Chemicals in the Ready-Made Garment Industry

There are several environmental hot spots connected to the life cycle of a pair of jeans, mostly in the raw material and production phases of the life cycle. The adverse impacts that we found were connected to CO_2 emissions, land use and deforestation, loss of biodiversity, excessive use of fresh water, chemical pollution and the use of nitrogen and phosphorus.

We decided to select the sustainability hot spot 'chemical pollution' for the in-depth study, all effects of this adverse impact are connected with the use and discharge of hazardous chemicals. This hot spot has an adverse impact on several planetary boundaries: biochemicals flows, freshwater use, biosphere integrity and novel entities. In addition, it can affect several social sustainability hot spots such as water, food and health.

We found the adverse impacts of the use and discharge of hazardous chemicals in several phases of the life cycle: from raw materials to the production of the fabric and the manufacturing of the pair of jeans.
The use and discharge of hazardous chemicals is emphasized in 4 UNSDG-goals, and it is the main issue in goal 12.4 on environmentally sound management of chemicals and all its waste throughout it's lifecycle by 2020.

SMART
Sustainable Market Actors for Responsible Trade

WWW.SMART.UIO.NO

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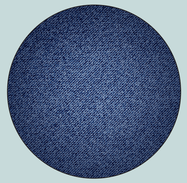
Which chemicals and where?

Conventional cotton

- Synthetic fertilisers
- Pesticides
- Growth enhancers
- Fungicides
- Herbicides

Denim production

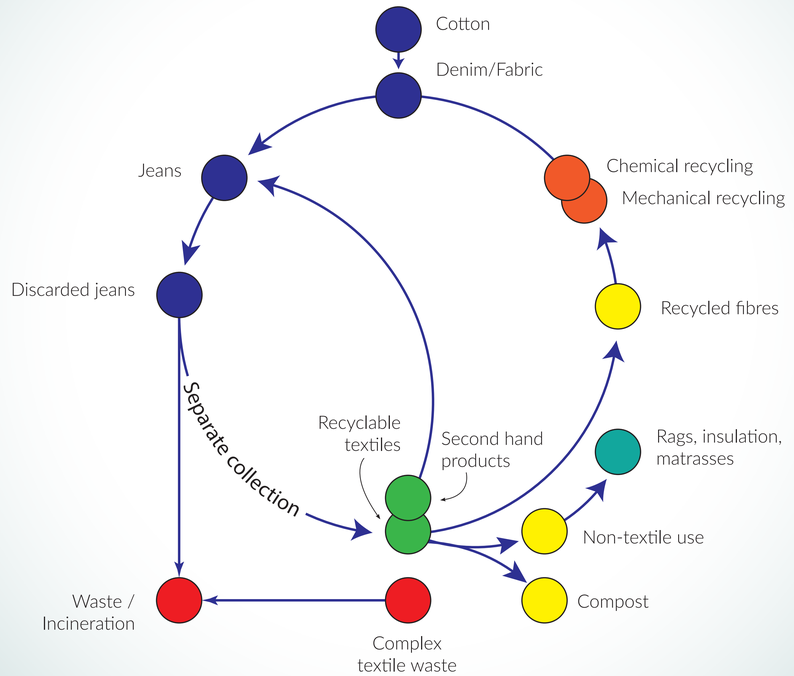


- Bleaching agents
- Alkali
- Reducing and oxidising agents
- Finishing chemicals: Sulphuric acid, phenol, softeners, antibacterial substances
- Detergents
- Synthetic indigo

Manufacturing

- Bleaching agents
- Potassium permanganate
- Caustic soda
- Formaldehyde
- Resins for 3D effects
- Detergents

After wearing, then what?



Regulatory options to closing the gap

EU

- Obliging best practice standards and subsidising the acquisition of sustainability labels.
- Sponsoring research and development into innovation of chemicals and impose BAT.
- Impose producer responsibility for hazardous substances.

Local Government

- Adequate enforcement of laws.
- Educating consumers on sustainable practices
- Stimulate companies to adopt CSR norms
- Stimulate multi stakeholder agreements

Consumers

- Buying responsibly
- Washing responsibly
- Re-use, recycle and repair

NGOs

- Educating companies and employees
- Stimulating Multi-stake-holder Agreements

Market Actors

- At a minimum make sure that local laws are upheld
- Apply additional CSR standards
- Be transparent
- Educate consumers

Rules and regulations*

Multi Stakeholder Agreements

- Dutch Agreement on Sustainable Garments and Textile 2016
- The Bangladesh Accord
- WRAP
- ZDHC

Private and self regulatory instruments

Codes of conduct
Certificates such as

- GOTS
- OCS
- BCI
- SEDEX
- Bluesign
- Oeko-Tex
- The Chemical Footprint
- SAI
- SAC

International regulation

- REACH
- Basel Convention, 1998
- Rotterdam Convention, 1998
- Stockholm Convention, 2001

National legislation with regard to

- Soil Protection
- Environmental Laws
- Cotton Breeding
- Wastewater
- Chemical Fertilizers
- Working With Chemicals
- Air Pollution
- Pollution Caused by Hazardous Substances
- Water Pollution
- EIA
- Health And Safety at the Work Place
- Pollution Prevention in the Textiles Industry
- Chemicals and Chemical Safety
- Wastewater Treatment, Waste Management
- Protection of the Environment, Hazardous Waste
- Strategic Environmental Protection
- Landfill
- Management of Detergents

Hazardous chemicals in the RMG industry

Bilateral investment treaties referring to the environment, biodiversity and CSR

International Soft Law

- OECD DD Guidance for Re-sponsible Supply Chains in the Garment Sector
- UN SDGs
- ILO Convention No. 170
- Dubai Declaration SAICM 2006
- World Health Assembly 63.26 2010
- UN Guiding Principles 2011
- TFWW 2012
- Guidelines on Highly Hazardous Pesticides 2016

**List is non-exhaustive.*