Paper Life Cycle

**Research and Development**

Research and development begins with the small scale production of prototype products in the hope of producing a final product for market consumption. Through trial and error companies in the paper making industry conduct research on their designs in order to use the least amount of inputs (resources) to create the best output or product for consumer use. In the case of paper sourced from newly accumulated raw material, paper production companies may test different source materials such as varied species of trees that will lead them to a decision on which materials to use based on both cost and performance. Also, companies will make decisions on which production processes will prove to serve them the greatest advantage in market competition. For example, will the company use a bleaching process to heavily whiten the paper or other chemicals in which are often used in the paper production process associated with negative effects of environmental degradation. In the case of recycled paper, all the above are involved with the addition of what types of post-consumer materials will be used in production and where those materials will be sourced.

**Marketing**

The marketing of the paper relies heavily on the materials and methods used in production of the final consumer product. If a company produces a low-cost, highly chemically enhanced paper product often known as “white copy paper” then the target market of the company will be consumers that want the greatest amount of use while at a low direct cost; unconcerned with environmental impacts. A company that wishes to produce a sustainably sourced paper product in which recycled materials are
used and uses a production process that does not utilize toxic chemicals will most likely target environmentally conscious individuals and companies that are willing to pay higher direct costs in association with less environmental impact.

**Manufacturing**

This process often varies between the use of recycled paper fibers and new wood pulp fibers. The utilization of recycled paper fibers is considered a more sustainable way of production, however it requires the process of de-inking. Manufacturing of paper involves the processing of wood into more easily manageable wood fibers such as wood chips. The wood chips are then broken down even further in a process called pulping. The pulp is refined and mixed in water so it can produce a pulp slurry. The water is then drained from the material, pressed and dried into thin sheets. Production is performed at mills. The machines in these mills tend to be extremely large and complex, some reaching around 500 feet and operate at speeds over 60 miles per hour.

**Packaging**

Most of the time paper is simply packaged in a sturdy paper wrapping, often times placed in a cardboard case. Producing company logo and paper specifications are often included on packaging.

**Sales, Distribution, Transportation**

The sales, distribution and transportation of paper is very similar to how most of the products in the world are distributed. The manufacturers sell large bulks of paper and transport the paper to these retail companies to sell to the consumers. Generally, not a lot of consumers purchase paper directly from the paper mill where it is produced. Rather, it is bought by large publishers or companies that
usually have specific requests for the paper. Most of the paper is then sold to the paper merchants and have a contract with the paper mill and usually paper mills like to have only one contract within that specific region. The distributors that purchase from the paper mills then sell it to the stores and small companies who buy the paper in large quantities. Recently, large companies such as Xpedx, have bought the small regional distributors and now own a lot of the distribution regions.

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Consumer Use

Paper use spans many different areas of everyday life in human society. Paper products serve many uses and are designed differently utilizing diverse range of materials and production processes according to the use that they are to serve the consumer. Paper products include, newspaper, magazines, stickers, stamps, tissues, toilet paper, notebooks, office paper, cups, and many others.

Final Disposition

All paper products are completely capable of being recycled to create new paper products for
future consumer usage. The recycling process involves de-inking and re-pulping the post-consumer paper for introduction into paper production for a new cycle of consumption. There is a limit to the amount of times bio-fiber may be subjected to the paper recycling process for new consumption; 4-6 cycles until fibers become too brittle for use in paper. Some paper-production techniques allow for the composting of post-consumer paper. Unfortunately, much of post-consumer paper ends up in landfills due to inadequate recycling infrastructure or consumer negligence.

Sources

http://www.conservatree.org/learn/Papermaking/Distribution.shtml

http://www.all-recycling-facts.com/paper-recycling-process.html