E- Confidence in Textile and Clothing

By: Rena Mehta

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Introduction

Textile is a major job creator after agriculture. In fact, textile industry is shifted from developed to developing nations in Asia and Africa due to availability of cheap and skilled labor. However, textile is also the major source of pollution. Many of the rivers have been polluted by the textile effluents. There is a lot of air pollution caused by textile industry. In fact, recently Copenhagen Summit was held and attended by 194 nations. The main focus was how to reduce the carbon emission. India is 4^{th} largest as per as emission of carbon is concerned.

E-Confidence "It is nothing but a production of textile goods with minimum damage to environment". The textile produced should be eco-friendly to consumer causing no health hazards. In near future, consumers will be prepared to pay extra for eco-friendly produced textiles to save the mother earth.

Textile Wet Processing Effluent:

Textile wet processing is one of the major water consumer. Large quantity of water is required for wet processing of textiles and as many as 200 -300 liters of water per Kg. of fabric are used depending upon the extent of wet processing.

- Wastewater from Bleaching may contain caustic soda, peroxide, different kinds of an-ionic stabilizers and detergents;
- Mercerizing effluent may contain spent caustic soda as well as some intermediate reaction product of wetting agents and detergents
- Wastewater from Dyeing & Printing may contain residual of reactive dyes and chemicals used as fixer, binder, thickener, etc.;
- Color Kitchen water may contain urea, Na_2CO_3, ammonium hydroxide and some other chemicals;
- Boiler generates significant amount of wastewater, which is high in TDS, sludge and chemical residuals;

- Wastewater from the textile units with Screen Development Section and Screen Stripping Area contain high values of chromium, COD and Sulphate;
- Wastewater from the Laboratory is high in BOD and COD.

If these wastes are discharged untreated into a river, lake or even on ground, they will pose serious ecological and pollution problem.

Pollutants at Various Stages of Processing:

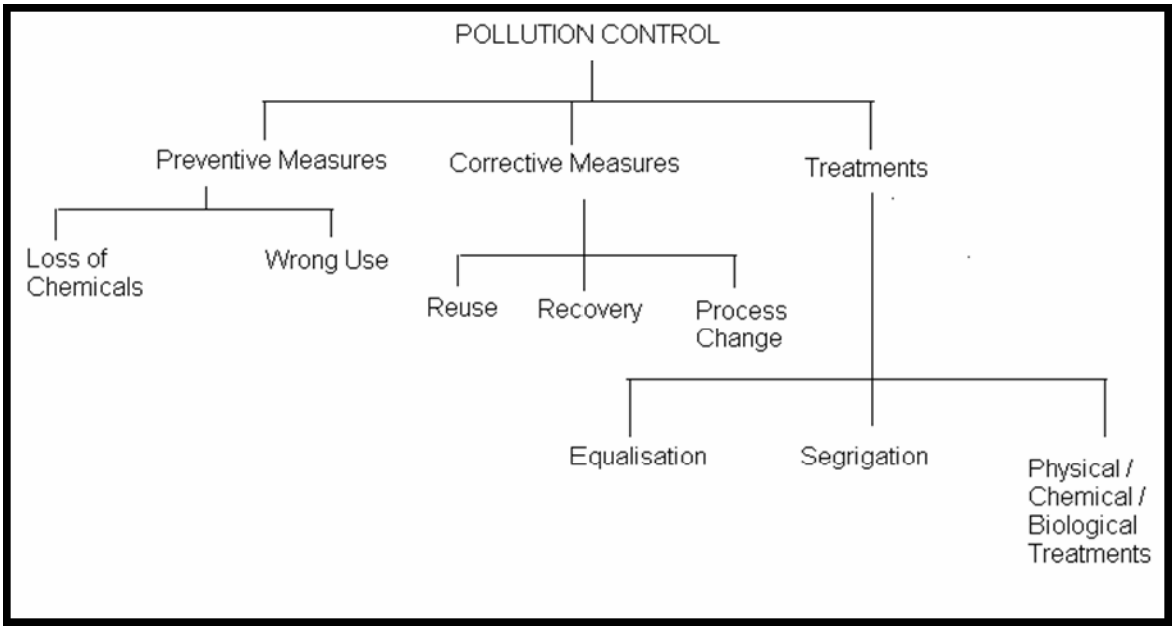
Unit process	Possible pollutants	Nature of effluents
Desizing	Starch, glucose, CMC, PVA, resins, fats and waxes not exert a high BOD	Very small volume, High BOD: (30 – 50% of total) CMC and PVA
Kiering	Caustic soda, waxes and grease, soda ash, sodium silicate and fragments of cloth	Small volume, strongly alkaline, dark color, high BOD: (30 % of total)
Bleaching	Hypochlorite, chlorine, caustic soda, hydrogen peroxide, acids	Small volume, strongly alkaline, low BOD: (5 % of total)
Mercerization	Caustic soda	Small volume, strongly alkaline, low BOD: (less than 1% of total)
Dyeing	Dyestuff, mordant's and reducing agents like sulphides, acetic acid and soap	Large volume , strongly colored, fairly high BOD: (6% of total)
Printing	Dyes, starch, gums oil, China clay, mordant's, acids and metallic salts	Very small volume, oily appearance, fairly high BOD
Finishing	Traces of starch, tallow, salts, special finishes, etc.	Very small volume, less alkaline, low BOD

Practical approach towards water pollution control:-

For efficient control of water pollution in textile industry, a practical approach is to take the following necessary steps.

1. Reduction on the waste volume.
2. Reduction in concentration of chemicals used and thereby reduction in their harmful effects.
3. Reduction in waste concentration by recovery and reuse.
4. Reduction of waste concentration by chemical substitution.
5. Reduction of waste concentration by process modification.
6. Segregation of drains.
7. Devising suitable treatment based on point of ultimate disposal, to meet the requirement.

The above mentioned measures can be achieved in practice as follows:-



Air Dye® Technology: Air Dye® technology manages the application of color to textiles without the use of water. It is today's sustainable alternative to traditional dyeing and decorating processes. As the name suggests, Air Dye uses air to dye fabric, bypassing the liquid state of dye altogether. Here's a basic breakdown of the technology: Instead of mixing dye with water and placing it on the surface of a fabric, our process transforms dye from a solid to a gas, eliminating the liquid state and therefore the need for water. When synthetic fabric is exposed to a certain temperature, the molecules in the fiber begin to expand. In this porous state, gaseous dye enters the space in between fibers and when fabric cools the dye is trapped in the fiber permanently.

REDUCES	For Prints	For Solid Colors
➢ Water Use	95%	29-88%
➢ Energy Use	86%	64%
➢ Global Warming Potential	84%	60%

E-Control Concept:

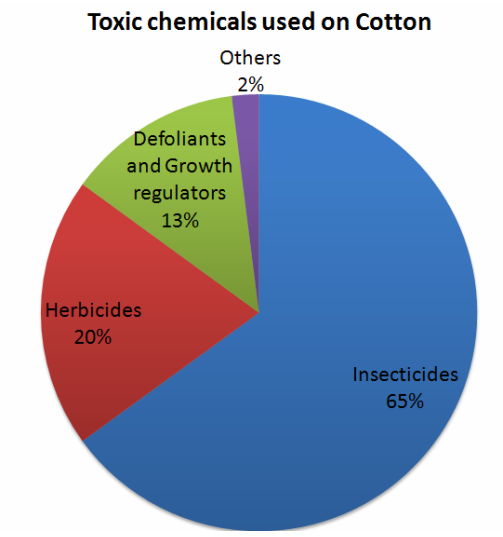
The concept for simple, rapid, innovative and economical continuous dyeing process with minium chemical usage was developed in mid nineties by A,Monforts & BASF. Innovative because the process utilises physical laws of water evaporation to provide optimum temperature and moisture conditions in the THERMEX Hotflue drier. This is ideal for efficient fixation of reactive dyes

ENVIORNMENTAL BENEFITS:

1. No urea, no salt
2. Low caustic soda, no sodium silicae.
3. Low consumption of chemicals than other dyeing process.
4. Thus , eco-friendly process.

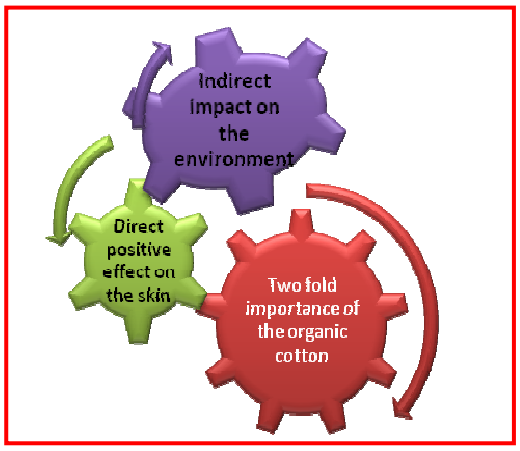
ORGANIC COTTON

- Many chemicals used in conventional farming were first developed for warfare.
- A Source said 25 million people world wide is poisoned by pesticides every year.

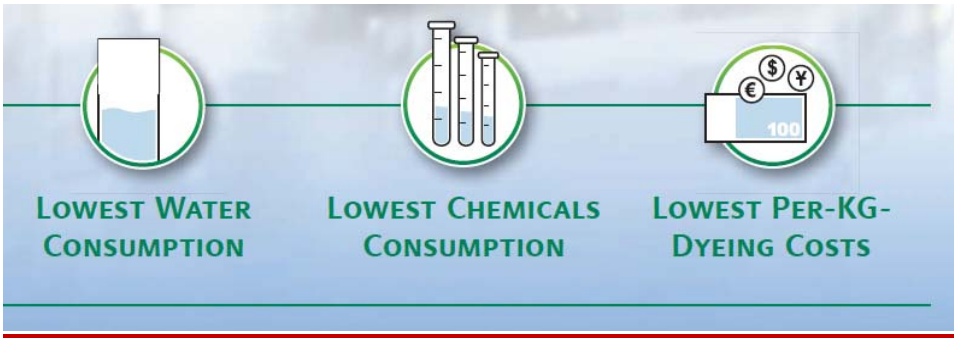


- 25% of the pesticides and fertilizers used in the world are sprayed in conventional cotton crops.
- Over 0.75 kg of toxic chemicals is used to grow the cotton needed for a conventional cotton sheet set, about 0.5 kg to make a T-shirt and pair of jeans.
- The influence of different toxic chemicals is beyond limits. The pie diagram in the following page will make you clear about that.

Organic clothing is clothing made from fibers that are grown without the use of pesticides, herbicides, insecticides, chemical fertilizers or other chemicals. Truly organic fibers are processed without using harsh dyes, chemicals or mixing the organic cotton fibers with the non organic cotton fibers.



AIRFLOW DYEING MACHINE



- Unlimited flexibility with regard to all fibres (except pure wool) and fabrics weight classes between 50–800 g/m.
- The lowest liquor ratio on the market: man-made fibres approx. 1:2, natural fibres 1:3 to 1:4, depending on the article and structure.
- Energy savings of approx. 40% compared to hydraulic jet-dyeing machines.
- A reduction in the overall process time of around 25%.
- Lowest water consumption and effluent represent an ecologically sound solution.

BIOPHYL GARMENTS

Polyester fibers made with renewable resources, combining sustainability with the performance and easy-care benefits of synthetics. By replacing traditional petrochemicals with renewable resources and biological processes, we are one step closer to building a renewable economy. Garments unite the comfort stretch and easy-care of elastic Polyester with the softness usually offered by Nylon products.

Bioinnovation for a Sustainable Textile Industry

Novozymes, have always been committed to developing sustainable enzymatic solutions for forward-thinking companies – the textile industry is no exception. Although washing and drying clothes may consume a lot of energy and water, there are many sustainable contributions to be made in the textile industry as well, before sending clothes off to the consumer. Already today, bioinnovation from Novozymes can enable such processes, but their solutions are often used as stand-alone products.

Enzymatic Solutions – Nurture by Nature:

They performed trials using the best available technology, bioinnovation and chemicals, on knitted fabric, which was first processed with bioscouring and low-temperature bleaching. During the dyeing process new combi concept was applied, which removes residual hydrogen peroxide and then biopolishes fabrics during dyeing. Finally, biosoaped the fabric, using enzymatic rinse solution, and as a result produced what we coin ‘the elemental T-shirt’, created with nurture by nature.

Amazingly, initial lifecycle analysis conducted by Novozymes indicated a possible savings of 80,000 litres water and 700 kilos of CO_2 per ton of knitted fabric, during the process of creating the most sustainable garment thinkable. It also showed reduced process time of 20-25%.

Playing Safe: Sifting the Standards

Boosting your green credentials with environmentally friendly textile certification has never been easier, with a wealth of standards on offer, but the path to choosing the right one can be difficult to navigate. The desire for sustainable textile production has gained momentum in recent years and, as a result, there has been a subsequent proliferation of industry and supplier-driven standards. While no-one can deny the importance of initiatives targeted at energy efficiency, waste recycling and renewable energy to reduce the impact of textile production on the environment, eco labels are also seen as an significant marketing tool, used to add another dimension to a product offer in an increasingly competitive market. Consumers have a growing expectation that the textiles they buy are produced in an environmentally friendly way, but the sheer scale of certification available can be confusing for everyone throughout the supply chain, as each of the textile standards differs in its approach. Some of the most common certification systems include:

Oeko-Tex

The Oeko-Tex Standard 100 is a globally uniform testing and certification system for textile raw materials, intermediate and end products at all stages of production and gives assurance that these products contain no substances harmful to health. Introduced in 1992, the basic concept is to include, in the testing scheme, all harmful chemicals that may be found in textile and related products.

GOTS (Global Organic Textile Standard)

GOTS aims to define requirements to ensure the organic status of textiles, from the harvesting of the raw materials, through

environmentally and socially responsible manufacturing up to labelling, in order to provide a credible assurance to the end consumer. The standard for organic textiles covers the production, processing, manufacturing, packaging, labelling, exportation, importation and distribution of all natural fibres. The standard provides for two label grades: 'organic' and 'organic - in conversion', or 'made with x% organic materials' and 'made with x% organic - in conversion materials'. The expression 'in conversion' denotes growers awaiting formal certification. Ninety-five percent or more of the fibre content of the products, excluding nontextile accessories, must be of certified organic origin or from an 'in conversion' period. Up to 5% of the fibre content may be made of non-organic fibres, including regenerated and synthetic fibres.

Bluesign

The bluesign standard is a guarantee that, right along the entire production chain, products only contain components and pass through processes that are harmless to people and the environment. Rather than testing finished products, bluesign guides the selection of components and processes to ensure they meet specific criteria before production begins, which the Swiss-based company behind the standard maintains is the most cost-effective and efficient method.

The European Eco Label

The European Eco Label, the 'flower', is a Europe-wide symbol for products that have been checked by independent bodies for compliance with strict ecological and performance criteria, for 26 different product groups. The 'flower' is a voluntary tool that promotes environmentally sound goods and services.

CONCLUSION

India has promised to meet for reduction in carbon emission by year 2020. If we failed to do it, it will affect on India in two aspects. Firstly, developed nations may ban the import from India

which will hit badly our economy. Secondly, if we continue to manage badly, our environmental aspects will reflect agricultural output due to improper and uneven rainfall. So, it is a better to start now to produce E-Confidence in textiles for better leaving conditions.

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