

Waste Paper Collection and Utilisation

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Paper is an essential item in any modern civilised society. Paper industry is therefore treated as one of the basis and important consumer industry. During the last 30 years, the production of paper and board in India has increased by more than ten times. The per capita consumption of paper is expected to increase from the present level of 2.0 Kgs to 4.5 Kgs by year 2000 A. D. The present paper production in the country is 13.6 Lakh tonnes and by 2000 A. D. the

consumption is expected to be 31.2 Lakh tonnes. Already the paper industry is facing the shortage of cellulosic raw material and hence it has to increase its dependence on waste paper utilisation.

The reuse of waste paper in the manufacture of paper and board is not new. In developed countries waste paper utilisation in the manufacture of paper and board is nearly 30-40% of the total paper production (Table No. 1). In these countries waste paper

TABLE—I
WASTE PAPER RECOVERY AND CONSUMPTION AROUND THE WORLD
(Sources : PPI, JULY, 1910—Annual Review Number .

Sl. No.	Country	Percapita consumption (Kg.)	Total Paper & Board Prod'n. ('000 MT)	WASTE PAPER ('000 MT)		% Production Consumption	
				Recovery	Consumption	Recovery	Consumption
							Figures for 1979
1.	Feb. Republic Germany	155	744	3268	3198	43.9	43.0
2.	Sweden	213	6280	509	634	8.1	10.0
3.	Finland	165.4	5738	216	202	3.8	3.5
4.	Italy	92	5101	1339	2096	26.2	41.1
5.	France	117	5261	1956	1863	37.2	35.4
6.	Spain	61	2251	911	1073	37.2	35.4
7.	U. K.	134	4198	28	2184	0.7	52.0
8.	Netherlands	148	1904	935	886	54.9	52.0
9.	Austria	103	1565	na	458	na	29.3
10.	Norway	136	1400	123	112	8.8	8.0
11.	Poland	41	1248	462	443	37.0	35.5
12.	Ger. Dem. Rep.	81	1217	578	565	47.5	46.4
13.	Belgium	145	863	430	234	49.8	27.1
14.	U. S. A.	289	58882	16330	14152	27.7	24.0
15.	Canada	215	13483	na	na	na	na
16.	Japan	151	17861	7732	7830	43.3	43.1
17.	Taiwan	80	1361	600	1050	45.0	78.6
18.	India	2	971	300	300	30.8	30.9
19.	Brazil	26	971	na	1070	na	35.6
20.	Mexico	29	1731	na	1006	na	58.1

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utilisation known as "Recycling of fibre" is a very important part of the paper industry, because it not only reduces the raw material demand, but at the same time it helps the industry in easier and cheaper process of conversion into paper and board. As a matter of fact the recycling of waste paper started in Europe by the end of 17th century, at the George Bathasar Illu Mills in Denmark.

In developing countries the concept of utilising Waste Paper as recycled fibre has come up only recently with the acute shortage of raw material. The reasons for not adoption waste paper utilisation in these countries have been mainly the poverty and illiteracy of its people. Because, any piece of waste paper generated in these countries is utilised for other social usage instead of taking it to the Paper Mills for the manufacture of paper. In India the situation has been more or less the same. Since time immemorial, Waste Paper has been used in making baskets and other household articles by old ladies of the house. Since last decade the concept of using waste paper by the paper mills has gained fast, and now in India also nearly 15% of its total production is going as recycled fibre. Due to acute shortage of raw material, the waste paper consumption by the paper industry has increased several folds and the major part of it is imported from abroad.

ADVANTAGES OF WASTE PAPER UTILISATION :

As has been mentioned above the use of waste paper or recycled fibre as a substitute for raw material in the manufacture of paper and board gives readily available source of fibre to the paper maker. Since this stuff has already passed the basic stage of its conversion from Bamboo/Wood/Rag/Grass, etc. by way of cooking and bleaching, it is obvious that by using waste paper we save quite a substantial amount of energy and chemicals, besides generating much less pollution.

In short the advantages can be summarised as below :

- (i) Readily available and easy convertible source of fibre is available.
- (ii) Process of conversion is much cheaper and easier compared to other cellulosic raw materials.

- (iii) A substantial amount of energy, chemical and utilities are saved when recycled fibre is used.
- (iv) It helps in keeping the environment cleaner.
- (v) It helps in better utility of a waste product, which is otherwise destroyed recklessly,
- (vi) It gives a good source of income to the poor people who collect this material from municipal and other sources.

WASTE PAPER COLLECTION :

On account of the reasons given above the utilisation and collection of waste paper in developed countries has been made on scientific lines, so that the consumer as well as the collector, are protected from various hazards in terms of health and technology.

In these countries waste paper has been classified scientifically and this scientific classification is adhered by their Federal laws in order to protect the collector as well as the consumer. In U.S.A. there are more than 50 grades of waste paper and its contaminants limitations are also specified. In table No. 2 few classified grades of waste paper used in U.S.A. is given. The collection of waste paper involves lot of health hazards, particularly when it is collected from municipal waste. In India the collection of waste paper has been haphazardous, unscientific and uncontrolled by any legislation. Although by trade conventions, we have the following categories of waste paper, yet they are only name sake, and no hard and fast rule is observed by the waste paper suppliers.

- (i) White cuttings.
- (ii) Records No. 1 & 2
- (iii) Brown and Gray Boards
- (iv) Kraft
- (v) Road sweepings.

It has been our sad experience and perhaps it may be sad experience of many other Indian Paper Mills also that the indigenous so called classification is never adhered by the supplier. Not only this, even in the supply of imported waste paper we find many a times the trader plays foul. This tells heavily on the procuring cost and quality of manufacture.

TABLE—II
FEW CLASIFIED GRADES OF WASTE PAPER USED IN U. S. A.

Sl. No.	Item	Grade Number	% prohi- bitive material	% Total out throws
1.	Mixed paper	1	2	10
2.	Super mixed paper	3	1	3
3.	Box board cuttings	4	1	2
4.	Mill wrappers	5	1	3
5.	News	6	1	2
6.	Special news	7	0	2
7.	Special news deink quality	8	0	1
8.	Over issue news	9	0	0
9.	Corrugated containers	11	1	5
10.	New double lined kraft corrugated cuttings	13	0	2
11.	Used brown kraft	15	0	1
12.	Mixed kraft cutting	15	0	1
13.	New coloured kraft	18	0	1
14.	Grocery bag waste	19	0	1
15.	Kraft multi wall bag waste	20	0	1
16.	New brown kraft envelope cuttings	21	0	1
17.	Mixed ground wood savings	22	0	2
18.	White blank news	24	0	1
19.	Ground wood computer print out	25	0	2
20.	Publication blanks	26	0	1
21.	Fly leaf savings	27	0	1
22.	Semi bleached cuttings	35	0	2
23.	Manila Tabulating Cards	37	0	1
24.	Computer print out	42	0	2
25.	Printed TMP	48	1	2

THE PROBLEM OF WASTE PAPER COLLECTION AND GRADATION :

It may not be out of place to mention that the system of collection and gradation of waste paper in India is as important as its recovery, to meet the shortage of raw material. The way in which the waste paper is collected by poor lads and women is something extremely pathetic. They collect all sorts of broken and mutilated waste paper pieces from the municipal garbage, which is infested with all sorts of contagious germs and diseases,. They pick the material by hands and carry it on their back and also sort it out in heaps at the collection points. No health precautions or

medical care is observed by any body to protect them from the hazards to which they are directly exposed. Not only this, even in the mills, the workers are exposed to such hazards. In order to meet this serious challenge it is necessary that the technical organisations like IPPTA and trade agencies come forward to formulate precautionary measures and norms of handling such material not only to protect valuable human life but also to help in better fibre recovery from waste paper. This will save many technical problems of consumer mills, like its pulping for better grades of paper. The collection will be healthier and more remunerative to the poor as well to the supplier.

A CASE STUDY OF WASTE PAPER PULPING IN THE SIRPUR PAPER MILLS :

In SPM (Sirpur paper Mills) waste Paper is obtained from practically all over India and the stress is more on using cheaper grade street sweepings. In such varieties we face serious problems of contaminants both of heavy and light in nature, which are very difficult to separate. They would spoil the paper and any amount of cleaning and centricleaning will not solve the problem. Consequently our R & D section developed our own process and equipment designs to solve this problem. By adopting the technics described below it has been possible for us to get rid of contaminants to a fairly satisfactory level. Generally in Waste Paper slushing, the waste paper contaminants get out along with the fibre, causing, serious problem of pulp purification. It also lowers the pulp strength. A dome type pulper slushes waste paper at medium consistency of 4.6% without cutting the contaminants and fibre. This pulper has a special arrangement for continuous removal of plastic pieces, rope cuttings and similar other materials. This development has helped in continuous pulping of all sorts of low grade waste paper including road sweepings, besides reducing the man power in waste paper sorting. The slushed waste paper is sent to a vibrating screen which separates out slushed pulp from the heavy and large size contaminants, without much loss of waste paper pulp. After screening the pulp passes through a riffler, where the grit and heavy small size contaminants are separated out and then through a set of centricleaners to remove further finer heavy materials. The waste Paper pulp is still contaminated with light, small and floating material such as rubber, plastics, etc. which are very difficult to separate out by the conventional method of

cleaning. Hence to separate these floating material a saveall type hydraulic separator is used. The slushed pulp slurry after centricleaning, is fed to this tank at about 1% consistency. The following materials such as rubber, plastics, etc. float to surface, and are removed with overflow. The cleaned pulp after settling is drawn from bottom of the hydraulic separator, thickened and sent to paper machine for further processing.

CONCLUSION :

It is suggested that an expert committee be set up by IPPTA consisting of Technologists and Engineers to formulate the following points, regarding waste paper collection and processing in this country, particularly to help small paper mills to use more and more of waste paper available in their neighbourhood.

- i) To formulate a national policy and trade norms for waste paper collection, gradation and supply.
- ii) Standardisation of waste paper processing equipments.
- iii) To concentrate more efforts to increase waste paper collection and recovery, which is a major source of readily available raw material.
- (iv) To stress upon the Government for the further liberalisation of excise duty and some incentives to collectors of waste paper which will help in increased utilisation of waste paper.

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