ECO-LABELLING AND TEXTILES

- A Bibliography

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Introduction

Textile is a part of the human needs. Environmental impacts occur at every stage of the life cycle of a product. Going “green” is the growing trend in all industries. The textile industry is one of the most ecologically harmful industries in the world.

Some environmental harmful stages of textile industries are fibre growth with herbicides or pesticides, dyeing with toxic chemicals, emissions to air and water, toxicity potential of processing wastes and area usage of the textile drains. The decisive factors, any material as environmental friendly are renewability, ecological path of the resource, usage of chemical to grow or to process it to make it ready for use.

Importance of eco labeling and its philosophy in the life is increasing across the world. Eco-labels inform consumers regarding products' environmental friendliness. It has emerged as a world-wide phenomenon because of increased environmental awareness and concern. Textile eco-labels, which are also available worldwide, are intended to help consumers make decisions regarding textile products with environmentally friendly attributes.

With increasing concerns regarding the effect the textile industry is having on the environment, more and more textile researchers, producers and manufacturers are looking to biodegradable and sustainable fibres as an effective way of reducing the impact textiles have on the environment. The emphasis in biodegradable and sustainable fibres is on textiles that are beneficial by their biodegradation and come from sustainable sources.

The eco-label is one of the indicators that quantify sustainable consumption and production, and ultimately, sustainable development. Eco-labelling is only one type of environmental labelling, and refers specifically to the provision of information to consumers about the relative environmental quality of a product.

Many institutes, research scientist, NGOs, international and national organisations have undertaken research to determine what the effects of the textile process are on the environment and health of consumers.

In order to fill the information gap on the subject “Eco-label and Textile” the CERC-ENVIS Centre has collected information from secondary sources. It is bringing out in an annotated bibliography. This bibliography will be useful as background information in research projects, as reference tools and information tools. It will make readers aware of recent research on the subject to facilitate the writing of reports or publications. It will be a good collection for libraries. It will make librarians or information officers aware of existing material on the subject. It covers the research articles and books indexed from 1998 to 2017.

We welcome comments and suggestions from users to enable us to improve.

Textiles and Clothing Sustainability: Sustainable Technologies

Subramanian Senthilkannan, Muthu Editor

Singapore: Springer, 2017, VI, 83p.

ISBN: 978-981-10-2473-3 | 978-981-10-2474-0

This is the first book to deal with the innovative technologies in the field of textiles and clothing sustainability. It details a number of sustainable and innovative technologies and highlights their implications in the clothing sector. There are currently various measures to achieve sustainability in the textiles and the clothing industry, including innovations in the manufacturing stage, which is the crux of this book.

Keywords: Sustainable Textiles, Textile, Clothing, Standard, Label, Eco-label

From a Systematic Literature Review to a Classification Framework: Sustainability Integration in Fashion Operations

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Sustainability, Volume 9, No. 1, 2017, 30p.

ISSN: 2071-1050

Sustainability management in global fashion operations is an area of growing concern. This can be seen by the number of research articles and industrial reports published. To establish a further debate, this study pursues two objectives. Firstly, it provides a systematic literature review pertaining to environmental and social sustainability management in fashion operations by encompassing 38 research articles indexed in Scopus from 2006 to 2016. Secondly, it presents a classification framework in which sustainability practices are categorized according to a three-dimensional concurrent engineering framework by focusing on product, process and supply chain levels. Results address that the breakdown of environmental and social sustainability practices identified in earlier research is not homogenous. For instance, some critical social aspects such as human rights are not widely covered in production processes. Similarly, serious environmental aspects such as biodiversity are not entirely focused on at the chain level. Last, this study concludes with a framework illustrating strategic priorities to be taken to advance sustainability in fashion operations.

Keywords: Eco-label, Textile, Supply Chain Management; Fashion Industry; Three-Dimensional Engineering Framework; Fashion Operations; Environmental Sustainability; Social Sustainability; Classification Framework; Systematic Literature Review

Factors influencing consumers' purchase intention of green sportswear

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Fashion and Textiles, Volume 4, No.2, 2017, 17p.

ISSN: 2198-0802

The purpose of this study was to examine consumers' purchase intention for green sportswear by investigating the effects of their expectation, perception, subjective norm, perceived behavior control, and attitude on purchasing green sportswear. The study further investigated differential influences towards purchase intention for green sportswear between non-green and green product users. A within-subjects research design was used to empirically test our conceptual model, which was expanded from the theory of planned behavior by adding two additional predictors (expectation and perception). An online survey was conducted with a nationwide convenience sample of U.S. consumers whose ages ranged from 18 to 74 years, and a total of 542 usable responses were obtained. The results of the overall model testing confirmed the significant effects of expectation, perception, subjective norm, and attitude on consumers' purchase intention for green sportswear. The findings from the comparative model testing indicated significant differences between non-green and green product users in terms of the effects of expectation and perceived behavior control on participants' green sportswear purchase intention. The outcomes of this study offer useful insights for developing effective strategies for consumers to generate more positive perception, expectation, and attitude towards purchasing green sportswear. This study also suggests potential ways for apparel retailers to develop effective marketing strategies for this sportswear segment to satisfy the values of potential customers.

Keywords: Green sportswear, Expectation, Perception, Purchase intention, Sustainability, Textile, Eco-label

Antecedents to organic cotton clothing purchase behaviour: study on Indian youth

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Journal of Fashion Marketing and Management: An International Journal, Vol. 21 Issue 1, 2017, 370 – 382p.

ISSN: 1361-2026

This study has examined the influence of past environment friendly behaviour, peer influence, and green apparel knowledge in the context of organic clothing purchase behaviour. Data was collected by means of a survey carried out in three major metropolitan cities and a sample of total 889 respondents was collected who were college students in India. The study found that past environmentally friendly behaviour influenced Indian youth's organic clothing purchase behaviour. Green apparel knowledge and peer influence, interestingly, had no impact on organic clothing purchase behaviour. The

findings can be used by organic apparel manufacturers in marketing organic clothing brands to the Indian youth. Organic clothing can be positioned to emphasize green values and distinct lifestyle for environmentally conscious youths.

Keywords: Organic Cotton, Textile, Ecolabel, Organic Label, Green Apparel

Sustainable Defence Textiles

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Textiles and Clothing Sustainability, Springer: Singapore, 2017, 23-65p.

ISBN: 978-981-10-2473-3 | 978-981-10-2474-0

Business organisations need to operate sustainably for the global well-being. “Do unto the sustainability as you would have it do unto you” is the “crux”, which has to vibrate in every individual's soul of Textiles and Clothing (T&C) stakeholders to ensure that “Textile world meets the needs of the present without compromising the ability of future generations to meet their own needs”. This is emphasised through an overview, life cycle, sustainable/unsustainable defence T&C features, sustainable procurement practices, and twenty-first-century realities and best practices. The generic viewpoints discussed are derivable to suite defence T&C. This is a chapter of the book “Textiles and Clothing Sustainability: Sustainable Technologies” edited by Subramanian Senthilkannan Muthu.

Keywords: Defence Sustainability, T&C, Life cycle Procurement Techniques, ISO, UNEP, Best practices, Standards, Labels, Eco-label, Textile

The Public-Private Distinction in Global Governance: How Relevant is it in the Case of Voluntary Sustainability Standards?

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The Chinese Journal of Global Governance, Volume 3, Issue 1, 2017, 1-26p.

ISSN: 2352-5193 | 2352-5207

Whether global rules and standards originate from a public intergovernmental body or from a private organization has significant implications for the applicability of international law such as WTO law. However, how sensible is this distinction between public and private? This paper argues that the distinction between public and private standards only makes sense if one looks at the legal status of specific standard-setting organisations. However, the distinction between public and private begins to blur and fade if one switches the unit of analysis. First, the paper shows that private standards are often based on internationally

agreed (public) rules and norms. Second, the paper argues that governments on purpose or in the design of their policies take these private initiatives on board. Hence, they become an integral part of 'public' governance. These arguments are developed on the basis of an analysis of Voluntary Sustainability Standards (VSS).

Keywords: Voluntary Sustainability Standards, Certification, International Trade and Global Governance, Standards, Eco-label, Fairtrade, Textile,

Eco labelling

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fibre2fashion.com, 2017, 4p.

This paper details the objectives of eco-labelling and its role in textile. It discusses the different eco-labelling schemes both in developed and developing countries. It describes the different government sponsored schemes and private labelling schemes. It provides the information on national and international standards. This paper can be viewed in http://www.fibre2fashion.com/industry-article/2742/eco-labelling .

Keywords: Textile, Eco-label, ISO 14021, Environmental Labeling, Eco-label, Trademarks

Sustainable and ethical manufacturing: a case study from handloom industry

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Textiles and Clothing Sustainability, 2017, Volume 3, Number 1, 1p.

ISSN: 2197-9936

Global fashion industry has bitterly evidenced the social and environmental implications associated with fast production cycles, overuse of resources, waste generation, environmental pollution and unethical labour conditions. Growing consumer awareness regarding social and environmental impacts of fashion products has led to create a new marketplace for sustainable and ethical products. This paper highlights craft practice as one of the potential avenues for achieving sustainability within the fashion industry. Through a case study drawn from handloom industry, this paper explores a manufacturing approach that is committed to fair-trade principles and designed to prevent waste. We argue that this study reveals a business model that could positively contribute towards generating employment opportunities and sustainable household income for the rural community. We conclude the paper by highlighting that this type of a fair trade and environmentally conscious manufacturing process could address the three pillars of sustainability: social, economic and environment. Findings of the study invite manufacturers to revisit and redesign current fashion production systems, especially when waste and labour issues are hindering the sustainability.

Keywords: Fair trade, Zero waste, Sustainability, Fashion, Handloom textiles, Eco-label, Textile

Sustainable supply chains: 9 propositions for greater responsibility

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eco@work, Issue: January 2017, 4-7p.

ISSN: 1863-2025

The Oeko-Institut is campaigning for sustainable supply chains and has drawn up nine propositions calling for greater responsibility. They are addressed not only to businesses but also to politicians, whose task it is to establish appropriate conditions, set standards and monitor compliance. The nine propositions emerged out of the IMPACT research project. The first proposition emphasises the scope of corporate responsibility (CSR). The second preposition is certification schemes and eco-labels which are an important step on the way towards more sustainable supply chains – and better guidance for consumers. The third preposition CSR and regulation are not an either/or option but complementary to each other. These prepositions are for sustainable supply chains. Researchers are investigating the impacts of different sustainability instruments for companies, products and services.

Keywords: Textile, Supply chain, Sustainability, Eco-label, Corporate Social Responsibility

Consumers' understanding and use of textile eco-labels during pre-purchase decision making

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Journal of Family Ecology and Consumer Sciences, special edition, 2016, 1-19p.

ISSN: 0378-5254

Eco-labels inform consumers regarding products' environmental friendliness and emerged as a world-wide phenomenon because of increased environmental awareness and concern. Textile eco-labels, which are also available in South Africa, are intended to help consumers make decisions regarding textile products with environmentally friendly attributes. This study explored consumers' understanding and use of textile eco-labels during pre-purchase decision-making in a South African context. Respondents were recruited through snowball sampling (N=234) to complete a self-administered online questionnaire. Results suggested that respondents were environmentally conscious only to some extent and that they objectively understood eco-textile products, but that they did not understand textile eco-labels or label information regarding organic cotton production processes. Even though most respondents indicated that they use and purchase textile eco-labelled products and are willing to pay more for such products, price and unavailability were barriers restricting some respondents from including such products in their general purchase choice range. Findings encourage consumer education regarding textile eco-labels and environmental aspects, particularly among certain demographic subgroups in South Africa.

Keywords: Eco-label, Textile, Environmental friendliness, Textile eco-labelled products

False promise or promise with a fault: deciphering the effectiveness of eco-label governance in the German textile market

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LUCSUS (Lund University Centre for Sustainability Studies), Box 117, 221 00 Lund, Sweden

Master Thesis Series in Environmental Studies and Sustainability Science (Lund University Centre for Sustainability Studies), 2016, 55p.

An understanding of the inherent effectiveness-potential of environmental product-labels is important because of the growing presence of these labels as governance regimes, especially in the textile market. The proper governance of eco-labels has the potential to assist with the transformation to more environmentally friendly consumption, but not enough is known about the inherent qualities that make a label effective or ineffective in communicating scientific environmental information. In this thesis, I study eco-labels and their potential effectiveness as a governance mechanism towards more sustainable consumption. Specifically the study encompasses six labels present in the German textile market with the aim to evaluate their inherent effectiveness- potential in conveying environmental information to consumers. Empirical material was constructed by rating

each of the four indicators: credibility, salience, legitimacy and awareness, on a Likert scale for each eco-label. The data to inform this rating resulted from a review of the available scientific and organizational literature. The results have been visualized using data tables and radar diagrams. The results of this study accumulate to show that the eco-labels considered here simply tell an ineffective story to the consumer! They have a low overall effectiveness-potential in conveying information regarding the sustainability of textiles. No label considered in this study attained more than 67% of its total potential effectiveness showing that there is a large gap between the prospects of this governance scheme and the way it is currently functioning. The lowest overall performer is the Fairtrade® textile label. The Non-State-Market-Driven (NSMD) governance system has a series of shortcoming that are partly responsible for this poor performance. A revised, theoretical governance approach combining decentralization theory with incorporated trans-governmentalism is proposed with the intent to maximize the positive and minimize the negative qualities of the NSMD model. Furthermore, this study shows that the current approach to eco-labeling falls short in the knowledge creation process for the consumer. This is due to the lacking cohesion of the message they portray. This study has addressed a knowledge gap that exists within the field of product labeling. Simultaneously this study identifies key shortcomings that eco-labeling organizations can take advantage of to enhance their effectiveness and increase sustainability in the textile market.

Keywords: Decision Making, Governance, Product Certification, Textiles, Eco-Label, Environmental Label, Sustainability Science, Likert scale

Ethical Textile Consumption: Only a Question of Selflessness?

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GfK Marketing Intelligence Review, Volume 8, Issue 1, 2016, 52–58p.

ISSN: 1865-5866

When it comes to purchase decisions for fair-trade clothing, there seems to be a gap between actions and words. Only few people buy fair trade despite stating moral concerns. Based on a survey of German consumers and the results of a behavioral economic game, the article presents strategies to minimize the gap identified between the willingness to purchase and the moral standards that many consumers set for themselves. The data suggests several consumer types and provides a few promising starting points for strategies that are not based on selflessness but rather generate more tangible benefits for the individual consumer groups. At least three of five consumer types or two-thirds of the consumers may constitute possible target groups according to the findings.

Keywords: Fairtrade, Clothing, Eco-Labels, Buying Motives, Consumer Typology, Dictator Game, Behavioral Economics, Textile

Effect of knowledge on decision making in the context of organic cotton clothing

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International Journal of Consumer Studies, Volume 40, Issue 1, January 2016, 66–74p.

ISSN: 1470-6431

This research was designed to study whether consumer knowledge on organic cotton and relevant issues influences attitude toward and price acceptance of organic cotton clothing. The effect of consumer knowledge was also studied on the way consumers use product label information in purchasing organic cotton clothing. An online survey was developed to measure the variables including experimental choice-based conjoint models for mandatory and auxiliary label specifications. Four hundred ninety-eight people completed the survey. The results indicated that moderately and highly knowledgeable participants were more willing to buy organic cotton clothing at higher price points and they had more positive attitudes toward organic cotton clothing than low knowledgeable participants. The results suggest that differentially knowledgeable consumers may attend to different types of information provided on product labels to evaluate organic cotton apparel products. Providing product-related information on product labels is essential; however, providing additional information on the benefits of using organic cotton and socially responsible business practices may improve consumers' knowledge and acceptability of organic cotton apparel products.

Keywords: Consumer Knowledge, Decision Making, Organic Clothing, Label Specification, Organic Label, Eco-Label, Textile

Influences of Sustainability Labels on Fashion Buying Behaviour – A Study on the Example of Fair Trade in Germany

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International Journal of Business Administration, Volume 7, No. 4, 2016, 11-32p.

ISSN: 1923-4007|1923-4015

The purpose of this paper is to find out the influences of sustainability labels on fashion buying behaviour. Despite key information about Fair Trade is provided in all stores of the sample company, customers seem not to be aware of the Fair Trade concept. Therefore this paper aims to give recommendations for a fashion retailer in terms of elucidation about Fair Trade by answering the following research questions: Which influences do sustainability labels wield on customer's buying behaviour? Are consumers of textile products aware of the function and backgrounds of the Fair Trade label? Design/methodology/approach – A paper-based questionnaire was administered to 128 customers of a German fashion retailer “Adler Modemärkte AG” in four city stores from which 127 were correctly completed. Additionally an adjusted self-completion questionnaire administered to 50.000 customers online from which a total of 1.712 was correctly completed. Descriptive analysis and cross-tabulations were applied to abstract

the main research findings and evaluate the hypotheses. Findings – Key findings suggest that Adler should either enhance their communication strategy regarding Fair Trade or remove Fair Trade products from the assortment, as the majority of respondents are not aware of Adlers` Fair Trade products. The Fair Trade label could neither be identified as consumer-barrier nor sales support. Further findings revealed participants have more knowledge about Fair Trade than initially assumed. Research limitations/implications – Majorly women aged between 56 and 75 participated in the survey. Findings are limited to geography, the target group of the fashion retailer Adler, gender, age group and the research method questionnaire.

Keywords: Fairtrade label, Eco-label, Textile, Sustainability Label, Fashion Industry, Apparel

Role of ecolabeling in reducing ecotoxicology

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Ecotoxicology and Environmental Safety, Volume 134, Part 2, December 2016, 383–389p.

ISSN: 0147-6513

Ecolabeling helps consumers to select environment friendly products, while meeting high demands on occupational health, safety, and usability. Ecolabeling undertakes cradle-to-grave approach which helps in minimizing the toxicological impacts at every stage of the product life cycle. The ecolabeling procedure calls for substitution or reduction of hazardous substances thereby reducing the toxicity caused due to these chemicals. China, Japan, Australia, European Union, and Nordic countries are leading in the race of awareness and implementation of ecolabeling schemes. In India, the ecolabeling scheme (Ecomark) was initiated in 1991. The Ecomark scheme lacked adoption of the green marketing principles and thus failed to create an impact. This study presents an overview of ecolabels in European Union, Nordic countries, Germany, China and India. Furthermore, it assesses the awareness of ecolabels among the retailers and traders of environment friendly products in India through a survey. The study highlights that the ecolabels are a success in most of the countries studied and are applied across a range of industrial sectors. The survey is administered to 80 retailers and traders of stores selling environment friendly products across different Indian cities. A correlation is established with the variables identified. The survey results indicate that although the retailers and traders of environment friendly products have low awareness of the ecolabels on environment friendly products, they are taking considerable efforts to promote and deliver environment friendly products to consumers. Large-scale awareness drives initiated by the Ministry of Environment, Forests & Climate Change permeating at grass root levels with the involvement of stakeholders could prove beneficial for promotion of the ecolabeling schemes.

Keywords: Eco-label, Ecomark, Green procurement, Environment friendly products, Textile

Sustainability in Fashion: The Fact book

Hakan Karaosman

Ph.D. Researcher - Sustainability and Industrial Management, Milan Area, Italy

2016, 28p.

This publication aims to display environmental and social impact generated by the fashion and textile industry. The overall goal is to provide a foundation for a rigorous discussion in order to reach a successful fashion industry through sustainability. How planet and people can play a mutual role to reach sustainability. International unions and non-governmental organizations work to mitigate the negative environmental and social impact.

Keywords: Apparel and Textile**,** Eco Textile, Sustainability, Fashion and Textile

Chinese Students' Knowledge of Environmentally and Socially Sustainable Apparel and Sustainable Purchase Intentions

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International Journal of Marketing Studies, Volume 8, No 3, 2016, 12-21p.

ISSN 1918-719X|1918-7203

Although many studies have focused on the relationship between consumers' purchase intentions and their knowledge and attitudes of socially and environmentally responsible issues pertaining to the apparel and textiles (AT) industry, few studies have focused on consumers outside the US and UK. Therefore, the purpose of this study was to better understand the sustainability knowledge, attitudes, and purchasing intentions of Chinese consumers. A paper questionnaire consisting of approximately 80 questions and five scales was given to 52 Chinese undergraduate students enrolled in a course at a university located in the Zhejiang province of China during the summer of 2015. As a result of the data analysis, the Chinese students were much more informed of environmental issues within the AT industry as compared to issues of social responsibility, yet also reported strong attitudes regarding the treatment and safety of workers in AT production and how these issues might influence their purchasing intentions.

Keywords: Chinese consumers, sustainability, apparel, social responsibility, purchase intentions, environmental responsibility, eco-friendly

Roadmap to Sustainable Textiles and Clothing: Environmental and Social Aspects of Textiles and Clothing Supply Chain

Subramanian Senthilkannan Muthu, Editor

Singapore: Springer Science+Business Media, 2015, 196p.

ISBN: 9812871640|9789812871640

This book covers the elements involved in achieving sustainability in textiles and Clothing sector. The chapters to be covered in three volumes of this series title cover all the distinctive areas earmarked for achieving sustainable development in textiles and the clothing industry. This second volume deals with the measurement of environmental and societal impacts across the textiles and clothing supply chain. It addresses this important aspect in a comprehensive way including the overall picture of environmental and societal impacts of textiles and clothing supply chain, environmentally sustainable clothing consumption, emerging green technologies and eco-friendly products for sustainable textiles, etc. This volume has a dedicated place to deal with the consumer phase impacts in the life cycle of clothing products, biodegradation of textile products, sustainable business development and its implications in textile sector.

Keywords: Eco-labelling, Environmentally Sustainable Clothing, Sustainable textiles, Textiles and the clothing industry

The heuristic-systemic model of sustainability stewardship: facilitating sustainability values, beliefs and practices with corporate social responsibility drives and eco-labels/indices

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International Journal of Consumer Studies, Volume 39, Issue 3, May 2015, 249–260p.

ISSN: 1470-6423

This study tests consumers' systematic conjunction of sustainability values, beliefs and practices, and examines the heuristic influence of sustainability stewardship on the consumers' VBN framework using a framework from the heuristic-systematic model and the value-belief-norm (VBN) theory. In this study, sustainability stewardship within the textile and apparel industry refers to approaches that can facilitate the corporate social responsible (CSR) drive and eco-labels/indices in corporate sustainability practices. Data from 239 US college students were analyzed using a structural equation modeling method. The findings confirmed that only the CSR drive is significant as heuristic sustainability stewardship in facilitating the consumer's systematic process in the VBN framework, while eco-labels/indices do not moderate consumers' sustainable practices. In particular, the current CSR drives in the textile and apparel industry strengthen consumers' values in the altruistic, self-enhancement and biospheric dimensions, and, further, lead to the sustainability practices of eco-citizenship, green consumption and green product purchasing, through the mediation of pro environmental belief. Comprehending these dynamics can empower marketers and researchers to devise pertinent ideas and practical

applications of sustainability stewardship to academia and to the textiles and apparel industry.

Keywords: Corporate Social Responsibility, Eco-Label/Index, Heuristic-Systematic Model, Sustainability Stewardship, VBN Theory, Textiles and Apparel Industry, Eco-Label

Traceability the New Eco-Label in the Slow-Fashion Industry?—Consumer Perceptions and Micro-Organisations Responses

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Sustainability, Volume 7, 2015, 6011-6032p.

ISSN: 2071-1050

This article focuses on eco-labels from the point of view of consumers and experts/owner-managers of micro-organisations. The analysis maps the 15 most common standardisations within the UK's fashion industry and elaborates on their commonalities and differences, before exploring the perceptions held by both consumers and micro-companies. This paper presents preliminary findings of a wider research project with emphasis on the potential for future research and marketing implications. The study is interpretative in nature and provides detailed results that contribute to an understudied area. It proposes for future research to investigate the need for a one-fits-all label in the fashion industry itself, as well as issues of design relating to the overall decoding mechanism of labels from the consumer side.

Keywords: Slow-Fashion, Eco-Label, Micro-Organisation, Perceptions, Associations

Handbook of Life Cycle Assessment (LCA) of Textiles and Clothing

Subramanian Senthilkannan Muthu, Editor

Cambridge:Woodhead Publishing, 2015, 400p.

ISBN: 0081001878|9780081001875

It is a comprehensive examination of the life cycle assessment process and its application in the textile and clothing industries. Life cycle assessment (LCA) is used to evaluate the environmental impacts of textile products, from raw material extraction, through fibre processing, textile manufacture, distribution and use, to disposal or recycling. LCA is an important tool for the research and development process, product and process design, and labelling of textiles and clothing. It systematically covers the LCA process with comprehensive examples and case studies. It covers key indicators and processes in LCA, from carbon and ecological footprints to disposal, re-use and recycling. It also discusses a broad range of LCA applications in the textiles and clothing industry.

Keywords: Eco-Labelling, Life Cycle Assessment, Carbon Footprints, Ecological Footprints, Environmental Impacts, Eco-label, Textile

Mapping sustainable textile initiatives and a potential roadmap for a Nordic action plan

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Consumption Research Institute, SIFO, PO 4 St Olavs plass, 0130 Oslo

Forlag: Nordic Council of Ministers, 2015, 230p.

ISBN: 9289342129|9789289342124

This report aims to chart a plan for a coordinated Nordic effort towards sustainable development in textiles and identify ongoing initiatives in the area. The aim was an ambitious plan with a potential for significant reductions in environmental pressures, but also green growth. The mapping showed that there were many ongoing initiatives in the Nordic. The work has mainly focused on the perspective of so-called "reducing resource use". This report responds to an invitation from the Nordic Council of Ministers to map out Nordic initiatives within textiles as a pre-study to the initiation of a Nordic Roadmap for Sustainable Textiles in 2015. The work has been conducted by: SIFO - National Institute for Consumer Research (Norway) SFA - Sustainable Fashion Academy (Sweden) NFA - Nordic Fashion Association/nicefashion.org (Nordic) IVL - Swedish Environmental Research Institute (Sweden) CRI - Copenhagen Resource Institute (Denmark) Nordic Committee of Senior Officials for Environmental Affairs (EK-M).

Keywords: Sustainable Development in Textiles, Mapping, Reducing Resource Use, Textile, Eco-Label

Ecolabels and Organic Certification for Textile Products

Luis Almeida

University of Minho, Guimarães

Singapore: Springer, 2015, 175-196p.

ISBN: 978-981-287-163-3|978-981-287-164-0

Consumers demand not only specific functionalities and quality levels for textile products but also safety and ecology. In response to this trend, the fashion supply chain places more and more importance on sustainability, forcing textile producers to respect high environmental and social standards in the entire textile-clothing chain, from raw materials to retail. In some cases, the consumer and postconsumer (reuse, recycle, disposal) phases are also considered. To answer the needs of consumers of eco-friendly products, several eco-labeling systems have been developed, which include specific requirements for "organic" textiles. This chapter presents an overview of the requirements of the major eco-labels that are used a, including the European Union Ecolabel (flower label), Oeko-Tex 100 (and the new certification scheme Sustainable Textile Production), Bluesign, organic certification systems (Global Organic Textile Standard and Organic Content Standard), Fairtrade, and labels from retailer chains (Clear to Wear and Ecosafe). This chapter is published in Roadmap to Sustainable Textiles and Clothing Ed. by S.S. Muthu.

Keywords: Textiles, Eco-Label, Organic Certification, Sustainability, Health and Safety, Social Responsibility, Environmental Protection

Handbook of Sustainable Apparel Production

Subramanian Senthilkannan Muthu, Editor

International Chemical and Environmental Manager, BESTSELLER, Hong Kong

Florida: CRC Press 2015, 556p.

ISBN: 978-1-4822-9937-3|978-1-4822-9939-7

The handbook covers all aspects of sustainable apparel production including the raw materials employed, sustainable manufacturing processes, and environmental as well as social assessments of apparel production. The book highlights the environmental and social impacts of apparel and its assessment. It explores the complexities involved in implementing sustainable measures in the massive supply chain of apparel production. The discussion then turns to sustainability and consumption behavior of the apparel industry and the assessment of sustainability aspects and parameters. The text details technologies that can pave the way toward sustainability in production and closes with coverage of design aspects, particularly sustainable design/eco design and new approaches to fashion sustainability. A vast and complex topic, sustainability in apparel production has many faces and facets. With contributions from an international panel of experts, this book unites all the elements, including very minute details, and supports them with detailed and interesting case studies. It gives you a framework for moving towards sustainability.

Keywords: Sustainable Apparel, Assessments, Frame Work, The Handbook, Parameters, Eco-label, Textile

Environmentally Sustainable Apparel Acquisition And Disposal Behaviours Among Slovenian Consumers

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AUTEX Research Journal, Vol. 15, No 4, December 2015, 243-259p.

ISSN: 1470-9589|2300-0929

Fibre production and textile processing comprise various industries that consume large amounts of energy and resources. Textiles are a largely untapped consumer commodity with a strong reuse and recycling potential, still fibres and fibre containing products ends up in landfill sites or in waste incinerators to a large extent. Reuse and recycle of waste clothing results in reduction in the environmental burden. Between 3% and 4% of the municipal solid waste stream in Slovenia is composed of apparel and textiles. This exploratory study examines consumer practices regarding purchase and the disposal of apparel in Slovenia. Data were collected through structured online survey from a representative random sample of 535 consumers. Responses to online questionnaire indicated the use of a variety of textile purchase and disposal methods. The influence of different sociodemographic variables on apparel purchase, disposal and recycling behaviour was examined. Moreover, the differences in the frequency of apparel recycling between consumers with and without an apparel bank available nearby were explored.

This research was conducted, since it is crucial to analyse the means by which consumers are currently disposing their textile waste in order to plan the strategies that would encourage them to further reduce the amount of apparel sent to landfills.

Keywords: Environmentally Sustainable, Consumer Behaviour, Apparel Consumption, Apparel Acquisition, Apparel Disposal, Environment, Questionnaire, Slovenia, Ecolabel, Textile, Apparel

Ethical foundations in sustainable fashion

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Textiles and Clothing Sustainability, Volume 1, Issue 3, 2015, 12p.

ISSN: 2197-9936

Sustainability is fuzzy and wide concept and the discussion what to sustain continues, the resources or lifestyle. Furthermore how holistically the sustainability should be approached is under discussion. According to the holistic approach for environmental ethics ecosystems and biosphere as a whole should be considered, not individual's rights. Furthermore in ethical discussion the value aspect is most important; what is considered to be valuable and from where value comes from. Furthermore environmental ethics raises deep questions; who counts morally and why. Moreover the human actions are under evaluation in environmental ethical discussion; “how should human beings act in the nonhuman natural world”. Environmental ethics can be applied in other fields e.g. in design and fashion. Values and ethics are fundamental grounds also for sustainable fashion. Environmental pioneer 1995 argue that “ethics are the philosophical basis for making choices about morals and values”. He further continues that “to think dispassionately about what we design and why, and what the eventual consequences of our design intervention may be, is the basis of ethical thinking”. Accordingly it is worthwhile to investigate the value base in sustainable fashion and further to consider the consequences of our design and industrial manufacturing processes in the clothing sector based on environmental ethics. Moreover it is important to understand the consequences of our design practices; e.g. how current design, manufacturing and business practices affect unsustainable consumption patterns. Products actually configure consumers' needs and use patterns and hence design can be said to be “practice-oriented”, which leads to certain everyday consumption habits. Therefore designers, manufacturers and companies are responsible not only for the environmental impacts of the fashion industry but also for the unsustainable consumption behaviour of consumers and the increase of waste streams, i.e. the unbalance in the fashion system. This text provides an overview for ethical foundations in the fashion field. Even though a lot of research has been done lately in the sustainable fashion field, the views have been limited and not well grounded on philosophical knowledge about environmental ethics and value discussion.

Keywords: Environmental ethics, Values, Sustainable fashion, Corporate social responsibility, Ethical consumption, Extended producer responsibility, Sustainable business, Greenwashing, Eco- label, Textile

Ecolabels as drivers of clothing design

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Journal of Cleaner Production, Volume 99, 15 July, 2015, 345–353p.

ISSN: 0959-6526

In recent decades, the textile industry has worked to reduce its negative social and environmental impacts. Identifying and addressing important sustainability considerations already in the clothing design are of increasing importance in the continuation of this work. Many companies look to ecolabelling schemes as means to set performance criteria and to demonstrate progress to customers. This study investigates the connection between ecolabels and clothing design from the perspective of moving the garment industry towards sustainability. Information gathered from literature was aligned and contrasted with interviews conducted with employees of garment companies in Sweden, and the material was analysed using a life-cycle perspective. The results reveal that the clothing design process currently only marginally influences clothing's sustainability performance by applying ecolabelling criteria. For a more sustainable textile industry there is a need to expand the expertise and information already in the design process regarding sustainability of their finished products. Such a change is only possible if the designers can be guided by a clear vision of design for sustainability for the company they work in.

Keywords: Ecolabels, Clothing design, Information for customers, Value chain, Textile, Eco-labelling

The sustainable future of the Scottish textiles sector: challenges and opportunities of introducing a circular economy model

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Textiles and Clothing Sustainability, Volume1, Issue 5, December 2015,9p.

ISSN: 2197-9936

Zero Waste Scotland introduced the concept of the circular economy to the Scottish textiles sector at events throughout 2013 to 2014. In April 2014, it commissioned research by independent consultants to examine the academic and industrial textile landscapes in Scotland, including developments in technical textiles and research into innovation in textile design and examples of circular economy models. The research identified a number of initiatives, including projects producing an alternative to denim and one developing cavity wall insulation from processed natural fibres. It made recommendations to Zero Waste Scotland about shaping the future landscape of textile innovation in Scotland and also offered examples of the circular economy from Scandinavia that might be applicable. It discusses about Nordic Swan Ecolabel.

Keywords: Nordic Swan Ecolabel, Textile, Eco-label, Circular economy, Scottish textiles sector, Closed-loop manufacturing

Impacts of sustainable value and business stewardship on lifestyle practices in clothing consumption

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Fashion and Textiles, Volume 2, No. 17 December 2015,18p.

ISSN: 2198-0802

With a rising interest in the sustainable issue on the part of society and industry, comprehending the dynamics of the sustainable phenomenon can empower marketers and researchers to devise effective marketing strategies and advance theoretical knowledge for the fashion and textile discipline. While consumer sustainable lifestyle practices and business stewardship implementation have been neglected in the fashion and textiles industries, this study aims to test the sustainable VALS framework by identifying the sustainable value and lifestyle practices, and examining the impacts of business stewardship on consumer sustainable practices. The results of the data (n = 239) from a US university identified feasible dimensions of sustainable value, lifestyle practices, and business stewardships. Upon testing multiple regression analysis for the sustainable VALS framework, all 12 hypotheses were supported to validate the significant impacts of sustainable values and business stewardship on the consumers' practices of a sustainable lifestyle on fashion product consumption. Specifically, altruistic, openness to change, anthropocentrism, and ecocentrism values are of interest; and the business stewardship of eco-labels and CSR drives play pivotal roles in promoting consumers' sustainable lifestyle practices.

Keywords: Business stewardship, Sustainable lifestyle, Value, VALS framework, Eco-labels, Fashion, Textile

EU Ecolabel Textile Products: User Manual, Commission Decision for the award of the EU Ecolabel for textile products (2014/350/EU) 2014, 226p.

This manual guides through the process of applying for an EU Ecolabel, in accordance with the criteria requirements. The manual provides information on - General Information – provides information about the EU Ecolabel (including a summary of the textiles criteria), details of the application process as well as frequently asked questions about application and Product Assessment and Verification – outlines the criteria for textiles, in accordance with the Commission Decision of 5th June 2014 (2014/350/EU). It also provides the information on Application Form and Declarations –to be completed as part of the application process. This user manual guides step by step to apply for the EU Ecolabel for textile products. It includes an outline of all data, tests and documentation that are required to demonstrate compliance. The basis for the manual is the Commission Decision of 5th June 2014 (2014/350/EU) establishing the ecological criteria for the award of the EU Ecolabel for textile products.

Keywords: Eco-labelling, Environmentally Sustainable Clothing, Sustainable Textiles, EU Ecolabel

Ecolabel – Tool for Promoting Sustainable Consumption and Production

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Annals of the University of Oradea, Fascicle of Textiles, Leatherwork, Vol. 15, Issue 1, 177-182p.

ISSN: 1843-813X|2457-4880

The ecolabel is one of the indicators that quantify sustainable consumption and production, and ultimately, sustainable development. Ecolabelling is only one type of environmental labelling, and refers specifically to the provision of information to consumers about the relative environmental quality of a product. Ecolabels are granted on request of various organizations, both public and private, and are recognized only locally or nationally, regionally or internationally. Often coexist at the same time and same place, several types of environmental labels. The acceptance of a particular ecolabel is optional, and is made usually based on reputation, trust and awareness about the label and the level to promote certain brands for better lifestyle and for use the eco, organic or green products. There are currently tracking worldwide by Ecolabel Index, which is the largest global directory of ecolabels, 449 ecolabels in 197 countries, and 25 industry sectors, from which 109 are for textile products. The number of EU Ecolabel greatly increased, so that in the period 2000 - 2010, the increase was more than 20 times. At the end of 2012, 17176 products or services was awarded EU Ecolabel. Currently, certainly, the number is much higher. Today, in the Ecolabel Index appear registered in Romania 23 types of ecolabels. Also, Romania currently has awarded 586 licenses for Eu Ecolabel, from which two for textile products and two for footwear.

Keywords: Ecolabel, Sustainable Development, Consumption, Production, Textiles, Footwear, EU Ecolabel

Assessing the Environmental Impact of Textiles and the Clothing Supply Chain

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BESTSELLER, Hong Kong

Cambridge: Woodhead Publishing, March 2014, 212p.

ISBN-10: 1782421041|13: 978-1782421047

The textile industry impacts the environment in a number of ways, including its use of resources, its impact on global warming, and the amount of pollution and waste it generates. Assessing the Environmental Impact of Textiles and the Clothing Supply Chain reviews methods used to calculate this environmental impact, including product carbon footprints (PCFs), ecological footprints (EFs), and life cycle assessment (LCA). The first chapters provide an introduction to the textile supply chain and its environmental impact, and an overview of the methods used to measure this impact. The book goes on to consider different environmental impacts of the industry, including greenhouse gas emissions, the water and energy footprints of the industry, and depletion of resources, as well as the use of LCA to assess the overall environmental impact of the textile industry. It then deals with the practice of measuring these impacts before forming a conclusion about the environmental impact of the industry. Assessing the Environmental Impact of Textiles and the Clothing Supply Chain provides a standard reference for R&D managers in the textile industry and academic researchers in textile science. Reviews the main methods used to calculate the textile industry's use of resources, its impact on global warming and the pollution and waste it generates Reviews the key methods, their principles and how they can be applied in practice to measure and reduce the environmental impact of textile products Includes the following calculation methods: product carbon footprints (PCFs), ecological footprints (EFs) and life cycle assessment (LCA).

Keywords: Environmental Impact, Clothing Supply Chain, Assessment, Standard Reference, Reviews, Calculation Methods

Go-green textiles for environment

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Advanced Engineering and Applied Sciences: An International Journal, Volume 4, No.3, 2014, 26-28p.

ISSN: 2320–3927

Natural fibers are significantly elongated substances produced by plants and animals that can be spun into filaments, yarns and ropes. Woven, knitted, matted or bonded are techniques to form fabrics that are essential for clothing. Like agriculture, textiles have been a fundamental part of human life since the dawn of civilization. In India, a growing shortage of natural fibre producers leads the researchers to develop new environmental friendly textile and its products. Natural fibres are at the heart of an eco-fashion

movement that seeks to create garments that are sustainable at every stage of their life cycle, from production to disposal. Natural fibres have intrinsic properties such as mechanical strength, low weight and healthier to the wearer that has made them particularly attractive. Progressively, eco-textiles are being used for industrial purposes as well as in components of composite materials, in medical implants, and geo and agro-textiles.

Keywords: Environment friendly, Textiles, Natural, Fibers, Clothing, Ecolabel

Natural Dyes: Sources, Chemistry, Application and Sustainability Issues

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Roadmap to Sustainable Textiles and Clothing, Part of the series Textile Science and Clothing Technology Ed. by Subramanian Senthilkannan Muthu, Singapore: Springer Science+Business Media, 2014, 37-80p.

ISBN: 9 78-981-287-064-3

Dyes derived from natural materials such as plant leaves, roots, bark, insect secretions, and minerals were the only dyes available to mankind for the coloring of textiles until the discovery of the first synthetic dye in 1856. Rapid research strides in synthetic chemistry supported by the industrialization of textile production not only led to the development of synthetic alternatives to popular natural dyes but also to a number of synthetic dyes in various hues and colors that gradually pushed the natural dyes into oblivion However, environmental issues in the production and application of synthetic dyes once again revived consumer interest in natural dyes during the last decades of the twentieth century. Textiles colored with natural dyes are preferred by environmentally conscious consumers and today there is a niche market for such textiles. But the total share of natural dyes in the textile sector is approximately only 1 % due to certain technical and sustainability issues involved in the production and application of these dyes such as non-availability in ready-to-use standard form, unsuitability for machine use, and limited and non-reproducible shades. Natural dyes per se are sustainable as they are renewable and biodegradable but they cannot fulfill the huge demand from the textile sector in view of the preferential use of land for food and feed purposes. Also, overexploitation of natural resources to obtain dyes may result in deforestation and threaten endangered species. For these reasons, the Global Organic Textiles Standard (GOTS) permits the use of safe synthetic dyes and prohibits the use of natural dyes from endangered species. Various research efforts have been undertaken all over the world to address the shortcomings of natural dyes in view of the tremendous environmental advantage they offer. This book attempts to review the current status of natural dyes and various sustainability issues involved in their production and application and examines their future prospects.

Keywords: Social Labelling, Eco-Labelling, Corporate Social Responsibility, Textile And Clothing Market, Fast Fashion, Consumer Behaviour

Roadmap to Sustainable Textiles and Clothing: Eco-friendly Raw Materials, Technologies, and Processing Methods

Muthu, Subramanian Senthilkannan, Editor

SGS Hong Kong Limited, Eco-design Consultant, Global Sustainability Services

Singapore: Springer, 2014, 354p.

ISBN: 978-981-287-064-3|978-981-287-065-0

This book covers the elements involved in achieving sustainability in the textiles and clothing sector. The chapters covered in different volumes of this series title aim to cover all the distinctive areas earmarked for achieving sustainable development in the textile and clothing industry. This first volume is dedicated to the initial phases of life cycle, i.e. raw materials and manufacturing phases of textile products. This book aims to cover the sustainable raw materials, technologies and processing methods to achieve sustainable textile products. There are plenty of raw materials available today to cater the needs of sustainable textiles and apparels including organic materials, recycled and biodegradable raw materials for textile applications. Similarly, many innovative methods to process textile materials to achieve sustainability in the supply chain along with various processing technologies to manufacture textile products sustainably. This first volume covers the titles of these areas in a comprehensive way.

Keywords: Sustainable Textiles, Eco-friendly Raw Materials, Ecolabel, Supply Chain

Eco Textile Labelling Guide 2014

Stacey Dove

Editor, MCL News and Media, Wakefield, United Kingdom

Wakefield: MCL Global, 4th edition, 2014, 100p

The Eco-Textile Labelling Guide, which contains details and updates of more than 60 sustainable textile labels and standards, has now been published by MCL Global. It includes new criteria from the EU-Eco Label, GOTS, Oeko-Tex, bluesign, Responsible Down Standard, the Global Recycled Standard and many more. This booklet is designed for manufacturers, retailers and buyers who are committed to reducing the impact of textiles on the environment and lists all the labels and environmental standards relevant to the global textile and clothing supply chain. It offers information on social criteria, such as Fairtrade, Fair labour, SA8000 etc., and textile processing standards. It also includes information on water standards, energy use, and sections on disposal and biodegradability.

Keywords: Textile Certification, Accreditation Companies, Organic Textile Standards, Eco-Textile Labels, Regional Labels and Legislation

Apparel Purchasing with Consideration of Eco-labels among Slovenian Consumers

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Fibres and Textiles in Eastern Europe Volume 22, Number 5, September 2014, 20-27p.

ISSN: 1230-3666

The increasing public awareness and sense of social responsibility related to environmental issues have led the textile and clothing industry to manufacture products with improved environmental profiles. During the 1990's, the industrialised world witnessed a growing number of environmental labels as a way of encouraging consumers and industries to alter their consumption patterns and to make wiser use of resources and energy in the drive for sustainable development. In this exploratory study, environmental knowledge among Slovenian consumers regarding the most popular current eco labels was examined. Data were collected through a structured online survey from a simple random sample of 535 consumers. Responses to an online questionnaire indicated that the largest share of participants consider clothing composition the most, while only a small percentage consider eco labels and the environmental impact. Consumers are willing to pay no more than 10% for a textile product with an ecological label attached. The largest proportion of respondents identified themselves as average eco-conscious although they didn't show any knowledge of eco labels. The study revealed that it is necessary to increase the level of awareness of sustainable materials as well as trust in eco labelling systems with transparent standardisation and certification systems.

Keywords: Eco-labels, Slovenian Consumers, Eco labelling systems, Textile, Apparel

The Role of Information Exposure in Female University Students' Evaluation and Selection of Eco-Friendly Apparel in the South African Emerging Economy

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Clothing and Textiles Research Journal, Volume 32, Issue 4, 2014, 266-281p.

ISSN: 0887-302X| 1940-2473

Increasing consumption in the South African emerging economy necessitates stringent effort toward developing environmental information campaigns that stimulate preferences for eco-friendly alternatives. This qualitative study explores the role of exposure to information about the environmental impact of the apparel supply chain in female students' evaluation and selection of apparel. Based on the outcome of garment selection exercises and focus group discussions, participants were not swayed by exposure to hang tags, audio-visual or printed information sources to prioritize eco-friendly features in their choice of product, nor were they willing to compromise on attributes such as price for the sake of the environment. Participants' recommendations include standardized eco-labels to facilitate identification of eco-friendly alternatives and message content that is short, precise and factual. Interpersonal communication could represent an influential source of information and merits further investigation into the relevance of normative social influence on pro-environmental apparel behavior in the South African emerging economy.

Keywords: Eco-friendly alternatives, Eco label, Eco-Friendly Apparel, Standardized eco-labels

Revision of the EU Green Public Procurement (GPP) Criteria for Textile Products and Services: Technical background and criteria proposals (Draft) Working Document

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Joint Research Centre, Edificion EXPO, Calle Inca Garcilaso 3, E-41092 Sevilla, Spain

JRC (Joint Research Centre) Technical Reports, December 2014, 77p.

This publication is a technical report by the Joint Research Centre of the European Commission. It provides the background information for the revision of the Green Public Procurement (GPP) criteria for textiles. A revised set of EU Ecolabel criteria were published as a Commission Decision 2014/350 on the 5th June 2014. The evidence base for the revised criteria is brought together in a technical background report. The report also records the discussions and feedback received from stakeholders during the revision process. The main purpose of this document is to evaluate the current GPP criteria in the light of the revised EU Ecolabel textile criteria revision and to discuss if the criteria are still relevant and to what extent they should be revised, restructured or removed. It also identifies, based on the background technical analysis, new criteria areas for consideration in order to better address key environmental impacts of the product group. This includes a proposed new area of focus on textile services.

Keywords: EU Eco-label, Textile, Green Public Procurement

Practices for Environmental Sustainability in the Textile, Clothing and Leather Sectors: The Italian Case

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International Journal of Operations and Quantitative Management, Volume 20, Number 3, September 2014, 193-225p.ISSN 1082-1910

The fashion supply chain is one of the most polluting industries in the world, being a huge consumer of water, electricity and chemicals, and discharging massive quantities of wastes to land. Stakeholders' and customers' pressure on sustainability has pushed companies to transform general environmental sustainability concepts into business practices. However, a few contributions have offered a comprehensive analysis of the practices employed in the fashion supply chain to reduce its environmental impact. In this paper, a theoretical framework for mapping practices for environmental sustainability implemented in the fashion system is presented. The framework is then used to analyse the Italian scenario.

Keywords: Environmental sustainability, Textile Clothing and Leather (TCL) sectors, Practices, Italy, Content analysis, EU Eco Label, Ecolabel

Environmental Standards & Trade: A Study of Indian Textiles & Clothing Sector

CUTS International, Jaipur: CUTS International, 2013, 211p.

ISBN: 978-81-8257-190-7

The study aims to promote appropriate and optimal use of eco-labels as a means for enhancing environmental sustainability, consumer welfare in the North and producer welfare in the South. To fulfill the objective of the project three surveys were conducted. One was an Internet survey of consumer organisations and households in select European country markets to understand and evaluate socio-cultural-political regimes and related barriers generated by the mentioned standards. Another one was conducted in Europe on retailers and importers in the T&C sector to identify the economic costs of implementing environmental standards and the benefits from marketing labeled products. The third one was conducted on a selected number of Indian producers and exports to understand their perception about demand-side factors and also supply-side concerns. Five capacity-building programmes were conducted to gauge and enhance further understanding on environmental standard and eco-labelling among Indian stakeholders. Prominent eco-labels popular with Indian exporters/manufacturers such as GOTS (Global Organic Textile Standard), EU Flower and Oeko-Tex 100 were discussed. The study shows, if properly introduced and adopted environmental standards can promote sustainable trade and development.

Keywords: Ecolabels, Environmental Standard, Sustainable Trade, Consumer

The Curious Case of Environmental Standards and its Trade Impact: An Integrated Indian and Norwegian Perspective

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GREAT Insights, Volume 2, Issue 8, November 2013

ISSN: 2215-0593 | 2213-0063

It reveals the dichotomy of environmental standards and eco-labels in the global textile market. Whereas on the one hand, the labels provide necessary information and guideline in the complex textile market, the knowledge of eco-labels is limited to consumers worldwide. On the other hand, these standards impede trade, keeping the producers away from vital markets in Europe and North America. This article is based on the triangulation of data and methods under the project entitled 'A Study of Environmental Standards & its Trade Impact on Indian Textiles & Clothing Sector.'

Keywords: Global, Labels, Trade, Impact, Triangulation, Data, Methods

EU Ecolabel on Textiles and Bed Mattresses: PAN Germany Comments on the criteria proposal of May 2013,

PAN Germany, 2013, 4p.

The revision of the EU Ecolabel criteria for textiles was initiated end of 2011. The Joint Research Centre of the European Commission has requested comments by stakeholders

on the criteria for textiles and bed mattresses proposed in May 2013 by 5th of July. PAN Germany commented on the criteria for textiles and bed mattresses. PAN Germany calls for the use of 100% organic cotton in "Eco" labelled textiles and recommends the restriction of the use of biocides in EU ecolabelled textiles. The list of criteria defined "hazardous substances" do not ensure that biocides containing nanomaterials or biocides which cause bacterial resistance or antibiotic cross-resistance are excluded from the use in EU ecolabelled bed mattresses. PAN Germany recommends to take these important hazard criteria "nanoscale compounds" and "substance that cause bacterial resistance" into consideration.

Keywords: Bed Mattresses, Biocides, EU Ecolabel, PAN Germany, Organic, Cotton

Advances in the Dyeing and Finishing of Technical Textiles

M. Gulrajani, Editor

Cambridge: Woodhead Publishing Limited, 2013, 425p.

ISBN: 978-0-85709-433-9

It reviews advances in dyes and colourants, including chromic materials, optical effect pigments and microencapsulated colourants for technical textile applications. Other types of functional dyes considered include UV- absorbent, anti-microbial and water-repellent dyes. Regulations relating to the use of textile dyes are discussed. There is also growing concern about the fate of the material at the end of its life cycle and its likely impact on the environment. In response, various pieces of legislation have been drawn up, along with the use of ecolabels and adherence to retailer standards. Surfactants, Inkjet printing of technical textiles and functional finishes to improve the comfort and protection of apparel are also explored. It concludes with a discussion of specialty polymers for the finishing of technical textiles.

Keywords: Technical, Dyeing, Textiles, Regulations, Ecolabels

The dualism of eco-labels in the global textile market: An integrated Indian and European perspective

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Jaipur: CUTS International,2013,18p.

A study conducted jointly by Consumer Research Institutes of Norway and India, explored the role of eco-labels and environmental practices in the textile market. This study included interviews with the various stakeholders (those who can affect or are affected by the activities of the textile market) of Norway and India, Indian textile workshops and consumers in Norway, Sweden, Germany, and the UK Fancia. The focus of this study is based on the sustainable challenges that the textile industry is facing and the different eco-labels that can be found and reduce the environmental impact of its production that today is very significant (large amount of water used, requiring large amounts of pesticides for cotton require much energy for the production of fibers and synthetic products and gases

emitted into the air and water). Through interviews with stakeholders it became clear that there is still no pressure from consumers, authorities, design institutes, or environmental organizations to adopt more sustainable practices and achieve eco-labeling on clothing and other textiles. This is because they have not yet fully aware of the damage to the environment for the textile and this will be a determining factor when purchasing a product (as it is the design, quality and durability). Those who did indicate be aware of these damages were the stakeholders (especially Norway) and Indian workers in the workshops. Another issue in the study is the eco-labels. Labeling is a way to inform consumers and to do so responsibly in social and political issues; this is why it is so important to understand what the different labels mean. This brings differences between producers who often do not know whether to opt for inclusive labeling or local one.

Keywords: Eco-Labels, Environmental Standards, Textile Value Chain, Political Consumption

EU Ecolabel for textiles: BEUC and EEB comments on the criteria proposal of May 2013: organic cotton and hazardous substances

Belgium: BEUC- Bureau Européen des Unions de Consommateurs, 2013, 9p.

The revision of the EU Ecolabel criteria for textiles was initiated end of 2011. The Joint Research Centre of the European Commission has requested comments by stakeholders on the criteria proposed in May 20131 by 5th of July. EEB and BEUC disagree with the current criterion addressing the origin of cotton as it does not guarantee the absence of hazardous pesticides in the Ecolabelled and the sustainable production of cotton, which is one the major environmental aspects of this product group. In these comments EEB and BEUC call for the use of 100% organic cotton (including cotton in conversion) in Eco-labelled textiles, arguing that there is sufficient volume of organic cotton in the market and that the market would require a clear signal for further growth. Furthermore this approach will ease operation for applicants and verification procedures. BEUC and EEB question the added value of IPM-cotton2 for the EU Ecolabel, as this requirement will be made mandatory within the EU by 2014 through the Council Directive on the sustainable use of pesticides. Furthermore, the operation of IPM on mass balance verification schemes will not make it possible to ensure absence of hazardous pesticides and GMO-cotton. NGOs demand additional restrictions of hazardous chemicals, including per-fluorinated chemicals and nano-materials. Furthermore, we are strongly concerned by the fact that some of the derogations open the door for the use of hazardous chemicals of concern to impart properties that are not core for the production of textiles (water repellents, stain removers, flame retardants…). This document presents the details of the discussion and comments made by BEUC and EEB.

Keywords: Criteria, Hazardous, Chemicals, BUEC, EEB, Cotton, Ecolabel, EU

Challenges for eco-design of emerging technologies: The case of electronic textiles

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Materials and Design, Volume 51, October 2013, 51-60p.

ISSN: 0264-1275

The combination of textile and electronic technologies results in new challenges for sustainable product design. Electronic textiles (e-textiles) feature a seamless integration of textiles with electronics and other high-tech materials. Such products may, if they become mass consumer applications, result in a new kind of waste that could be difficult to recycle. The ongoing innovation process of e-textiles holds opportunities to prevent future end-of-life impacts. Implementing eco-design in the technological development process can help to minimise future waste. However, the existing Design for Recycling (DfR) principles for textiles or electronics does not match with the properties of the combined products. This article examines possibilities to advance eco-design of a converging technology. DfR strategies for e-textiles are discussed from the background of contemporary innovation trends. Three waste preventative eco-design approaches for e-textiles are discussed: 1 harnessing the inherent advantages of smart materials for sustainable design; 2 establishing open compatibility standards; 3 labelling the e-textiles to facilitate their recycling. It is argued that life-cycle thinking needs to be implemented concurrent to the technological development process.

Keywords: e-Textiles, Eco-Design, Recycling, Preventative, Innovation, Eco labeling, Labelling

Eco textile processing & its role in sustainable development

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Indian Textile Journal, Volume 123 Issue 12, September 2013, 31p.

ISSN: 0019-6436

The article discusses eco-textile processing and explores its role in sustainable development. Other topics discussed include ways on how recycling fashion and organic clothing can contribute to eco sustainable development, fibers which can be considered as eco-friendly and textile dyes that are considered biodegradable or non-biodegradable. With the eco-fashion industry still in its infancy, the main responsibility at the moment lies with clothes manufacturers and fashion designers, who need to start using sustainable materials and processes, emphasizes the author.

Keywords: Sustainable, Recycling, Eco-Fashion, Organic, Materials, Eco-textiles, Eco-fashion industry

Eco-friendly textiles: A boost to sustainability: A case study

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Asian Journal of Home Science, Volume 8, Issue 2, December, 2013, 768-771p.

ISSN: 0976-8351|0973-4732

This article presents an overview of the textile industry highlighting major processes, techniques and practices that are used to make textile industry more sustainable. There is

an essential need to identify the stages in various steps of textile production that are said to be the greatest cause for environmental degradation with a special focus on substances that are likely to cause harm to eco- balance. Now a days various processes, techniques and practices related to textile production have been developed to cure the world from being affected by the hazardous effects of chemicals etc. which are either used in textile industry or released as a by-product by the textile industries. These all sustainable methods and techniques should be adopted by textile industries in order to save environment and to foster sustainability in the field of textiles.

Keywords: Sustainability, Textiles, Eco-friendly fibres, Green dyes, Eco label,

Dyeing Of Textiles with Natural Dyes - An Eco-Friendly Approach

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International Journal of ChemTech Research, Volume 5, No.5, July-Sept 2013,2102-2109p.

ISSN: 0974-4290

Numerous plant species are found to have an important role in the day-to-day life of the ethnic and local people. However, it is a matter of concern that the indigenous knowledge of extraction, processing and practice of using of natural dyes has diminished to a great extent among the new generation of ethnic people due to easy availability of cheap synthetic dyes. Thus by keeping in view of above, the present study has been undertaken so as to revive the age-old are of dyeing with natural dyes. In the present work, the flowers of *Clitoria ternatea* (Clitoria flowers) and *Targetes erecta* Linn (Marigold) and *Punica granatum* (pomegranate) peel were used for the extraction of dye, dyeing of the selected fabrics at optimized conditions, using combination of mordants and evaluate the resultant colour fastness of the selected dyed samples to washing, rubbing, and light. Also the antimicrobial properties of the dyes were evaluated.

Keywords: Natural dye, Mordants, Colour fastness, Eco-friendly dye.

Barriers to the success of eco-labels for textiles: A report from stakeholder interviews in Norway

Marthe Hårvik Austgulen and Eivind Stø

Project report no. 1-2013, Oslo: National Institute for Consumer Research, 2013, 60p.

This report is a part of the project “A Study of Environmental Standards and the Trade Impact on Indian Textiles and Clothing Sector” implemented by the National Institute for Consumer Research (SIFO) in Norway and the Consumer Unity and Trust Society (CUTS) in India.

In this report author seek to identify barriers to the use of eco-labels in the textile industry by analysing stakeholder interviews with 22 Norwegian and Nordic stakeholders. They focus on the stakeholders' attitudes towards and perceptions of eco-labels and who they

perceive as the responsible actors. The main purpose of the project "A Study of Environmental Standards and their Trade Impacts: the case of India" is to generate improved understanding of the potential for environmental and social labels as a communicative tool for European consumers and Indian textile producers. One objective is to identify barriers for the use of eco-labels as a tool to improve the sustainability of the textile supply chain. In this report, authors have identified two areas where there seems to be a market for eco-labelled textiles. The first is, as mentioned by all informants, textiles for babies and small children. There seems to be a willingness to pay among parents with small children, and this market has the potential to be a door opener for eco-labels for textiles and clothing. The second is green public procurement.

Keywords: Eco-labels, Textile industry, Norway, India, Sustainability, Corporate Social Responsibility, Sustainable development, Environmental standards, Environmental regulation

Green Threads: Ecolabels for Punters

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Asia Pacific Journal of Marketing & Management Review, Volume 2, No.6, June 2013, 74-82p.

ISSN 2319-2836

With the sure growing storm of Global Warming, Eco-friendly products are finding their place amongst the coming generation, be it eatables, beauty products, shopping bags or textiles. Time has come for punters commonly known as consumers to take the lead in prompting manufacturers to adopt clean and eco-friendly technologies and environmentally safe disposal of used products through preventive and mitigate approaches. Labels attached to a variety of products to attract the attention of consumers about the environmentally positive features of the products. And these eco-friendly labels are known as eco-labels. The ecolabeling was initiated by Germany in 1978. Today, ecolabeling is being implemented in more than 30 countries. Coming to our domestics station "Ecomark" in Feb 1991 with the earthen pot as the symbol was launched in India. Eco Labels guide the consumers and producers that the product is ecofriendly with fewer adverse environmental impacts. Realizing the need to explore more on this issue, authors made an effort to know about ecolabels. Further it highlights the International and national scenario with a package of barriers. It also endorses a simple road map in shape of suggestions as to ponder this issue more determinedly, more sincerely.

Keywords: Ecolabels, Green Threads, Textile, Eco-friendly labels, Ecomark after Ecolabels

What is a label worth? Defining the alternatives to organic for US wool producers

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Journal of Fashion Marketing and Management: An International Journal, Volume 17 Issue 3, 266 – 279p.

ISSN: 1361-2026

As sustainability efforts have increased across the apparel and textile industries, consumers are being exposed to an increasing variety of information and label claims. The purpose of this paper is to determine consumer willingness to pay (WTP) for locally produced animal fiber products with organic and alternative labeling schemes, which included eco-friendly, natural and sustainable. The results of this paper indicate that policy makers should consider definitions and certification for claims besides organic to potentially benefit wool producers. Consumers indicated higher WTP for all versions over conventional wool socks, with the highest WTP exhibited for organic. WTP for organic versions further increased after definitions were provided. Natural and eco-friendly versions had larger premiums than sustainable, but this difference disappeared after definition. This research provides consumer WTP comparisons for a variety of labeling terms currently appearing on wool apparel products. Uncovering this information provides greater understanding of consumer WTP for wool with such attributes, especially after definitions are presented.

Keywords: Consumer behaviour, Labelling sustainability, Organic, Eco-friendly, Wool, United States of America, Ecolabel

The Potential for Green Textile Sourcing from Tirupur: On the Path to More Sustainable Global Textile Chains

Camilla Cecilie Valeur[1] and Nordic Council of Ministers

1. Danish Federation for Small and Medium-sized Enterprises

Copenhagen: Nordic Council of Ministers, 2013, 56p.

ISBN: 9289325593|9789289325592

This report provides a thorough analysis concerning the situation in Tirupur, India, where the local government has imposed strict requirements on zero liquid discharge of wastewater in textile production. The report analyses how Tirupur can turn the Zero Liquid Discharge requirements into a competitive advantage by creating a green textile cluster based on the European Eco-label Flower and ISO 14001. The report also includes an analysis of the demand situation for environmentally certified textile in the Nordic countries and how this demand can be affected positively.

Keywords: Ecolabel organizations, Ecolabelled textiles, Oeko-Tex, Organic textiles, European Eco-label Flower, ISO 14001

Eco – Textiles: For Sustainable Development

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International Journal of Scientific & Engineering Research, Volume 4, Issue 4, April-2013, 1379-1390p.

ISSN: 2229-5518

Textile industry is considered as the most ecologically harmful industry in the world. The ecoproblems in textile industry occur during some production processes and are carried forward right to the finished product. In the production process like bleaching and then dyeing, the subsequent fabri make toxic substances that swell into our ecosystem. During the production process controlling pollution is as vital as making a product free from the toxic effect. The utilization of rayon for clothing has added to the fast depleting forests and opened the door to the development in natural sustainable fibres like organic Cotton, Hemp and Bamboo fibres.

Petroleum-based products are harmful to the environment. In order to safeguard our environment from these effects, an integrated pollution control approach is needed. Luckily there is an availability of more substitutes. Textile industry has a heavy impact on the environment as the current practices are unsustainable; and companies, environmentalist and consumers are looking at strategies for reducing the textile carbon footprint. So, there is need to produce the textile materials which are eco-friendly through using different processes like enzyme technology, plasma technology, super critical carbon-di-oxide dyeing or foam technology etc.

Keywords: Textile Industry, Eco-textiles, Sustainable process and Toxic Substances, Eco label, Eco-friendly

Eco-Labels and Standards for textile products to save environment

B. Goel,

Man-Made Textiles in India, Vol. 40 Issue 10, October 2012, 337p.

ISSN: 0377-7537

Environmental issues arise at all stages of the textile and apparel supply chain. The expansion of textile production and consumption has contributed to increasing pollution, water shortages, fossil fuel and raw material depletion, and climate change. Thus to save the environment from pollution it is very important to explore the uses, types and benefits of textile ecolabels. In present paper effort has been made to collect and disseminate the information related to different types of textiles eco-labels including independent/private and national and international ecolabels along with their prerequisite, objectives and the product covered by these ecolabels. This wills ultimately improve the quality of the environment and will encourage the sustainable management of resources.

Keywords: Textile Ecolabels, Sustainable Management, All Stages, Environmental Issues

Eco-labels for textiles

Manisha Mathur

Man-Made Textiles in India, Volume 40, Issue 10, October 2012, 335 p.

ISSN: 0377-7537

The author comments on the popularity of eco-labels for textiles with at least 15 countries including India having launched the eco-labeling schemes that are either sponsored by the governments or by the voluntary organizations that receive technical and financial support from their government. He believes that obtaining an eco-label could not only assist the entry to new markets but can also generate savings. He added the measures like this could help restore the environment.

Keywords: Eco Labeling Schemes, Restore, Textile Ecolabels

Life cycle assessment and eco-design of a textile-based large-area sensor system

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2012 Electronics Goes Green 2012+ (EGG), 2012

ISBN: 978-1-4673-4512-5 | 978-3-8396-0439-7

This paper was presented during Joint International Conference and Exhibition: "Electronics Goes Green 2012+ (EGG), 2012" during September 9 – 12, 2012 held in Berlin, Germany. The sensing floor is a smart textile application that supports Ambient Assisted Living as it introduces smart functions unobtrusively in the user's daily living environment. The technology is based on textile sensor areas and microelectronic modules, which are integrated invisibly in the textile underlay of carpets or laminates. A Life Cycle Assessment

(LCA) was carried out to support environmentally conscious decision-making in the course of product development. The results suggest that the system's electricity consumption during its use phase is the most relevant environmental aspect and that a 2.5 mm thick polyester fleece has the highest environmental burden of the materials in the product. The paper also reports about experiences with conducting a LCA in the context of the SME that develops and manufactures the sensing floor system.

Keywords: Floors, Sensors, Textiles, Lighting, Capacitance, Life Testing

Does Green Fashion Retailing Make Consumers More Eco-friendly? : The Influence of Green Fashion Products and Campaigns on Green Consciousness and Behavior

Namhee Lee, Yun Jung Choi, Chorong Youn and Yuri Lee

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Clothing and Textiles Research Journal, Vol. 30, Issue 1, 2012, 67–82p.

ISSN: 0887-302X | 1940-2473

This study focuses on fashion retailers' as the gatekeepers' role of encouraging eco-friendly consumption culture, that is, consumption of green products. The purpose of this study is to propose and test a green retailing effect model involving different persuasion routes among green private brand (PB), green marketing campaigns, green consciousness and behavior, and to explore the moderating effect of marketing communication involvement (MCI). The research shows that perception of green PBs has positive impact on consumers' green behavior. Perception of green campaigns has a significant influence on consumers' green consciousness and indirect impact on consumers' green behavior. The relationship between consumers' perception of green campaign and green consciousness is stronger in the low MCI group. The model is helpful in understanding the positive impact of fashion retailers' green retailing activities on green consumption culture. The result also provides strategic guidelines for retailers about their sustainable retail activities.

Keywords: Green Marketing, Eco friendly, Ecolabel, Textile

Fashioning Sustainability: How the Clothes we wear can support Environmental and Human Well-being

April Shannon McGrath

Sustainable Fashion, Spring 2012, 24p.

Attempts to promote sustainability in the clothing industry have focused on using eco-materials and more resource efficient production; however the scale of production and consumption has increased to levels where the benefits of technical improvements are reduced. Creating true sustainability in the fashion industry requires reducing the material flow of clothing, addressing both sustainable production and consumption. Clothing producers must shift the focus of their operations from exchange value to use value, which offers opportunities to increase garment quality and reduce quantity demanded through encouraging consumers to engage in fashion through wearing, not purchasing, clothes. Because the success of this approach depends on designing clothes able to satisfy both the functional and emotional values of consumers, surveyed 18-25 year old individuals to evaluate what needs they perceive to be satisfying through shopping for and purchasing

clothing, what psychological mechanisms induce increasing consumption, and what effects clothing qualities have on their clothing consumption.

Respondents shopped for and purchased clothing to satisfy the needs for leisure, identity, affection, and participation, frequently went shopping out of impulse, and made purchases to experience stimulation through new clothing. They would later be dissatisfied with their clothing and mainly disposed of clothes because of quality-related problems. Author provides fashion design solutions that can stimulate wearers' personal involvement in generating satisfaction, breaking the cycle of passive acquisition of clothing and creating clothing that is meaningful to the wearer over a longer period of time: clothing that can sustain both environmental and human well-being.

Keywords: Fast Fashion, Human Needs Satisfaction, Needs Based Design, Consumer Behavior, User Involvement

Greening of the Textile and Clothing Industry

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Fibres & Textiles in Eastern Europe Volume 20, Issue 6A (95), 2012, 22-27p.

ISSN: 1230-3666

Today consumers are becoming more aware of the need to protect the environment, and companies use these terms to promote their goods or services with eco-labels. Environmentally friendly (also eco-friendly, nature friendly, and green) are terms used to refer to goods and services, laws, guidelines and policies claiming to inflict minimal or no harm on the environment. Clothing is an integral part of our lives and green or environmental concerns have started to draw more and more attention in the textile and clothing sector . This paper analysed how green the textile and clothing industry is with respect to the product lifecycle, from raw material through the design, production and logistics up to disposal in order to point out important points and parameters for greening the industry.

Keywords: Green, Environmentally Friendly, Eco-Friendly, Textile Industry, Apparel Industry, Ecolabel

Digital inkjet printing of textiles-An eco-friendly solution to textile designing

B. Goel, R. Singh and G.B. Pant

Man-Made Textiles in India, Aug 2012, Vol. 40 Issue 8, p. 265

ISSN: 0377-7537

Digital textile printing, designs can directly be made on computer screen and can be selected according to the consumer demands. Ink jet printing is as a critical technology for mass-customization manufacturing of textile products. Digital printing is a non-contact method to print colors on various materials of substrate decoration.

Keywords: Digital Inkjet Printing, Textiles, Eco-Friendly, Textile Designing

Progress towards a greener textile industry

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Coloration Technology: Special Issue: Green Chemistry, Volume 128, Issue 1, February 2012, 1–8p.

ISSN: 1478-4408

Many of the principles of the relatively new science of Green Chemistry, which aims to use resources efficiently and minimise waste, are applicable in the field of textiles. Improving product quantity and reducing environmental impact in the production and subsequent coloration of textile fibres is a realistic goal. Public interest in organically produced natural fibres has followed on from that in organically grown food, although the market for organic fibres is still relatively small. In recent years, fibre manufacturers have played their part in introducing a number of more ecologically regenerated cellulosic fibres, as well as new totally synthetic polymer fibres based on renewable raw materials. The methods that can be adopted aimed at reducing the environmental impact of fibre, dye manufacture and subsequent coloration processes, are described with particular reference to these newer fibres.

Keywords: Green Textile, Eco-friendly, Textile

Review and downscaling of life cycle decision support tools for the procurement of low-value products

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International Journal of Life Cycle Assessment, Volume 7, Issue 6, July 2012, 655–665p.

ISSN: 0948-3349|1614-7502

In this article, authors analysed how environmental aspects can be derived from life cycle management instruments for procurement decisions of low-value products. For the analysis, they chose the case of operating room textiles. The review includes the life cycle management instruments: life cycle assessment, environmental labels, and management systems applied within the textile industry. Authors do so in order to identify the most important environmental decision criteria based on which the procurer of low-value products can decide for the most environmentally friendly option. Authors concluded that the decision vector supports procurers when considering environmental aspects in procurement decisions and provides a mechanism for balancing the information between over complexity and oversimplification. Therefore, it should be the basis for future development of an eco-label for operating room textiles.

Keywords: Decision vector, Eco-label, Environmental management system, LCA, Life cycle management, Instruments, Operation room textiles, Procurement

Prevention of Textile Waste: Material Flows of Textiles in Three Nordic Countries and Suggestions on Policy Instruments

Naoko Tojo[1] and Nordic Council of Ministers

1. International Institute for Industrial Environmental Economics,Lund University P.O. Box 196, 22100 Lund, Sweden

Denmark: Nordic Council of Ministers, 2012, 121p.

ISBN: 928932385X|9789289323857

Textile exerts various environmental impacts throughout its life cycle. Prevention of textile waste is one means to reduce these impacts. This study seeks to map-out the flow of textile products in the three Nordic Countries, Denmark, Finland and Sweden, from the time they are put on the market until they are discarded. Based on the findings on the flows as well as on the perception of stakeholders, the study reviews and discusses government interventions that may be useful for the enhancement of textile waste prevention. Potential use of various policy instruments based on the concept of extended producer responsibility (EPR) is analysed. The study indicates a handful of areas where further research is needed in order to fine-tune policy actions that would best address the situation specific to the case countries.

Keywords: Danish Discarded Textiles, Eco-Labelling, Nordic Countries, Textile, Carbon Footprint, Textile Recycling Textile, Waste Prevention

EU Environmental Prohibition on Hazardous Substances and Its Impacts on International Trades of Korea Companies

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Clean Technology, Volume 18, Issue 1, 2012, 1-13p.

ISSN: 1598-9712|2288-0690

Starting with textile products in the middle of 1990, environmental requirements on prohibition of hazardous substances in products have been led by EU member countries and expanded to electrical and electronic equipment with implementation of RoHS (Restriction of the use of certain hazardous substances in electrical and electronic equipment) in 2006. Under EU REACH (Registration, Evaluation and Authorization of Chemicals), the concept of SVHC (Substances of Very High Concern) and resulting regulatory duties regarding it have been introduced to the supply chain of almost all industry sectors. In this technical review, kinds of hazardous substances, reasons for restrictions and related directives and regulations are reviewed with its influence on the international market. Suggestions are made how to cope with environmental regulations as well as mid-to-long term market strategy to secure global market competitiveness.

Keywords: Hazardous Substances, SVHC, Rohs, REACH, Electronic and Electrical Products, Textile Eco-Label

Social and Eco-labelling of Textile and Clothing Goods as a Means of Communication and Product Differentiation

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Fibres & Textiles in Eastern Europe 2011, Vol. 19, No. 4 (87) 20-26p.

ISSN: 1230-3666

The certification and labelling of 'socially responsible products' has been clearly attracting more and more interest in recent years. The systems and practical solutions developed in this field aim to make “ethical products” recognisable and generally available. This trend arises from growing consumer appreciation of not only the technical advantages, price, quality, delivery times and environmental safety of the products they buy but also of their social and ethical aspects. This article evaluates the importance of socio- and ecocertification and labelling for meeting buyers' expectations of textile and clothing products. It also discusses consumers' opinions on this matter.

Keywords: Social Labelling, Eco-Labelling, Corporate Social Responsibility, Textile and Clothing Market, Fast Fashion, Consumer Behaviour

The Chemicals in Products Project: Case Study of the Textiles Sector

United Nations Environment Program, DTIE / Chemicals Branch, January, 2011, 48p.

This report presents the results of the study carried out by UNEP on the textiles sector. The study focused predominately on clothing. It aims to assess information needs and gaps among stakeholders, analyze existing systems in terms of information provided against the needs and also to serve as a reference for future CiP (Chemicals in Products) information exchange activities in the textiles sector. In consideration of the limited time available for the study, priority was given to concentrating on consumer textiles (as opposed to technical textiles). The study investigated the wide range of needs of the numerous stakeholders involved in the life cycle of textiles and who would undertake management of the chemicals contained in textile products: it found the main driver for the great majority of these needs is product safety. The CiP information system communicates information about what chemicals are present in products. It would help companies be prepared to take early action.

Keywords: Clothing, CiP (Chemicals in products), UNEP, Consumer, Textiles

Guide to Sustainability Labelling and Certification in Textile and Fashion

UNEP/Wuppertal Institute Collaborating, Germany: Centre on Sustainable Consumption and Production (CSCP), 2011, 44p.

Textile/clothing sector because of its environmental and social impacts is a focus of sustainability movement. This guide book gives information on the significance of sustainability labels in textiles and sustainable textiles labels (also known as eco-labels)

have been developed to inform consumers of the environmental and social conditions in which they were produced and allow them to make an informed choice. A list of most famous eco-textile trade fairs around the world is given. It gives detailed information on different ecolabels of textile popular across the world. It gives information on primary as well as on secondary labels. It explained the drivers to sustainability labeling like producer side drivers, retail and design side drivers, consumption side drivers and Regulatory drivers for textile sustainability labels. It also discussed the opportunities of improving access to textile sustainability labels, demonstrating economic opportunities.

Keywords:Sustainability, Guide, Famous, Eco-Textile, Labeling

Eco-friendly and protective natural dye from red prickly pear (Opuntia Lasiacantha Pfeiffer) plant

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Journal of Saudi Chemical Society, Volume 15, Issue 3, July 2011, 257–261p.

ISSN: 1319-6103

New natural dye extracted from red prickly pear was used for dyeing wool with different types of mordents. The effect of mordant concentration on the color strength was discussed; the results obtained indicated that the color strength decreases with the increase of mordant concentration. The effect of the dye bath pH, salt concentration, dyeing temperature and dyeing time was also studied. The color strength and the dye uptake have exhibited high values. Good fastness properties of the dyed fabric were achieved. Antimicrobial activity of wool fabric dyed with this dye was tested according to diffusion agent. Test organisms as Escherichia coli, Bacillus subitilus, Pseudomons aeruginosa and Staphylococcus aureus were used and the results indicated that the samples exhibited a high inhibition zone. According to the available literature, this is the first report concerning a natural dye for fabric from fruits of red prickly pear plants.

Keywords: Red Prickly Pear, Natural Dye, Dyeing Wool, Mordents, Fastness Properties, Eco-Friendly Dye

Eco-Labeling Criteria for Textile Products with the Support of Textile Flows: A Case Study of the Vietnamese Textile Industry

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Journal of Sustainable Energy & Environment Volume 2, 2011, 105-115p.

ISSN: 1906-4918

Developing countries are confronted with difficulties in implementing eco-labeling schemes when they adopt eco-labeling criteria from developed countries. Production-related criteria, in particular, must reflect the availability of necessary infrastructures and local conditions. This study identified such criteria in a case study of the Vietnamese textile industry. It aims to (1) understand textile flows by using the mass balance concept and the combination of available data (which is insufficient) in Vietnam and previous reports and (2) identify production-related eco-labeling criteria from resource consumption, 46 pollutants and toxicants discharged by the textile industry. The results show that, in 2008, 1.67×106 tons of textiles flowed through Vietnam, approximately 19.4 kg/person. Textile manufacturing represents a majority of the processes of the Vietnamese textile industry with 1.40×106 tons of textiles being processed (84% of total flows in 2008). T-shirts and trousers were the major products in the textile manufacturing, i.e., produced (64.8%), exported (17.1% and 13.7%, respectively). Thus, these products are ideal candidates for eco-labeling. By filtering indicators through three conditions (availability of data and testing methods, significant environmental impact, and economic feasibility) and validating the identified criteria through a field survey of T-shirt production, we concluded that water and energy consumption, and SO_2 and COD emissions could serve as eco-labeling criteria. However, other identified key indicators should be considered for further studies. These criteria are useful for the next steps of criteria development. Material flow analysis and the proposed identification of eco-labeling criteria can resolve the constraints imposed by a lack of data in developing countries.

Keywords: Eco-Labeling Criteria; Key Environmental Indicators; Manufacturer Survey; Textile Flows; Vietnamese Textile Industry

Creating a global vision for sustainable textiles

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"Textiles: A Global Vision" the Textiles Institute Centenary World Conference, 34 November 2010, Manchester, UK. 19p.

Certification, such as eco-labels, plays a major role in giving credible assurance to retailers and end consumers that products comply with standards based on social, ecological & environmental standards. Of the 309 eco-labels identified worldwide, 41 cover textiles (Ecolabelling, 2008) and some 9000 textile & clothing manufacturing companies have been certified. Organic Exchange Fibre Report (2008/09) estimated a 54% increase in cultivation of organic cotton from the previous year, but production of organic cotton only 0.959% of conventional cotton, i.e. the growth in eco-labelled textiles is not reflected in consumer demand, raising questions about the impact eco-labelled or 'sustainable' textiles. A number of issues may impede the spread of eco-labelled textiles through the supply chain: costs and time required to achieve, use and renew the eco-label, recession and potential loss of competitive advantages. This paper will present the findings from in depth interviews examining the decision making around buying and sourcing of eco-labelled fibre, fabrics or textile products. The seven companies located both in India and the UK, spanned the supply chain, from fibre to product: textile manufacturers, eco-parameter testing labs, Certification Company and retailer. The aim of the research was to understand and investigate the marketing strategies for sustainable textile products. The goal was to understand how designers, manufacturers and retailers may collaborate to deliver eco-labelled textiles attractive to the end consumer and author conclude by reflecting on potential implications for the supply chain integration

Keywords: Eco-Label, Textiles Supply Chain, Consumer

Developing 'Eco-Wool' Compliant Supply Chains for Australian Wool

CAI Jackie, RUSSELL Ian and PIERLOT Anthony

CSIRO Materials Science and Engineering, P.O. Box 21, Belmont, Victoria, 3216, Australia

Shanghai: 12th International Wool Research Conference, 2010, 10-13p.

ISSN/ISBN: 9787506468329

China is the largest customer and processor of Australian wool, taking nearly 80% of Australian wool exports. The continued viability of both industries depends on being able to grow and manufacture quality wool products in the most environmentally friendly manner possible. Indeed consumers in the major foreign markets are increasingly seeking to make purchasing decisions with regard to the environmental costs and sustainability. The International Wool Textile Organisation (IWTO) has adopted the EU ecolabel standard as its definition for 'eco-wool', both for wool production and as an 'environmental best practice standard' for wool processing. Based on our investigation and auditing, it is

evident that many Chinese processing mills are more than capable of complying with the requirements for environmentally friendly processing. However, there are few Chinese mills that operate under EU ecolabel criteria, largely due to a lack of awareness of its benefits and detailed understanding of compliance requirements. This paper will report on a project, supported by funding from the Australian Government Department of Agriculture, Fisheries and Forestry (DAFF) under the Australian-ChinaAgricultural Technical Cooperation program, to address some of these issues and develop 'eco-wool' supply chains for Australian wool processed in China. This paper was presented during 12th International Wool Research Conference on 19-22 October 2010, Shanghai, China.

Keywords: Eco-Wool, EU Ecolabel, Wool Processing

2009

Sustainable Textiles: Life Cycle and Environmental Impact

R Blackburn, Editor

Cambridge: Woodhead Publishing, 2009, 416p.

ISBN: 9-781-845-694-531| 9-781-845-696-948

Environmental issues are playing an increasingly important role in the textile industry, both from the point of view of government regulation and consumer expectations. It reviews ways of achieving more sustainable materials and technologies as well as improving recycling in the industry. The first part of the book discusses ways of improving sustainability at various points in the supply chain. Chapters discuss how sustainability can be integrated into textile design, ensuring more sustainable production of both natural and synthetic fibres, improving sustainability in processes such as dyeing as well as more environmentally-friendly technologies including enzyme and plasma technologies. The second part of the book reviews consumer perceptions of recycled textiles, eco-labelling, organic textiles and the use of recycled materials in textile products. With a distinguished editor and an impressive range of international contributors, this book is an important reference for the textile industry and those researching this important topic.

Keywords: Sustainability, Textile Design, Environmentally Friendly Technologies, Recycling, Textile Industry

Eco-labelling programme in US

Indian Textile Journal, Vol. 119 Issue 12, September 2009 76p.

ISSN: 0019 - 6436

The article features the eco-labelling program called Labeling Ecologically Approved Fabrics (LEAF), which is based in Los Angeles, California. It notes that LEAF will help apparel designers and brands to promote the standards achieved by their products, by verifying whether a garment has been certified by third-party certification organizations. Standards-development organizations such as The Global Organic Textile Standard and Organic Exchange and Social Accountability International are negotiating with LEAF for a possible collaboration.

Keywords: Eco labeling, Labelling Ecologically Approved Fabrics (LEAF), Third-party certification.

Ecolabelling as a Confirmation of the Application of Sustainable Materials in Textiles

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Fibres & Textiles in Eastern Europe, Vol. 17, No. 4 (75), 2009, 21-25p.

ISSN: 1230-3666

The sustainable development idea has been -and still is-the principle activity of those who are aware of the importance of environmental protection. Realisation of this idea takes place, for example, by use of sustainable materials. They have a special meaning most of all in textiles because ecologically-friendly characteristics are usually the first to be mentioned as having a direct impact on the human body, (human-ecology) for example, not causing an allergy, non-carcinogenic, non-toxic etc. One of the forms of giving information about sustainable materials is the use of ecolabelling: making distinctions of products by means of given trade marks (eco-labels), which are an important marketing tool on today's more and more environmentally aware, boundary-less market. This paper presents popular ecolabels used in different countries all over the world. Examples of the criteria which must be fulfilled to claim that the textile was made from sustainable materials are presented. The requirements given by different institutions which have the right to grant eco-labels are compared. The level of understanding amongst Polish consumers with respect to information about sustainable materials from eco-labels for textiles was surveyed.

Keywords: Sustainable Materials, Ecolabelling, Eco-Criteria

Is the urban Indian consumer ready for clothing with eco-labels?

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International Journal of Consumer Studies, Volume 32, Issue 5, September 2008, 438–446p.

ISSN: 1470-6431

India has witnessed rapid strides of development at sustained growth rates of more than 8% and has seen a huge spurt in consumption. Consequently, it has been estimated that the increased consumption may result in the country becoming one of the leading offenders relating to environmental pollution. The textiles industry in India is traditionally one of the worst offenders of pollution, with its small units following outdated technology processes. One opportunity to reduce the environmental impact of clothing industry in India is to concentrate textile production within environmentally certified or eco-labelled clothing. In the absence of existing research, this study investigates whether the urban Indian population would be interested in clothing with eco-labels. The results suggest the existence of a segment of consumers who are positively motivated towards eco-labelled garments. This segment profile is described in terms of demographic and psychographic variables. Managerial implications and future directions are suggested.

Keywords: Eco labels, Textile, Environmentally Certified

Eco-textile labelling: A guide for manufacturers, retailers and brands

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2. Founder & Director, MCL News & Media, Wakefield, United Kingdom

West Yorkshire: Mowbray Communications Ltd., 2008, 96p.

It is a comprehensive easy-to-read handbook designed for manufacturers, retailers and buyers who want to source or produce clothing that has a minimal impact on the environment and that is made in a socially responsible manner. The guide lists all the labels and environmental standards relevant to the global textile and clothing supply chain. It gives practical information about the 30 most important existing eco-labels and standards for manufacturers, brands and retailers.

Keywords: Guide, Eco labels, Global textile

Consumer willingness to pay for sustainable apparel: the influence of labelling for fibre origin and production methods

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International Journal of Consumer Studies, Volume 32, Issue 5, September 2008, 491–498p.

ISSN: 1470-6431

This study of value-based labelling for apparel products examined consumer willingness to pay (WTP) for three credence attributes of fibre: origin, type and production method. Experimental auctions were conducted with student subjects in Texas and used socks made from cotton and polylactic acid (PLA), a fibre manufactured from corn. The bid results of two rounds were compared. The first round was conducted without information about the credence attributes of the socks. The second round included varying levels of three types of attributes: fibre origin (imported, US and Texas), fibre type (cotton and corn) and production method [conventional, organic and non-genetically modified (GM)]. Tobit regression analysis was performed using the attributes and subject demographics to determine consumer WTP for the various attribute levels and to profile consumers with interest in the attributes. In terms of origin, results show that participants were willing to pay a premium for socks with fibres produced in Texas, but not for those produced in the US. Fibre type mattered, with participants requiring a discount once they learned that socks were made with PLA fibre. The greatest premium ($1.86) was placed on socks labelled as organic, slightly more than the premium for socks labelled as non-GM. The results also indicate that women were less willing to pay for US fibres than men, and Hispanics were less willing to pay for organic or non-GM fibre production. A key finding of this study is that consumer's value information about the local origin of fibres. The premium for organic fibres is not unexpected, given the success of the organic apparel market, but the premium on non-GM fibres suggests that sustainable production systems that are not organic may be successful if they emphasize other attributes such as local or non-GM.

Keywords: Eco labels, Textile, Environmentally Certified, Eco labeling, Fibre, GM fibres

Labelling wool products for animal welfare and environmental impact

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International Journal of Consumer Studies, Volume 32, Issue 5, September 2008, 427–437p.

The notable growth of the market in recent years indicates apparel consumers' interest in organic fibre products. Yet less is understood about how apparel consumers would respond to labelling for other credence attributes associated with animal-fibre products, such as animal welfare or eco-friendliness. An online survey of 507 US consumers was used to compare consumers' reactions with a variety of labelling schemes for wool product attributes, including animal-friendly, organic and environmentally friendly production. Consumer segments were created based on frequency of label choice, and analysis of variance and multinomial logit regression were used to identify and characterize the demographics and psychographics of the consumer segments that found labelling for

animal welfare or environmental concerns appealing. The study identified a segment of consumers (19% of the sample) who were motivated to purchase apparel products labelled for animal welfare. These animal-focused consumers could be identified with relatively high accuracy from the demographic and psychographic variables in the model. The model variables, which included familiarity with organic products and self-perceived knowledge about environmental damage related to apparel production, were not effective in identifying the environment-focused apparel consumers. The results also demonstrated the ability of a general belief in animal rights to motivate the apparel consumers in the sample, suggesting that acting on a concern for animals could be a more powerful motivation for consumer behaviour than acting on a concern for the environment.

Keywords: Eco labels, Wool Products, Labelling, Animal Welfare

2007

Firecode - fire safety in the NHS: operational provisions, Part C: Textiles and furnishings

Great Britain: Department of Health: Estates and Facilities Division, London: The Stationery Office, 2007, 64p.

ISBN: 978-0-11-322786-0

This document sets out fire safety recommendations, advice and guidance for the purchase, use and donation of textiles, furniture and furnishings in hospitals and other healthcare premises in England. The guidance is also suitable for the independent health sector. The guidance has been revised in accordance with the requirements of EC legislation and European technical specifications, in particular in relation to the Medical Devices Directive (93/42/EEC) and the General Product Safety Directive (2001/95/EC). It also recognises present Government policy in supporting areas such as: the Keymark (the CEN mark of conformity); the use of eco-labels in textile and end--user applications; and the use of the CE Mark.

Keywords: Guidance, EC Legislation, Safety Directive, Textiles, Fire Safety, Eco-labels, Textile

Chinese Eco-Labelling Scheme

Colourage, Vol. 54 Issue 11, November 2007, 78p.

ISSN: 0010-1826

The article focuses on the importance of Chinese ecological labelling system in textile industry. The scheme is called China Certification Committee for Environmental Labelling of

Products (CCEL) which designed to use market forces in supplementing mandatory environmental laws to lessen domestic environmental products' stress. It will also serve as a random sample testing conducted by the authorities in the market of textile products.

Keywords: Textile Industry, Chinese Eco Labeling System, Textile, Eco-label

Perspectives of ecolabels-global competitiveness of Indian textiles

Colourage, Vol. 54, Issue 4, April 2007, 120p.

ISSN: 0010-1826

The article examines environment-related issues in the Indian textile industry, including eco-labeling and international competitiveness. Textile eco-labels, which prescribe the norms for the presence of harmful substances in products, have been the best tools for companies to demonstrate compliance to eco-norms. The Environmental Management System ISO14000 helps in the achievement of environmental compliance by manufacturing firms. Included in the article are lists of banned amines and dyes.

Keywords: Textile Eco labels, ISO 14000, Indian textile, Environmental Compliance

Implementation of eco labelling scheme

Colourage, Vol. 54 Issue 7, July 2007, 86p.

ISSN: 0010-1826

The article focuses on the implementation of ecolabeling scheme for the textile industry in India. Activities in the ecolabeling initiative include product selection, criteria development and public review process. The main objective of these activities is to develop a label that is accurate, relevant, non-deceptive and based on reproducible comprehensive scientific methods.

Keywords: Implementation, Textile Industry, Eco Labeling Scheme, Scientific Methods, Textile Eco labels

Perspectives of Eco-Labels in Textiles: Selection Criteria for Eco-friendliness of Textiles or Ecolabel

Colourage, Vol. 54, Issue 5, May 2007, 88p.

ISSN: 0010-1826

The article focuses on ecolabeling for textile products. The first type of eco-label zeroes in on overall environmental impact of the product, frequently using a life cycle analysis. The second type is a single-issue label that refers to a specific environmental or ethical characteristic of the product. Textile eco-labeling involves production-process standards, raising concern of developing countries in the form of technical barrier for trade, and a market access tool for elite traders.

Keywords: Production-Process Standards, Eco Labeling, Textiles, Eco-labels

The ecological tagging of textile materials

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Review of Management and Economical Engineering, Vol .6, No.6, ,Special Issue - Business Excellence no. 2, 2007, 34-37p.

ISSN: 1583-624X

The eco-tagging is due to help the consumer to identify and choose the products and services which are most friendly with the environment (comparative with the similar existing products on the market). We assist, lately, to a more and more accentuated competition between producers in what it seems to be the bid of products more or less ecologic. Using arguments among most diverse, they try to assure the consumers as their products are more ecological than the competitor's.

Keywords: Ecological, Textile, Consumers, Eco-labels

Well dressed? The present and future sustainability of clothing and textiles in the United Kingdom

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Cambridge: University of Cambridge Institute for Manufacturing, 2006, 84p.

ISBN 1-902546-52-0

Researchers had explored the environmental, social and economic sustainability of a wide range of future scenarios for the supply of clothing and textiles to the UK. They have laid out a set of proposals outlining how consumers could satisfy their needs for clothes and textiles with significantly reduced impact on the environment, while also offering new business opportunities to UK companies. The report is intended to be valuable to a wide range of interested groups. It is written for people in business – who have to balance their personal ethics and the concerns of their consumers with the need for their business to prosper. It is written for consumers who have a limited budget but are concerned about the impact of their shopping choices. It is written for campaigners and those in education, government and the media – to try to provide as balanced evidence as possible about the present and future impacts of the clothing and textiles sector.

Keywords: Supply, Consumers, Clothing, Textiles, Business, Environment and textile

Green Tools Handbook for Textile Industries: A guide on main product and system certifications focused on ecological improvement of textile products, 89p.

This publication has been developed in the frame of project "TexEASTile Sustainable Innovation for Textile in South East Europe" that has been co-funded by South East Europe, Transnational Cooperation Programme. This handbook covers the main product certifications (Ecolabel, Oeko-Tex Standard® 100, GOTS, Organic Exchange) and the main system certifications (ISO 14001, ISO 9001, Oeko-Tex® Standard 1000, SA 8000). It is compared with each other, respectively, the requirements expressed by the standard for product certification and those expressed by the standard for system certification. This brief guide to the most popular ecological product and system certifications in the textile industry aims to try to clarify the main differences of the various standards and identify strengths and weaknesses and then provide help to those who wish to deepen the technical aspects and operational implementation.

Keywords: Guide, Ecological, Texeastile, Certifications, Textile Industry

Consumer demands on Type III environmental declarations

Consumer voice in standardisation (AISBL)

Avenue de Tervueren 32, box 27, B-1040 Brussels, Belgium, 2006, 122p.

This report is commissioned by ANEC - the consumer voice in standardisation (AISBL). It identifies the main consumer concerns on Type III environmental declarations and

recommends how to address these. The recommendations are intended to support ANEC's input to the political debate on Integrated Product Policy and into European and international standardisation work. The report includes 10 example Type III environmental declarations (EPDs), demonstrating how the recommendations can be implemented in practice. Among other products study has covered clothing and textiles also.

Keywords: Type III Environmental Declarations, Recommendations, Consumer, Demands

Acceptability through Eco-Labelling in our Textile Industry

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Colourage, Vol. 53 Issue 10, October 2006, 42p.

ISSN: 0010-1826

The article discusses the role of eco-labeling in shaping the requirements and demands of clothing and textile industry customers in India. Eco-labeling is an off-shoot of the increased emphasis on environmental and health and safety-related norms and practices. Because of the increasing demands for eco-labeling in the U.S. and European Union, India is obliged to follow due to its export activities in the two regions.

Keywords: Customers, Eco Labeling, Export, Textile Industry

EU Eco-label for Lenzing

Indian Textile Journal, Vol. 117 Issue 1, October 2006, p 19

ISSN: 0019 - 6436

The article reports that Lenzing is the only fiber producer from around the world with the European Union Eco-label, Flower. The label ensures highest environmental standards. It stands for a unique certification system that enables consumers to identify environmentally sound products. The award confirms the commitment of Lenzing to setting new standards for sustainability and ecological technology. Such a commitment made the company a vanguard of the textile industry and elevated it into the competence center for ecological production processes and technology.

Keywords: Lenzing, Certification, Award, Fiber

Lenzing with EU Eco-label

Melliand International, Vol. 12 Issue 4, December 2006, p 272

The article reports on the recognition given by European Union (EU) to fiber manufacturer, Lenzing AG at a yarn fair held September 2006 in Paris. EU grants the eco-label, European Flower, to Lenzing as recognition to the environmental friendliness of the manufacturer's cellulosic fibers. The label, which has a flower that represents a unique certification system, symbolizes eco-friendliness of the product. The flower design also helps consumer recognize that the product is environment- friendly.

Keywords: flower, fiber, certification, environment-friendly.

Ecodesign and Textiles

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Research Journal of Textile and Apparel, Volume 10, Issue 3, 2006, 67 – 75p

ISSN: 1560-6074

To assess a product's environmental impact is always a difficult job. How should one measure the environmental impact of a product or the production? Will the Life Cycle Assessment (LCA) be one method in measuring a products' superiority with regard to environmental impact? This article reviews the possibilities of using LCA as a possible measurement system in evaluating a product's ecobalance. Is the green trend becoming so strong that it will provide new product possibilities and market possibilities to designers and manufacturers? If green taxes become more common in European Union, it is important to invest in green product innovations and green services. The trend in consuming everyday items is changing and the future of ecodesign, especially in textile production, needs to be researched and newly specified. Designers and producers will soon have to be ready for this change.

Keywords: Ecodesign, Sustainable Design, Life Cycle Assessment, Green Marketing, Ecolabel, Environmental Awareness

2005

Biodegradable and Sustainable Fibres

Ed. by Richard Blackburn

Amsterdam: Elsevier, 2005, 464p.

ISBN: 1845690990|9781845690991

With increasing concerns regarding the effect the textile industry is having on the environment, more and more textile researchers, producers and manufacturers are looking to biodegradable and sustainable fibres as an effective way of reducing the impact textiles have on the environment. The emphasis in Biodegradable and sustainable fibres is on textiles that are beneficial by their biodegradation and come from sustainable sources. Biodegradable and sustainable fibres open with a discussion of microbial processes in fibre degradation. It then moves on to discuss the major fibre types, including bast fibres, alginates, cellulose and speciality biodegradable fibres, such as lyocell, poly(lactic acid) and poly(hydroxyalkanoate)s. The development of synthetic silks is covered along with biodegradable natural fibre composites, nonwovens, and geotextiles. The final chapter looks at the history and future of soya bean protein fibres. Biodegradable and sustainable fibres is a comprehensive monograph providing essential reference for anyone interested in the area and environmental issues relating to textiles including fibre and textile scientists and students, textile technologists, manufacturers, and forensic specialists in industry and academia.

Keywords: Sustainable Sources, Biodegradation, Microbial Processes, Major Fibre Types, Synthetic Silks

Environmental Baseline Requirements for Textiles

Consumer Council at Austrian Standards Institute, Vienna: Austrian Standards Institute, 2004, 129p.

This report follows up on the conclusions made in the ANEC report on textile products and develops specific environmental baseline requirements for textiles. Environmental baseline requirements have been developed on the basis of eco-label criteria, for which reason a comparison and review of different eco-labelling scheme have been carried out. This study has shown that it is possible to develop environmental base line requirements for textile with a combined use of eco-label criteria, surveys of chemicals in textiles and information on BAT (Best Available Techniques) of the textile industry. The project has reviewed the existing criteria of textiles of different schemes. It also listed chemicals not allowed in eco-labelled textiles and chemicals not allowed to emit from textiles.

Keywords: Ecolabel, Eco Labeling Scheme, Textile Products, Environmental Baseline Requirements

Greening a cotton-textile supply chain: A case study of the transition towards organic production without a powerful focal company

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Greener Management International, Vol. 43. September, 2004, 53-54p.

ISSN: 0966-9671

This paper reports on a case study of a supply chain for textiles made from organically grown cotton. All actors in the supply chain, from the cotton farmers in Peru through to the Swedish trading company that markets the product, have been interviewed about the changes that occurred as a result of the greening process, their motivation for taking part in that process and what this participation has brought them. The focal company is Verner Frang AB, a small Swedish trading company specialising in sourcing high-quality cotton yarn from Peru and selling it to weavers on the European market. During the late 1980s the company saw its European market diminishing. This development coincided with an increasing demand for 'eco-fashion' and with an increasing interest in initiatives for 'green' public procurement in Sweden. In light of these developments Verner Frang AB saw the potential of environmental excellence as a way of differentiating its product targeting what appeared at the time as a growing niche market for 'green' textiles. This triggered a decision to focus exclusively on trading type I eco-labelled products made from certified organic cotton. Initially, however, the company was faced with two serious hurdles. (1) There were no suppliers in Peru that could supply cotton yarn made from organically grown cotton; indeed the company could not even find any farmers that could supply it with certified organically grown raw cotton. (2) Although it had a long history of working with Peruvian suppliers, Verner Frang AB was a small customer with very little power to impose any change on them. The case study in this paper highlights the hurdles Verner Frang AB had to overcome when it started working with organic cotton and reports on how the implemented changes have influenced the various actors in the chain over the ten years since the greening of the supply chain was initiated.

Keywords: Ecolabel, Environmnet Supply Chain Management, Textile Products, Environmental Baseline Requirements, certified Organic Cotton, Eco-labelled Products

Power and Incentives in Environmental Supply Chain Management

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Strategy and Organization in Supply Chains, Physica, Heidelberg, 2003, 65-81p.

ISBN: 3790800244

This book chapter presents two case studies to illustrate how two very different companies have responded to environmental challenges with supply chain implications. Using these two cases as examples, the paper discusses the organizational implications of the different approaches. It is argued that ESCM involves three distinct tasks: (1) Deciding the objective(s) to be achieved, (2) Motivating relevant actors to ensure that they will cooperate in achieving the determined objective(s), and (3) Devising a system of control. It is also argued that greening in the supply chain can be achieved both through use of power leverage (the threat of sanctions) and incentives. The first case details the greening of a cotton/textile supply chain triggered by the focal company Verner Frang AB. In the second case, the ESCM approach taken by the British DIY retailer B&Q for greening of the wood products supply chain is described. The cases differ both in terms of the approach applied and in terms of the context and characteristics of the focal company and its interaction with other parties in the supply chain. This paper is a chapter of the book Strategy and Organization in Supply Chains and is edited by S. Seuring, M. Müller, M. Goldbach, and U. Schneidewind.

Keywords: Environmental Supply Chain Management, Power, Incentives, ESCM, Life Cycle Assessment, Eco-friendly Textiles

Environmental Indicators of Textile Products for ISO (Type III) Environmental Product Declaration

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AUTEX Research Journal, Vol. 3, No. 4, December 2003, 206-218p.

ISSN 1470-9589|2300-0929

The objective of this research project was to develop technical environmental indicators of textile products for ISO Type III environmental product declaration. The standardization of an environmental declaration for products (Type III) currently under way in the ISO offers an interesting opportunity for communicating the environmental effects of products in a global and uniform manner. The research was conducted in co-operation between the Tampere University of Technology, the Federation of Finnish Textile and Clothing Industries and the more important Finnish textile producers and sellers. This paper examines the manufacturing processes of the selected textiles by using Life Cycle Inventory Analyses (LCI) of the Life Cycle Assessment (LCA) method, and also compares the data available with the criteria for different environmental labels (EU eco-labelling and the Öko-Tex standard). As a result of this research project, a proposal is presented for the formulation of technical environmental indicators of different types of textile products, i.e., of essential

environmental effects, to support the development of ISO Type III environmental declaration criteria.

Keywords: Life-cycle assessment, LCA, Eco-Labelling, Environmental Product Declaration,Environmental Indicators, Integrated Product Policy (IPP)

HEMP-SYS: Design, Development and Up-Scaling of a Sustainable Production System for HEMP Textiles—An Integrated Quality SYStems Approach

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Journal of Industrial Hemp, Volume 8, Issue 2, 2003, 79-83p.

HEMP-SYS is a European Union (EU) Project funded under the thematic programme: Quality of life and management of living resources of the 5th Framework, key action 5.2. The project has officially started on 1st November 2002 and will be carried out for 36 months. Scientific and industrial partners will tackle the main problems of the hemp fibre production chain for textile destination from cultivation to the development of end products. Main objectives of the project are: provide decision support to primary producers, produce an integrated quality control system for raw and processed products, disseminate information to support the entire chain of the hemp fibre industry. Main expected project results are: innovative hemp fibre production systems with decision support tools for farmers, optimal processing methods, a prototype for an integrated quality control system, disseminated knowledge and high-value hemp textile end products.

Keywords: Hemp Fibre, Processing, Production Chain, Quality Control, Textile Products

Towards Sustainable Market Strategies: A Case Study on Eco-textiles and Green Power

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Wuppertal Institute for Climate, Environment and Energy in its series Wuppertal Papers, Volume 130, 2003, 70p.

ISSN 0949-5266

This study focuses on the economic, market-related context of consumption patterns and incorporates the regulatory settings and values. The aim is to systemise the influences on sustainable consumption patterns. Special attention is drawn to the question how existing niche markets could be extended to mass markets. This question is deepened by case studies on the green textile and the green power markets. The results emphasise the

different key factors which influence the successful pathways for an extended green market volume. Looking at the case of the green power market it can be seen how important it is to create an economic and institutional context for adoption. Looking at the case of green textiles the importance of new lifestyles and cultural impacts are obvious. Looking at the interfaces between institutional settings, supply structure, societal values and consumers' decision-making, it can be seen that consumers' demands are not only a product of individual needs. Therefore sustainable consumption strategies will have to face not only the change of needs, but also the change of structures which influence individual choices.

Keywords: Systemize, Green Textile, Markets, Green Power, Sustainable, Consumption, Influences

2002

Recent developments in colorants for textile applications

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Surface Coatings International Part B: Coatings Transactions, Volume 85, Issue 4, November 2002, 243–264p.

ISSN: 1476-4865

This paper reviews the developments in the various classes of dyestuffs used in dyeing textile materials. The background to these developments is discussed in relation to developments in fibres, the driving forces for change in the global textile coloration sector, and changes in the colorant manufacturing sector. From a general classification of the chemical types of colorants used the developments relating to specific dye classes are then reviewed, namely direct, reactive, vat, sulphur, azoic, disperse and basic dyes. Wool dyeing is discussed in terms of acid, metal-complex, mordant (chrome) and reactive dyestuffs. Some considerations relating to natural dyes and biotechnology, regulatory developments and eco-labelling, and developments in colour fastness requirements are also briefly discussed.

Keywords: Dye, Classes, Textile, Colorants, Global, Changes, Classfication, Eco-labelling

Greening Indian Businesses for the World Market

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Bannerghatta Road, Bangalore, Karnataka, India

IIM Bangalore Research Paper No. 181, February 20, 2002, 22p.

There has been a steady increase in environmental notifications under the provisions in the WTO Agreements as indicated by the recent WTO environmental database. This trend threatens to reduce market access and competitiveness of traditional exports from developing countries like India. The Indian businesses need to aggressively address the green challenge in the world market, and credibly signal the eco-sensitivity of their products in the market by increasing environmental certification. Other developing countries like China have been quick with proactive strategies on environmental certification to tap global opportunities in the sectors like organic food/beverage and eco-textiles. The rates of growth in ISO 14001 and IFOAM certified firms/farms in China have been phenomenal, and tin total number of such eco-certified Chinese firms/farms outstripped those in India in the last six years. Drawing from the literature on competitiveness and environmental regulations, and anecdotal evidence of actual firm experience, this paper puts forward the case that it is both essential and profitable for Indian businesses to increase environmental certifications to take advantage of the full potential of the opportunities in the world market.

Keywords: Eco-Sensitivity, Environmental Certification, Greening, Businesses, Market, World, Strategies

Eco-friendly durable press finishing of cellulose-containing fabrics

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Journal of Applied Polymer Science, Volume 84, Issue 12, 20 June 2002, 2243–2253p.

ISSN: 1097-4628

To impart easy-care properties to cellulose-containing fabrics along with avoiding any harmful effects of formaldehyde on both the health and the environment, attempts have been made to use citric acid (CA) as an ester cross-linking agent along with different catalytic systems in the absence and presence of certain additives. Further, fixation conditions, type of crosslinking agent, as well as type of substrate have been studied. Results revealed that the enhancement in carboxyl content, performance properties, and the decrease in tear strength (TS) as well as in whiteness indices (WI) of the finished fabric samples were increased by increasing CA concentration up to 80 g/L and by raising thermofixation temperature from 140 up to 180°C for 90 s. Inclusion of triethanolamine hydrochloride (TEA. HCl), decreased the carboxyl content, TS, color strength K/S, as well as oily stain release rating (SRR) of the finished fabric samples along with an increase in bound nitrogen (%N), wrinkle recovery angle WRA, and an improvement in WI without affecting the durable press rating (DP). Within the range examined (0–30 g/L), increasing PEG-600 concentration improved the wet resiliency, TS, as well as WI properties of the finished samples. Increasing DMDHEU ratio in the CA/DMDHEU cross-linking system gave rise to an increase in %N, WRA (dry and wet), DP, as well as in free CH2O of finished fabrics, along with a slight improvement in WI values. On the other hand, the TS, carboxyl content, K/S, SRR values of the finished fabric samples were lower at a higher DMDHEU ratio. Increase in carboxyl content, %N, WRA (dry and wet), DP and SRR, as well as extent of post dyeing (K/S) of the treated fabric samples upon using different ester crosslinking agents followed the

descending order: citric acid > pyromellitic dianhydride. The opposite holds true for the TS, and WI values. Among the esterifying catalysts used, and for a given set of finishing conditions, NaH2PO2 · H2O proved to be the most effective one, and the following order of effectiveness may be drawn: NaH2PO2 · H2O > K2HPO4 > Na3–citrate > Na2–tartrate. Inclusion of silicone softener in the finishing formulation brought about an improvement in softeness degree, WRA, %N, DP, TS as well as K/S values along with a decrease in carboxyl content, SRR, and WI values of the treated fabric samples, regardless of the used silicone softener. The performance properties of the finished fabric samples were determined by the type and nature of the substrate.

Keywords: Cross-linking, Esterification, Fibers, Textiles

The international market for organic cotton and eco-textiles: A report for PAN UK's Pesticides Poverty and Livelihoods project

P. Ton

Consultant Cotton

London: Pesticide Action Network UK, 2002,34p.

ISBN: 095216566X

This market survey describes and analyses the international market for organic cotton and eco-textiles in mid-2001, with a view to scaling-up the production and consumption of organic cotton. The core of this survey lies in telephone interviews with almost 100 key actors involved in the various stages of both the conventional and ecological textile and clothing sectors. Results indicate that the market for ecological textiles makes up only a very tiny fraction of the overall textile and clothing market. Where there is a consumer market for eco-textiles, i.e. in the USA, Europe and Japan, demand can only be measured in fractions of percentages of the overall textile and clothing market. Markets in other countries are still virtually non-existent. Initiatives that could be taken up by governmental bodies and donor agencies to increase the consumption of organic cotton textiles and clothing are suggested.

Keywords: TROPAG , Gossypium , Cotton , Organic Farming , International Trade , World Markets , Demand , Production Possibilities , Constraints , Textile Industry , WORLD , Developing Countries.

Indian textile industry- environmental issues

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Indian Journal of fibre and textile research, Volume 26, March-June 2001, 11-21p.

ISSN: 0975-1025 | 0971-0426

Indian textile industry occupies a unique position in the Indian economy. Over the period, it has gone through several changes. An overview of Indian textile industry in terms of its structure, associated problems, pollution control strategies and its impact on environment is given. It has covered the issues like German ban on azo dyes and relevant environmental issues. It has provided the government's stand towards German ban and mentioned eco friendly considerations for the Indian textile industry.

Keywords: Azo dye, Eco friendly textile, Eco label, Eco norm, Pollution control strategies

Studies on an eco-friendly textile auxiliary

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Colourage, ,Vol. 48 Issue 10, 2001, 25p.

ISSN: 0010-1826

In the present work studies on the colour of polyester fabrics dyed with disperse dyes and cotton fabrics dyed with reactive and reactive -HE dyes using a commercially available textile auxiliary have been carried out. 'Sunnysyst-800' is an eco-friendly textile auxiliary that is free from any carcinogenic chemicals and red-listed items. Colour parameters were obtained using the CIE system of colour measurements. Results indicate that with the usage of lower concentration of electrolyte and addition of Sunnysyst-800, good strength of dyeing can be obtained for cotton and polyester fabrics. It was also found that disperse and reactive-HE dyes can be mixed up to dye polyester/cotton blend fabrics in one-bath dyeing.

Keywords: Dye, Eco friendly textile, Eco label, Polyester/cotton blend fabrics

Environmental and social benchmarking for industrial processes in developing countries: a pilot project for the textile industry in India, Indonesia and Zimbabwe

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Integrated Manufacturing Systems, Vol. 11 Issue 7, 2000, 491 – 500p.

ISSN: 0957-6061

Industry is increasingly being required to meet stringent social and environmental specifications in the international market. A number of industries in developing countries fear that unless they meet these requirements, they will lose their competitive edge in the international markets. The objective of this article is to present a newly developed methodology by the United Nations Industrial Development Organization (UNIDO) which enables members of private industry in developing countries to assess their own performance in terms of environmental and social parameters, as well as to evaluate their performance against a set of global norms. This paper will present the said approach for assessing industrial processes through a case study from the textile industry, i.e. more specifically, woven fabric finishing (cotton), conducted by UNIDO in India, Indonesia and Zimbabwe. This article is based mainly on a report published by UNIDO in 1998.

Keywords: Benchmarking, Developing countries, Environment, Textile industry

Are ecolabels valuable? Evidence from Apparel Industry

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American journal of Agricultural Economics, Volume 81, No. 4, April, 1999, 801-811p.

ISSN 0002-9092 | 1467-8276

Using U.S. apparel catalogue data, we estimate hedonic price functions to identify market valuation of environmental attributes of apparel goods. We identify a significant and robust premium for the organic fibers embodied in the apparel goods. We also find a discount for the "no-dye" label. Authors do not, however, find any evidence of a premium for environment-friendly dyes. They further investigate the pricing behavior of apparel suppliers for potential heterogeneous pricing of the organic-fiber attribute and find no evidence of different premia across firms.

Keywords: Eco-Labels, Organic-Cotton Apparel, Dyes, Hedonic Price

Ecolabels and International Trade in the Textile and Apparel Market

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American Journal of Agricultural Economics, Volume 81, Number 5, January 1999, 1078-1083p.

ISSN 0002-9092 | 1467-8276

The paper provides a formal analysis of the welfare and trade implications of eco-labeling schemes. Authors couch their analysis in the context of a stylized model of the textiles market between an industrialized North and a developing South. Textiles eco-labeling involves production-process standards, raising concerns of protectionism against the South. They investigate several labeling scenarios (labeling by North, labeling by both North and South, and harmonization) and considered a large home country, the North, that imports conventional textile goods from the South and produces import-competing conventional textiles as well. Both the North and the South exhibit increasing marginal cost of textile production. Trade is initially distorted by the North's import tariff, as would be the case in the real world. In the absence of information on process standards, equilibrium in the textiles market does not allow 'green' credence attributes to emerge. They reviewed important stylized facts and issues associated with eco-label schemes and presented a parsimonious model that incorporates these stylized facts. They analyzed the two eco-labeling cases described previously and summarize numerical comparative-statics results pertaining to the harmonization of labels. It ended with conclusion.

Keywords: Textiles Eco-Labeling, Conventional Textile, Green Credence, Parsimonious Model, Production Process Standards, Protectionism.

Eco-Labels and International Trade in Textiles

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CARD Working Papers, Paper 228, Iowa State University 1999, 32p.

This paper provides a formal analysis of the welfare and trade implications of eco-labelling schemes. A simple model of vertical (quality) differentiation captures major stylized features of the textiles market in which trading takes place between an industrialized North (domestic) and a developing South (foreign). The paper investigates several labeling scenarios (labeling by North, labelling by both North and South, and harmonization). A labeling scheme in the North without the South's participation is detrimental to both the North's and the South's producers of conventional textiles. In aggregate, the North's textiles industry benefits from the introduction of the label. If the South creates its own label, it regains market share in aggregate, but at the cost of its conventional textiles sector; both of North's industries lose. Consumers gain with a wider choice and with higher quality of textile goods. They would favor upward international harmonization of eco-labels towards the higher quality of the North, as long as the South participates in production and provides some cost discipline.

Keywords: Eco-labels, Textiles Market

Guidance Manual Eco-labelling for Textiles

Egyptian Environmental Affairs Agency and Entec UK Ltd., January 1999, 80p.

This manual is developed by the Egyptian Environmental Affairs Agency and Entec UK Ltd., along with Textile Research Division, National Research Centre under SEAM (Support for Environmental Assessment and Management) Project. The main goal of this project was to show the significant financial savings and environmental improvements that can be made by relatively low-cost and straightforward intervention. Measures that had relevance across the sector, innovative contents and a high multiplier potential were then developed

as demonstration project. One of the sectors was textile. In textile sector it detailed about eco-friendly processing for securing international eco-label. It demonstrates how to conserve water and energy. Different processes of bleaching and combined processesing like Desize, scour and bleach. How to clean up by using enzymes and reduction of sulphide in sulpher dyeing is also explained.

Keywords: Eco-labels, Textiles, Bleaching

1998

Eco–labelling and textile eco–labeling

Brian J McCarthy and Brian C Burdett

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Coloration Technology, Volume 28, Issue 1, June 1998, 61–70p.

ISSN: 1478-4408

Importance of eco labeling and its philosophy in the life is increasing across the world. Eco labeling schemes- national and international is continuing to proliferate and causing confusion in the market place. The aim of this review is to provide the present status of different and major eco labeling schemes. It has specifically focused on the leading textile related schemes across the world. It has discussed the different EU textile eco labels which are national labels and so called private labels that cover a wider geographical area. The terminology distinguishes these from EU eco labeling policy.

It has discussed individually the private labels-Ecotex, Oekotex, and GuT and the national labels—Nordic Swan, Swedish Nature Conservation Society, Skal Organic, and Stitching Milieukeur.

Keywords: Eco labeling schemes, EU textile Ecolabels, Terminology, Private Labels

Whither ecolabels in India?

Colourage, Vol. 45 Issue 11, November 1998, 13p.

ISSN: 0010-1826

Concern for environment is an important issue and practically every industry is up against problems of pollution control, with the textile industry bearing the heaviest weight, the more so in the wet processing segment. Apart from the need to meet the regulations of pollution control in India, with the opening of the market to international competition and the need to face the formidable challenge from the major players in the international market, the need to produce textiles in an eco-friendly way and guarantee them to be free from harmful chemicals has become paramount. Most of the criteria for ecolabels are product-based at present and the limit of harmful chemicals varies with the intended use of textiles. It is in this background that ecolabels were introduced at first by some German manufacturers to get a marketing advantage. Where India stands in this context is an important issue which must be resolved.

Keywords: Wet Processing Segment, Formidable, Eco-Friendly Way, Paramount, Eco Labels, German Manufacturers

Consumer Education and Research Centre

Consumer Education and Research Centre (CERC), set up in 1978, is a non-political, non-profit and non-government organisation dedicated to the education and empowerment of consumers as well as promotion and protection of consumer interests through effective uses of education, research, the media and law. CERC has three major roles-to make consumers aware of their rights, to help them protect themselves and to make providers of goods and services accountable.

Its activities include complaints handling, legal advice and litigation, consumer education and awareness programmes, library and information service, publication, comparative testing of products, advocacy, investor and environment protection.

CERC-ENVIS Centre

Ministry of Environment & Forest, Government of India has recognized Consumer Education and Research Centre (CERC) as ENVIS (Environment Information System) Centre in 2005. The focus of ENVIS is to provide environmental information to decision makers, policy planners, scientists and engineers, research workers, etc. across the country. ENVIS was conceived as a distributed information network with the subject-specific centers to carry out the mandates and to provide the relevant and timely information to all concerned.

Subject assigned to the CERC- ENVIS Centre is "**Eco labelling and Promotion of Eco friendly products."** The Centre launched the website http://cercenvis.nic.in/ on NIC (National Informatics Centre) platform with the theme 'Eco-labelling and Promotion of Eco-Friendly Products'. The website furnishes the information on national and international scenario on this subject.

It publishes theme based quarterly newsletter named "Green Insights". It also circulates bi-monthly e-bulletin "Green Alert". Since Social Media is very popular among youth and to attract them and sensitise them towards eco products. ENVIS Centre has started a page on facebook also (https://www.facebook.com/EcoProductsEcoLabeling).

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