

bluesign®

The independent
industry
textile
standard

Pure materials. Pure benefit.

Selecting Dyes and Chemicals to Minimise Environmental Impacts

**AFIRM RSL Seminar
Shanghai International Convention Centre
Shanghai, China**

27 September 2007



- Founded in 2000
- Located in St.Gallen Switzerland (EMPA building)
- Specialised in managing EHS issues in textile production
- Input oriented system
- Rating of chemicals
- Managing of textile processes in respect of consumer safety, water and air emission, occupational health and resource management

Environmental Impacts ...

... of Textile Industry

Chemicals



- 25% of the chemicals produced worldwide are used for textiles
 - » Environmental impact

Water



- Growing of cotton: 8'000 – 40'000 l / kg cotton
- Finishing of textiles: up to 700 l freshwater / kg textile
- Waste water in production: up to 600 l / kg textile
 - » Mostly drinking water quality

Energy



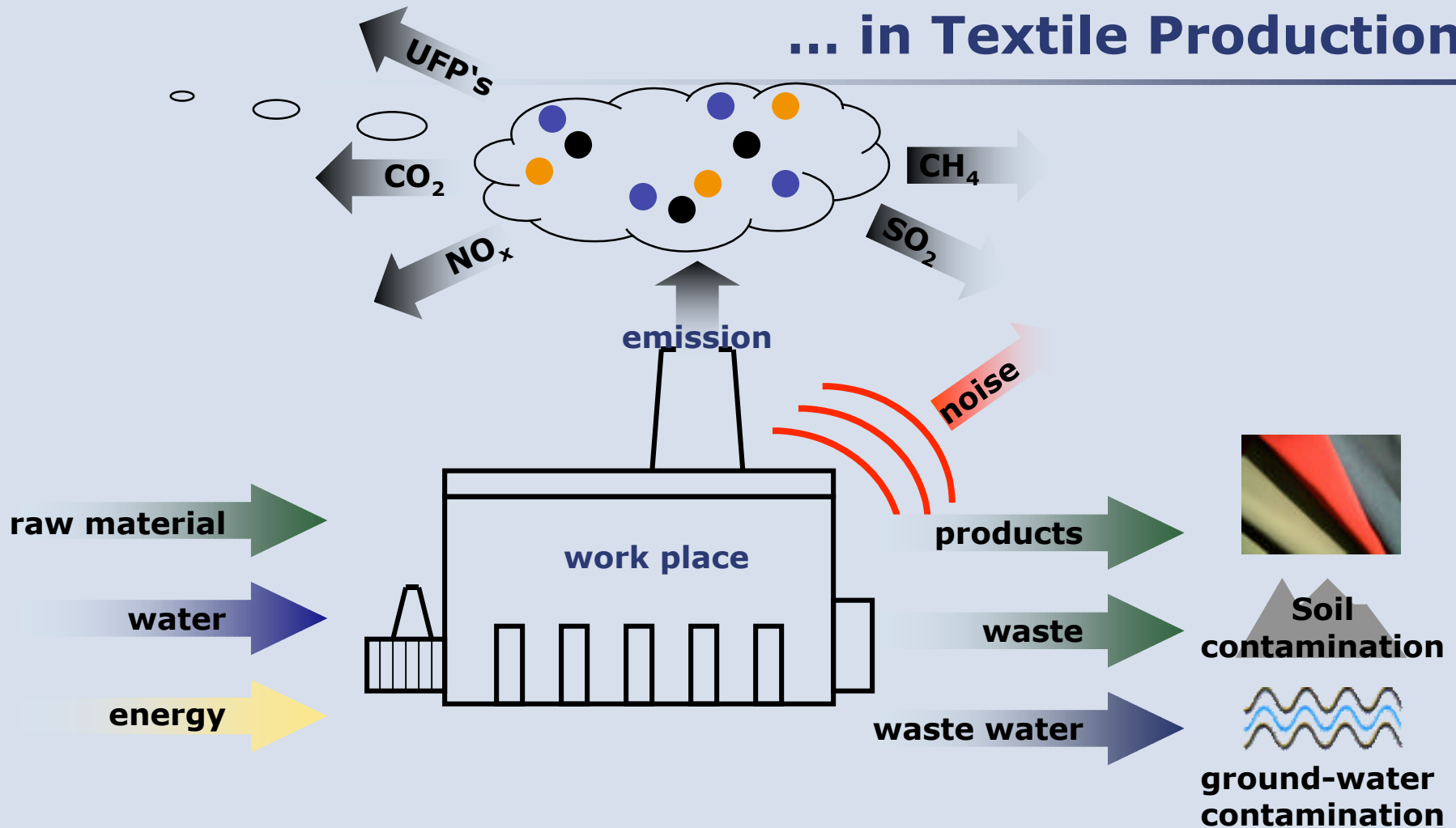
- High energy consumption in production, transport, retail and use
 - » Contribution to global warming

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EHS Aspects ...

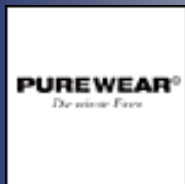
... in Textile Production



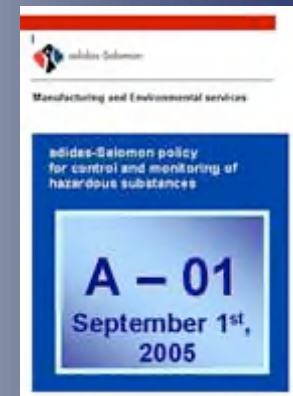
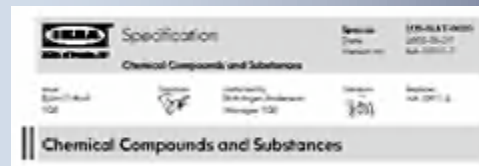
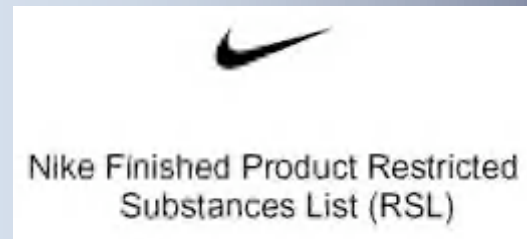
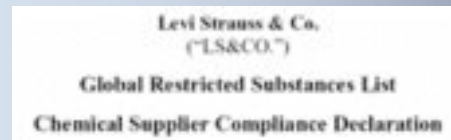
Current "ECO" approaches ...

... the Solution?

Eco labels



Restricted Substance Lists (RSL)



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But what is found daily ...

... in Textile Products!



- MAK-Amines
- PVC & Phthalates
- APEO
- Heavy Metals
- PFOA and PFOS
- Sensitising dyes
- Toxic solvents
- Other toxic substances

Waste Water Impact ...

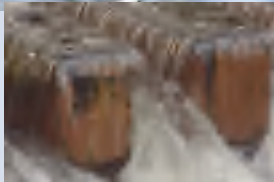
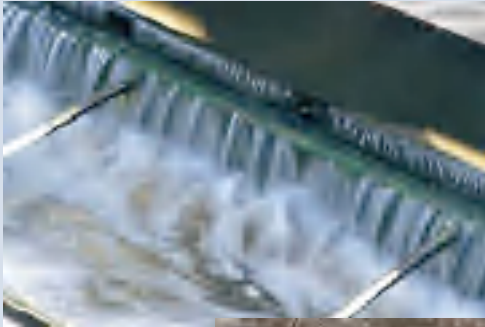
... of Greige Fabric



- Preparations, sizes, knitting-oil
- Monomers, oligomers
- Solvents from synthetic fibres
- Inherent substances like antimony
- Natural impurities (from cotton, wool, etc.)
- And others

Waste Water Impact ...

... of Processes



- Auxiliaries, dyestuffs, chemicals used in production directly or indirectly enter the waste water
 - » ~65% in a production of synthetic fabrics
 - » ~55% in a production of cotton fabrics
- Water from exhaust air scrubber
- And others

COD Impact ...

... Typical Synthetic Manufacturer

**Greige
Fabrics**

Processes

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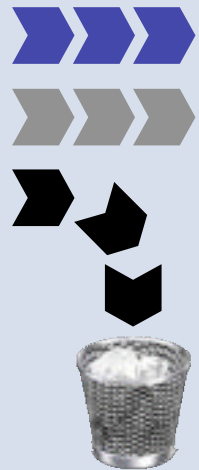
The bluesign® standard ...

... Conclusions

Monitor Input Stream of
Textile Production Chain ...

... in order to ascertain
Consumer Safety!

Input



Monitoring &
Optimisation
of
Processes &
Technology



Output



- **Consumer Safety**
Only approved components free of harmful substances are used
- **Conserving Resources**
Minimised resource consumption leads to a sustainable product
- **High-tech and Comfort**
No compromise in functionality, quality or design

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Expert System to assess Input Streams

Component Categorisation

Rating

- blue:** All foreseeable applications within the bluesign® standard
- grey:** Can be used for applications under conditions provided by "Best Available Technology" – as long as consumer safety is not compromised
- black:** Usage ban



Definition of Applications



Input Streams

The five pillars of the bluesign® standard



Over 600 restricted and banned substances are monitored within the bluesign® standard

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Input Streams

Water Emission



Optimised input of selected chemicals leads to

- High biodegradability and high bio-elimination
- Low fish-, bacteria-, daphnia-, algae toxicity
- Reduced total COD (Chemical Oxygen Demand) load
- BOD (Biological Oxygen Demand) is improved
- Reduced AOX (Adsorbable Organic Halogen)
- Minimised heavy metal concentration

Input Streams



Resource Productivity

- Use of eco-efficient products = to achieve best performance with optimised resource consumption and minimum air and water emissions
- Comparison of one fabric range produced in the same mill before/after a screening process:

	before	after
» Water consumption:	227 l	108 l
» Use of chemicals:	354 g	248 g
» Energy consumption:	26.4 kWh	17.2 kWh

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Result ...

... Resource and Cost Savings

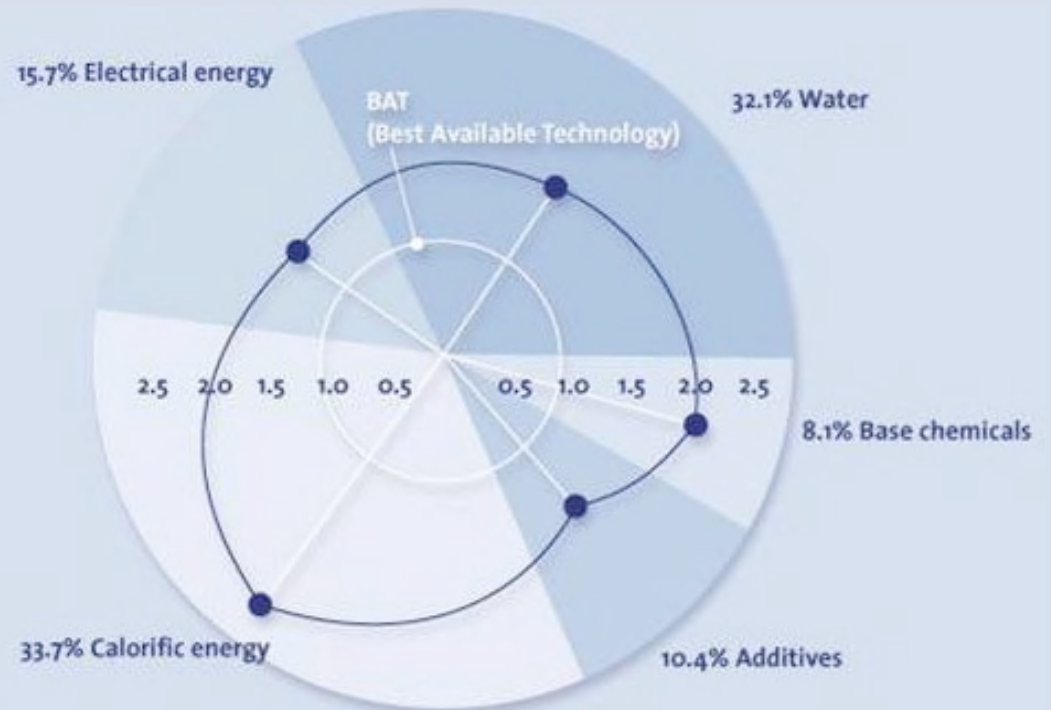
Resource Inflation (rif):

Total = 2.01

Water	= 1.77
Electrical energy	= 1.55
Calorific energy	= 2.61
Additives	= 1.67
Base chemicals	= 2.24

Cost Inflation (cif):

Total = 2.09



Input Stream Management System

The Holistic Approach

Tackle the root of the problem:

- » Clean components lead to clean products and reduce environmental impact



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bluesign® screening ...

... the Full Factory Audit



- Rating of all components in use
- Monitoring of processes
- Data acquisition and balancing of resources
- Screening report with recommendations
- Indication of resources and cost saving potentials compared to "Best Available Technology"

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bluesign® screening ...

... the Outcome



- Reduction of ecological footprint: minimised energy and material input per kg of a textile fabric
- Total transparency
- Breaking down complex EHS-issues to a manageable level
- Compliance with all common RSL's
- "Insurance" for manufacturers, retailers and brands

A blue-tinted photograph of a cornfield. The image shows rows of corn plants with long, pointed leaves. A white rectangular box is overlaid on the right side of the image, containing the text "Thank you" in a dark blue, sans-serif font.

Thank you