

Optimization of Managing Waste in Textile Industry

K. Prabhakumari¹ S.R.Tamil Selvan²

Assistant Professor, Final Year Student

Department of Apparel Manufacturing and Merchandising, NIFT-Tea College of Knitwear Fashion, Tirupur.

ABSTRACT:

Managing the resources in the field of Textile industry is the typical task. The waste from the industry should manage efficiently in the organization. Most industries in Tirupur the wastes are managed optimally by adopting certain methods or Recycling. Textile industry plays an important role in the economy of the country like India and it accounts for around one third of total export. Traditionally produced fabric contains chemical residues, used during their manufacturing. These chemical residues may evaporate in air or may absorb through our skin thus causing allergy.

In this study the researcher developed the paper structured questionnaire about the different methods and the various operations involved in the textile industry to maintain environment and discusses about the water usage, wastewater characteristic of textile industry. It also gives a brief idea about the treatment technologies for treating waste water and to manage the waste optimally in the organization.

Keywords—Waste, Textile, Management, Industry, Optimization.

Introduction

According to Today's Scenario the industries have to maintain the environment efficiently to avoid certain diseases. The textile dyeing industry consumes large quantities of water and produces large volumes of wastewater from different steps in the dyeing and finishing processes. Wastewater from printing and dyeing units is often rich in color, containing residues of reactive dyes and chemicals, and requires proper treatment before being released into the environment.



Fig-1

The toxic effects of dyestuffs and other organic compounds, as well as acidic and alkaline contaminants, from industrial establishments on the general public are widely accepted. Every year a minimum of hundred new textile products evolve with sustainability as a focal point. In an era of increased purchasing power among consumers more textiles are dumped after their life cycle, this alarming pollution of landfill is reminded to be escalating every year. This deposit in landfill can cause serious effect to the humans and ecology



Fig-2

On disposing the materials try decompose and some become successful and others end as a harmful deposit without being degraded. Decomposing of such materials release toxic greenhouse gases and are also polluting the water bodies directly and indirectly.

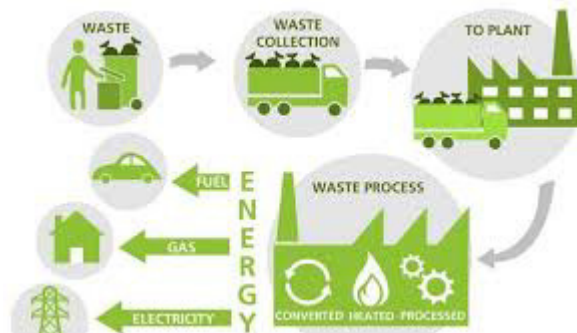


Fig-3

Scientists are finding prospective in moon and other planets after tapping of majority of earth's resources. Now, land space is reduced and valued than ever before. In this scenario, it is important for textile industry to shift to better waste management practices. It will impossible for waste impossible for dumping on landfills.

REVIEW OF LITERATURE:

Bhatia, S.C. 2007 estimated that the scouring process is carried out to remove impurities such as wax, fatty acids, oils, etc., present in the fabric. Scouring is carried out in alkaline conditions under high pressure and temperature. Alkaline waster with high BOD and COD is generated at this stage.

Denizil, A et al., (2000) explained that The textile dyeing and printing industry have been recognized as one of the most polluting industries in India, which contribute towards the pollution of the water environment. Recycling has become a necessary element, not because of the shortage of any item, but because of the need to control pollution. There are three ways to reduce pollution: (1) use of new, less polluting technologies; (2) effective treatment of effluent so that it conforms to specified discharge requirements; and (3) recycling waste several times over before discharge.

Ghosh, P and Gangopadhyay, R. 2000 observed that the textile industry comprises a diverse and fragmented group of establishments that produce and/or process textile-related products (fiber, yarn, and fabric) for further processing into apparel, home furnishings, and industrial goods. Textile establishments receive and prepare fibers; transform fibers into yarn, thread, or webbing; convert the yarn into fabric or related products; and dye and finish these materials at various stages of production.

Sule, A .D and Bardhan, M.K. 1999 said that the most practical solution for the main challenge for the textile industry today is to modify production methods, so they are more ecologically friendly at a competitive price, by using safer dyes and chemicals and by reducing cost of effluent treatment/disposal.

OBJECTIVE:

- To study about the profile variables of the respondents
- To analyse the efficiency of waste management in the organization
- To examine the factors influencing in managing waste.
- To recommend the suggestions to manage the waste optimize in the organization.

RESEARCH METHODOLOGY

In this Article , the methodology of research is organized by collecting all the details regarding the research design, data collection instrument, sampling procedure, source of the data and statistical tool are also given. Research design is purely and simply the framework or plan for a study that guides the collection and analysis of the data. The research design indicates the methods of research for gathering information.

TOOLS FOR DATA COLLECTION

A well structured questionnaire was designed to collect qualitative and quantitative data. The questions related to the objective of the study from a major portion of the questionnaire. It

mainly consist of multiple choice questions, ranking , so that the respondent can answer easily by just putting a mark on any of choice of answer furnished. The questions are arranged in an orderly way so as to provide a logical progression.

Sampling technique

In this study, The Researcher used convenient sampling. In convenient sampling, a sample is obtained by selecting convenient population elements from the entire population.

SOURCE OF DATA - PRIMARY DATA

The primary data are those, which are collected afresh and for the first time, and thus happen to be original in character. There are several methods of collecting primary data, particularly in survey and descriptive research. Some important ones are observation method, interview method, through questionnaire, through schedules etc. The data were collected through structured questionnaire.

STATISTICAL TOOLS:

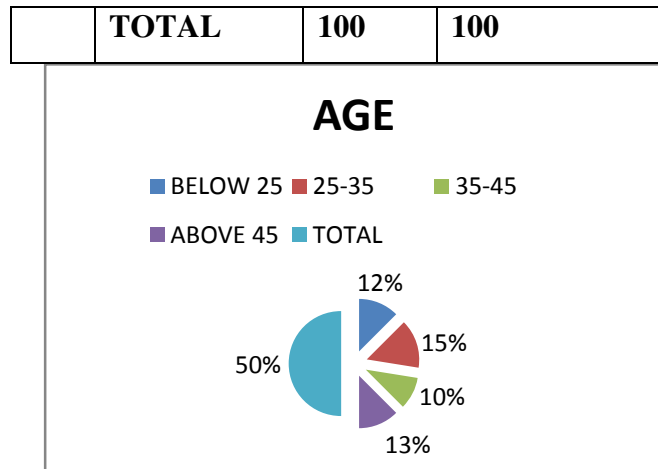
PERCENTAGE ANALYSIS:

The Percentage analysis is an effective tool to study the attributes of the respondents. Each response by the respondent to a particular statement is plotted into frequency table and quantified. The entire response to the statement is considered as 100 percent and each of the choice within the statement is measured as what percentage does it holds to the total response to that particular statement.

$$\text{Percentage of respondents} = \frac{\text{Number of respondents}}{\text{Total respondents}} \times 100$$

PERCENTAGE ANALYSIS - AGE OF THE RESPONDENTS

S.N O	AGE GROUP	TOTAL	PERCENTAGE
1.	BELOW 25	25	25
2.	25-35	30	30
3.	35-50	20	20
4.	50 AND ABOVE	25	25



INTERPERTATION:

The above table shows that 25 percent are below 25, 30 percent are from 25 to 35, 20 percent are from 35 to 50 and 25 percent are 50 and above.

SUGGESTIONS:

1. Composting

The technique is much appreciated especially in interior designing and automobile sector where use of natural fibres can also reduce the weight of the automobile and ensuring better mileage. The package textiles that are mainly focusing on research and business opportunities with eco-friendly textile materials are now into making bags that are compostable. Natural fibres with least size.

2. Regeneration

Reclaimed/recycled fibres can be used to make wiping cloth, yarnsuntwisted and re-spun into new yarn variety, mattress and wadding. Regeneration is another technique in which the fibre is regenerated from a natural source by heat and chemicals. For examples, Tencel, Lyocell, Seacell are some of the popular brands that made textile fibres from wood.

3.Non-woven technology

. In this technology, composites, which uses fibre and polymer matrix bonded under heat and pressure, to form a compressed medium that can be very much suitable for agro, build, geo, acoustics and filtration textiles. Composite technology is also advancing with the FRP (fibre reinforced polymers) that find their origin from recycled materials. Most of the thermoplastic fibres like polyester, polyamide will be melted and converted into granules for recycled fibre production.

Technical textiles

Recycled fibres are also used in automobile interiors, agro-textiles, reinforcement in geotextiles, acoustics, textiles for building construction purpose, upholstery, package textiles and food packing materials. papers. In contrast to the word upcycling, the products that are made with less value than conventional is called downcycling .

Paper making alternatives

Discussing on the possibilities of recycling old textiles, it is interesting to know, that the old textiles are used in making papers. This is a conventional way of making high quality paper. It is believed that the American currency and bond papers.

CONCLUSION

In this analysis the researcher discussed so many methods and suggestions to manage the waste efficiently. It is critical to focus on waste management in textiles much equal to inventing new products and technologies. Sustainability is the key to run a business in the modern era, especially if the company is into exporting. Discarded waste fabrics are now seen as a new resource and a wealth potential. The suggestions are given to

REFERENCES

1. Bertram RF, Chi T (2016) A study of companies business responses to apparel E-commerce's environmental impact. *Int J Fashion Design Technol Education* 11: 254-264.
2. Huang J, Zhao R, Huang T, Wang X, Tseng ML (2018) Sustainable Municipal Solid Waste Disposal in the Belt and Road Initiative: A Preliminary Proposal for Chengdu City. *Sustainability* 10: 1147.
3. Mukherjee A (2017) Clothes from plastic bottles.
4. Khalili P, Tshai KY, Kong I (2017) Natural fiber reinforced expandable graphite filled composites: Evaluation of the flame retardancy, thermal and mechanical performances. *Compos Part A Appl Sci Manuf* 100: 194-205.
5. Koch K, Domina T (1999) Consumer textile recycling as a means of solid waste reduction. *Fam Consum Sci J* 28: 3-17