

Creating Consumer Awareness by Reuse of the Textiles



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Abstract

Environmental pollution is one of the major concerns of the day. Textiles being one of the basic necessities of the human being cannot be done with even though textile industry contributes almost one-third to total pollution. Lot of work, projects have been carried out to minimize the pollution caused by it but still lot needs to be done and if the efforts are from base level wherein each and every individual can contribute it will be more effective.

The theory of 4 Rs i.e. reuse, recycle, refuse and reduce, established by environmentalist has been successful to some extend. The least expensive and least adverse effect on the environment is when a component can be recycled into its original product. This paper gives an insight of the use of 2Rs of the above of the above theory i.e. reuse and recycle, to control the pollution caused by the textiles.

Textile recycling is the method of reprocessing or reusing of clothing scraps from the manufacturing process, used clothing and fibrous material. Reuse is where the item is used for a new function. Reuse of waste textile and clothing product is a way which redistributes the items in the form of seconds.

Majority of textile waste comes from household sources. Clothing is thrown away as old clothes after their average lifetime of three years, or they become unfashionable. These are post-consumer waste. Textile waste also arise from processing and from retail industry. They are post- industrial waste. Both kind of textile waste when recycled and reused will give substantial results and help in controlling pollution.

Introduction

Environmental pollution is a term refers to all the methods by which people pollute their environment. It is undesirable change in biological, chemical or physical characteristics of the environment which causes harmful effect Environmental pollution is one of the most serious problem faced by the mankind. The Textile industry is one of the most pollution creating industry in terms of high solid waste, high biological oxygen demand (BOD)/chemical oxygen demand (COD) content in waste water, hazardous chemicals and dyes etc. The growing importance of raw materials with respect to ecological acceptability and need for non-polluting technologies themselves together with the demand for a higher degree of recyclability of the products is being taken care in the current developments

Purpose

Clothing is one of the basic necessities of the human beings. Besides covering body an increasing consciousness of self and to achieve the desired satisfaction, there is an ever increasing demand for newer fabrics as well as finishes. To meet this demand more and more industrialization is needed in the textile sector. The textile industry is extremely complex. Environmental hazards caused by textiles are manifold. With the rapid pace of

technological developments in textiles, the ecological balance is disturbed. In textile manufacturing the different stages of production viz cultivation/synthesizing, spinning, weaving, chemical processing to cutting, making and trimming into an apparel number of chemical substances are used. Though air, water and noise pollution are created at every step of textile production, residual dyes and chemicals together with water are discharged as effluents. The most problematic is textile wet processing, in terms of vast quantity of water and good number of chemicals which are used in wet processing.

Sr. No.	Process	Polluting agent	Type of pollution
1	Cultivation	Spraying of pesticides	Air pollution
2	Man made fibre production	Chemicals	Effluents (water pollution)
3	Spinning	Lubricants(anionic phosphate ester based antistatic)	Water pollution
4	Weaving	Sizing material (starch)	Requires high BOD value for decomposition
5	Desizing/bleaching/scouring	Chemicals	Water pollution
6	Dyeing and printing	Dyes effluents	Disturbs aquatic life, water for irrigation, soil pollution when percolates in the ground
7	Textiles	Discarded clothing	Solid waste

Apart from the environmental pollution, toxic dyes and chemicals are used in wet processing of textile goods which are coming in contact with the skin and causing a direct damage to the health like skin cancer, allergy etc. The rising waste in our industries is an alarming situation. This calls for an effort to reduce the generation of waste so that the ill effects and problems related to waste disposal can be minimizes and to dispose waste in such a way that it facilitate recovery of resources. The purpose of the investigation was to find out the solution which can be practiced at household level also and contributes to the reduction of pollution to a greater extent.

Objectives

1. To study the type and cause of the pollution by the textile sector
2. To suggest the viable solutions to the above problems

Methodology

Study was carried out in two phases. Consumer awareness and history was studied in first phase and in second phase articles were designed and prepared. The views of the consumer were taken. The basic purpose for taking the views was to see the consumer acceptability of the articles that were made from textile waste.

History

But how and why this happened? When we look at the past, we realize that the population was less, needs were few and the resources were in abundant. Waste was such that it got naturally recycled, being mostly biodegradable. It is seen in archeological studies that, in times when resources of raw materials were decreasing, the garbage dumps of ancient towns were containing fewer wastes with potential for recycling (tools, pottery etc). After the advent of the industrial revolution, different types of waste came into existence which is both non-biodegradable and highly hazardous. One classic example is of paper making. Ancient Chinese historical documents record that the source of fiber for Ts'ai Lun's paper included discarded cloth and rags. After Gutenberg's invention of the printing press in Europe in 1455, there was great demand for paper. As first it was made exclusively from old linen rags but by the mid 177s rags made of imported cotton were also used. Until industrialization, cotton was the most expensive form of cloth available. When the first paper mill in America was constructed in 1690, old linen rags were also the main source of fiber. When cotton plantations developed in the South, cotton rags were also used. With the beginning of industrialization, demand for paper exceeded the supply of rags. By 1880, many newspapers were printed on paper made from wood pulp and as mechanization made the process cheaper and cheaper. It was likely that in pre-industrial times cotton cloth was reclaimed and reused as many times as possible because of its expense and rarity. Paper made from wood became the standard.

Some form of pollution is always associated with production and particularly in cotton cultivation, production and processing, releases various types of waste at every level.

Although definition of eco friendly textile is yet to be standardized, it is generally accepted that if the bio-degradability of effluent is more than 90%, the product will be eco friendly. Therefore, the key areas of textile processing like pretreatments, dyeing, printing, finishing etc. the process should create minimum pollution load with a simultaneous minimum consumption of resources like water, power etc and do not utilize any harmful/hazardous/carcinogenic chemicals. People are apprehensive about adopting this because of the increased investment of time and money. Researches are being carried out to provide solutions.

In a life cycle assessment the life cycle of a product is usually divided into procurement, manufacture, use and disposal .Other than manufacturing, disposal of textile waste if properly done can help in reducing pollution. It is estimated that 400,000 to 700,000 tonnes of textiles are land filled every year with most of this coming from household sources. Although the majority of textile waste originates from household sources, waste textiles also arise during yarn and fabric manufacture, garment making processes and from retail industry. Reduction of this waste will also help in controlling the pollution to some extent. At least 50% of the textiles going to landfill are recyclable. Textile waste comprises of fibre waste, yarn waste and fabric waste. Recycle and reuse of the waste provide both environmental and economic benefits.



What is 'recycle and reuse' of textile waste?

Recycle means taking materials from products we have finished using and making brand new products with them. It involves processing used materials into products to prevent waste of potentially useful materials, reduce energy usage, reduce consumption of fresh raw materials, and reduce air pollution and water pollution by reducing the need for conventional waste disposal.

Reuse is to use an item more than once. This includes conventional reuse where the item is used again for the same function and new life reuse where it is used for a new function. In broader economic terms, reuse offers quality products to people and organizations with limited means, while generating jobs and business activity that contribute to the economy. By taking useful products and exchanging those without reprocessing, reuse help save time, money, energy and resources.

Recycling of the Textile Waste

Recycling is the reprocessing of the waste material into a new product. The least expensive and least adverse effect on the environment is when a component can be recycled into its original product. Recycling of waste in the textile and clothing sector can take several forms. It also includes collecting recyclable materials that would

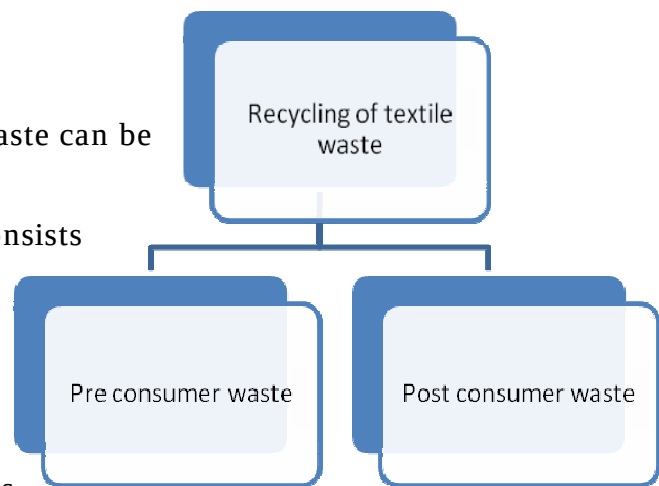
otherwise be considered waste, sorting and processing recyclables into raw materials such as fibres, manufacturing raw materials into new products, and purchasing recycled products. Sources of textile waste: Majority of the textile waste comes from household sources. Average lifetime of any clothing is deemed to be for about three years, after which they are thrown away as old clothes. Even “not so worn garments” are also discarded sometimes as they become undesirable or out of fashionable. Most of these are used as handed over clothes and remaining goes to landfill. It also arises during manufacturing of yarn and fabric, garment –making processes and from retail industry. So the main sources of waste material for recycling of the textile are:

- (i) fibre waste
- (ii) yarn waste
- (iii) textile waste

For the purpose of recycling these textiles waste can be classified in two categories:

- ♣ **Pre-consumer textile waste:** It consists of by-product materials from the fibre, yarn and textile industries e.g. yarns from finishing department, pieces of textiles of various lengths, small scraps of fabric knits or woven, short lengths of textiles from ready made garment industry, goods damaged during production, rejected consignment.

- ♣ **Post-consumer textile waste:** It is defined as any type of garment or household article made from manufactured textiles that the owner no longer needs and decides to discard. These articles are discarded either because they are worn out, damaged, outgrown or have gone out of fashion e.g. old and worn fabrics have areas which can be cut out and stitched, accessories stripped off for reuse.

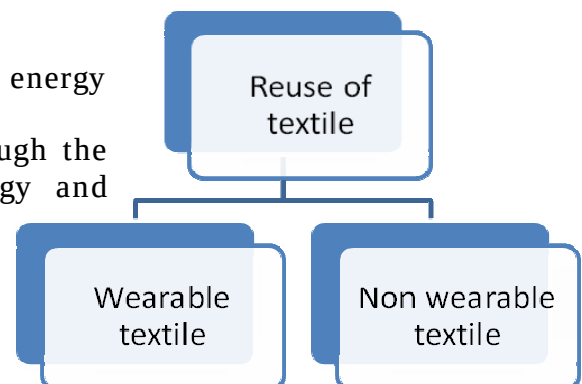


Advantages:

- (i) Reduces pressure on resources.
- (ii) This system uses 20% less energy.
- (iii) Results in less pollution and energy saving.
- (iv) Reduces environmental load through the efficient use of resources, energy and recycling of used products.
- (v) It gives old clothes and other textiles a second life.

Reuse of the Textile Waste

It is a method to use an item more than once. It is the means of extending the life or repurposing an item rather than discarding or throwing it away. Reuse is where the item



is used for a new function. It reduces the number that needs to be manufactured and is a way which avoids away and manifests itself in redistributing the items in the form of handed over or seconds. Waste reduction or reuse helps in sustaining a comfortable quality of life and supports a productive economy.

Wearable textile: Clothes handed over to the helps, second hand clothes, clothes donated to needy in orphanages, remand homes, woollens handed over or resold in the market.

Non wearable textile: Sold to the flocking industries for reuse as fillers in car insulation, panel linings, woollen garments sold for fibre reclamation to make fabric/yarn, cotton and silk clothes used as wiping clothes for a range of industries.

Advantages

- (i) Raw material and energy saving – as it replaces many single use products with reusable ones thus reducing the number of the manufacturing.
- (ii) Reduced disposable needs as well as cost.
- (iii) Cost savings for business and consumers – a reusable product is often cheaper than the many single use products.
- (iv) Preservation of better hand crafted products for a longer period.
- (v) Products made from textile waste

Lamps

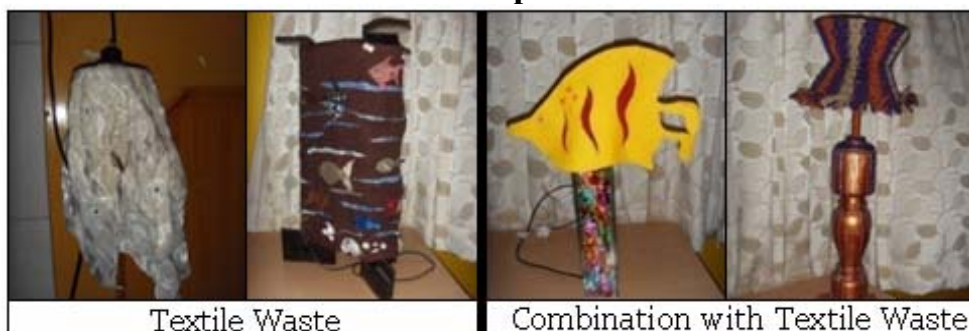


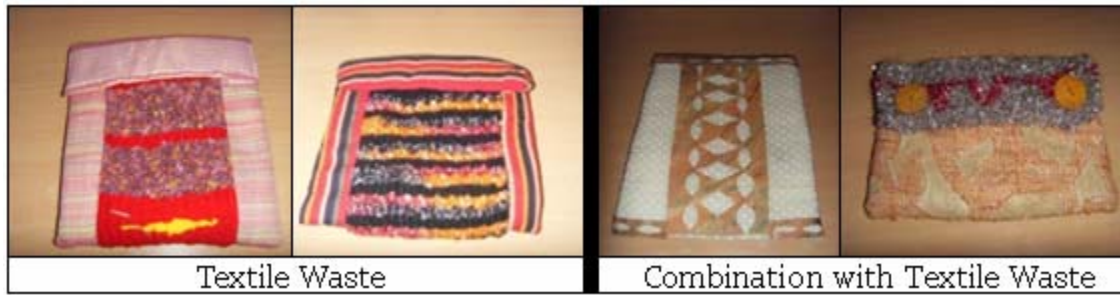
Table Mats



Pen Stands



Diary Cover



Waist Band



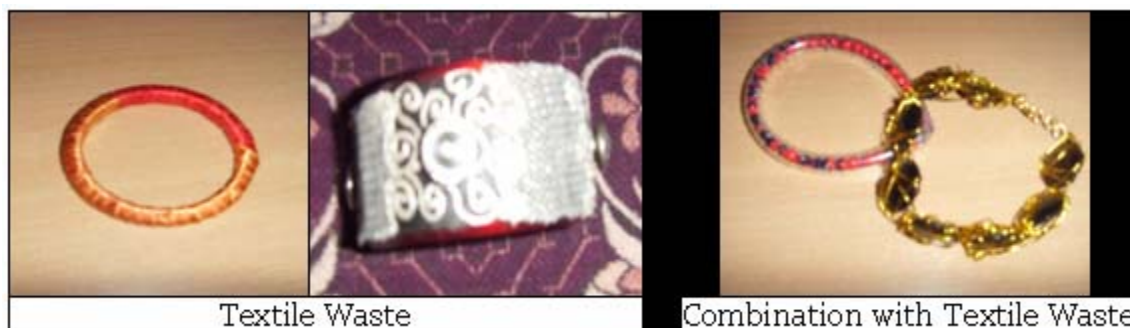
Footwear



Clutch Purse



Bangles



Results

Results of the first phase revealed that consumers were aware of the recycling of the paper and some reuse of the textiles. But making value added products from the textile waste was innovative and new concept.

From the second phase of the study data revealed that products were innovative, appealing and marketable. Consumers hesitated for the recycling of the textiles which were worn next to the skin and had a faded or worn out look. Acceptability increased with the decrease in the cost of the product as compared to the virgin product in the market.

Conclusion: The increasing volume of discarded clothing and diminishing land-fill spaces is posing serious threat to environment. The world's population is increasing according to a geometrical progression and is producing an excessive amount of waste of all kinds including textile. The problem of environmental pollution can arise in the disposal of such waste. A widespread concern is there for proper conservation of the Earth's resources and for a frugal approach to consumption. Need of the hour is to find out ways of reusing used clothing and recycling materials to reduce apparel waste. It discusses about how designers, manufacturers, retailers and consumers, all can contribute to the success of imbibing recycling into the fashion process. Designers can work on concepts of redesigning and on the technical aspects of recycling, retailers can create a potential market for reused and recycled clothing for different fractions of society and consumers need to change their attitude and open up towards use of recycled and used goods. There is need to develop global awareness and an efficient textile recycling system which can provide consumers with easy and informed choices for discarding used clothing. We need to look at this with multi pronged strategic view point and invest in four as:

- Assessment – to assess the waste being generated during and after processing and categories it into various segments of different products which can be made, simultaneously segregation and collection process need to be identified.
- Awareness – all stake holders need to be made aware how to reduce waste and segregation, collection and recycle of the generated waste.
- Action – the action for collection and utilization of linkages with users and market should be established.
- Advocacy – for inclusiveness and regulatory mechanism by government and resources for such activities need to be leveraged.

The process can be effective if everyone embraces the system of recycling and sufficient steps are taken to overcome the limitations pertaining to free flow of goods and easy disposal of recyclable materials.

Recommendations

- (i) Certain laws and regulations need to be formulated by the government which obligates the manufacturer and individuals to stop or reduce certain polluting activities.

- (ii) Waste management programme to train manufacturers towards maximum utilization of the waste would result in effective use of textile waste
- (iii) Initiatives to increase the awareness amongst the consumers regarding the use of pre-consumer and post consumer textile waste should be taken.
- (iv) Small-scale units should be set up which can produce products from textile waste and generate employment.

We can help by

- Giving unwanted clothes and accessories to needy people
- Look for recycled content in the garment you buy.
- Buy goods which you can use for longer time or for multipurpose.
- Handing down clothes to younger siblings or other family members when the child has grown out of them.
- Buy cloth wipes that can be washed and used again.

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