combinations of mixed recovered fibers in the marketplace
- Environmental pressures, legislation, and corporate initiatives to greatly increase the amounts of recovered fiber use in many applications
- Retirement during the next decade of people who were involved in the initiation of many of the current major paper recycling operations around the world

In light of these challenges, having a good handbook will be essential, but not enough. Success will depend also on there being a lot of talented engineers and scientists willing to devote their careers in the pulp and paper industry.

### **Issues to be Concerned About**

Turning our attention back to the book *Recycling and Deinking of Recovered Paper*, you might be surprised at how many different aspects of the issue can affect the profitability and practical workability of a paper recovery operation. Sections of the book deal with issues related to tonnages of source materials, tonnages of paper products, legal and regulatory issues around the world, wastepaper collection systems, sorting and processing equipment, a wide variety of deinking unit operations and devices, integration of different deinking operations into systems and "loops", issues related to the quality and hornification of recycled pulps, chemicals used in deinking, the use of enzymes, the bleaching of recovered fibers, the drainability of recycled pulps, runnability issues in paper mills using recovered fibers, the special aggravations related to "stickies," the reuse of water in paper fiber recovery operations, environmental impacts related to paper recycling, and future prospects of fiber recovery.

The publication of a lucid, well-integrated volume about technology can sometimes be seen as a sign of the maturation of a field. But watch out. Time will tell if paper recovery has reached a zenith in our level of understanding. Alternatively, maybe we are presently standing, handbook in hand, at the threshold of a new wave of further implementation of recycling technologies.