
HUNTSMAN
Enriching lives through innovation
Turning Risks into Opportunities
How to dye wool sustainably
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82° IWTO CONGRESS
EXCELLENCE IN MANUFACTURING HERITAGE FOR THE FUTURE
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Agenda

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- Greenpeace Detox campaign and the link to wool
- What is a **S**ubstance of **V**ery **H**igh **C**oncern (**SVHC**)?
- The way out – positive industry examples
- The excuses we hear
- Breaking news from China:
  - Tighter discharge standards for the textile industry

In July 2011, Greenpeace launched its Detox Campaign with the objective of getting the textile industry to clean up its act

In its Dirty Laundry report, Greenpeace claims that:

- It found evidence linking leading brands to water pollution in China
- The report was backed with scientific analysis
- High levels of synthetic chemicals were found in the Pearl and Yangtze River Deltas

“Road to Zero” - www.roadmaptozero.com

RØADMAP TO ZERO DISCHARGE OF HAZARDOUS CHEMICALS

OBJECTIVE

Welcome to the Zero Discharge of Hazardous Chemicals (ZDHC) website.

This website is hosted by a group of major apparel and footwear brands and retailers who have made a commitment towards ZDHC.

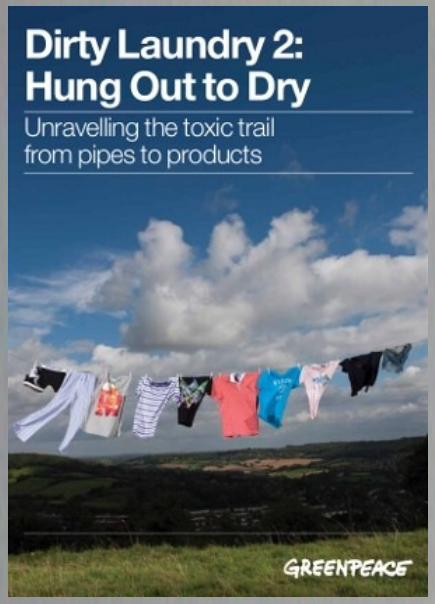
The committed brands and retailers are currently: adidas Group, C&A, G-Star, H&M, Li-Ning, Nike, Inc. and Puma.

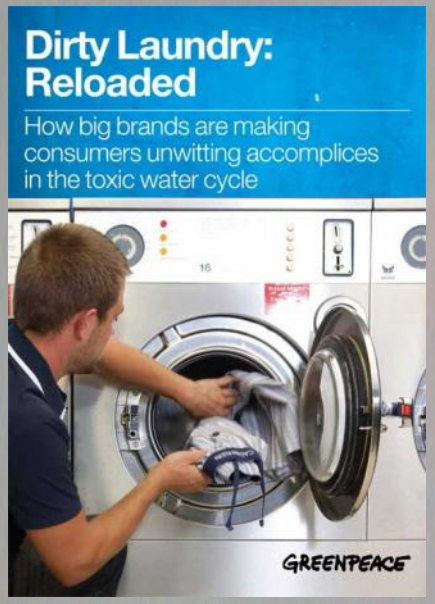
The objective of this commitment is to lead the apparel and footwear industry towards zero discharge of hazardous chemicals for all products across all pathways in our supply chains by 2020.

In response, in Nov 2011, several major brands committed to work towards Zero Discharge of Hazardous Chemicals by 2020


With the objective of leading the industry towards
cleaner supply chains and increased transparency

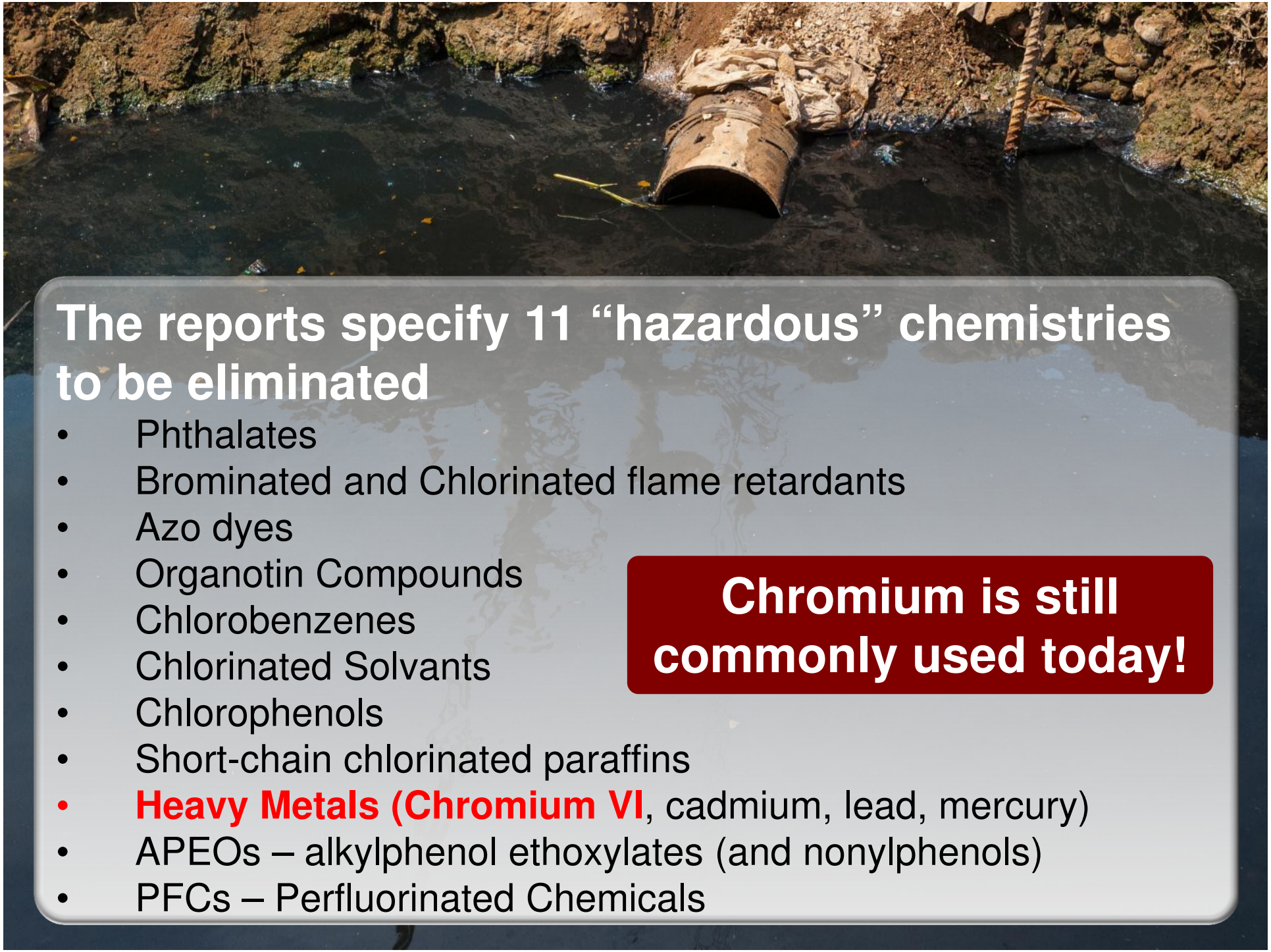
Greenpeace kept up the pressure on brands and retailers





A further series of "Dirty Laundry" and "Toxic Threads" reports were subsequently launched

There is a serious risk that wool could be targeted next!



The reports specify 11 “hazardous” chemistries to be eliminated

- Phthalates
- Brominated and Chlorinated flame retardants
- Azo dyes
- Organotin Compounds
- Chlorobenzenes
- Chlorinated Solvants
- Chlorophenols
- Short-chain chlorinated paraffins
- **Heavy Metals (Chromium VI**, cadmium, lead, mercury)
- APEOs – alkylphenol ethoxylates (and nonylphenols)
- PFCs – Perfluorinated Chemicals

Chromium is still commonly used today!

Chrome VI used in wool dyeing

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- Approx. 25 % of all dyes used for wool are chrome dyes (mainly for black and navy shades)
- These dyes require the after treatment with a mordant to develop fastness properties
- The mordant for chrome dyes is potassium dichromate

Potassium Dichromate is Chromium VI !

Potassium Dichromate

Safety Data Sheet extract

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- Odorless, orange-red crystals which may be fatal if ingested. Swallowing can cause severe burns of the mouth, throat, and stomach, leading to death.

- Skin and eye contact may cause severe irritation.

Acute Toxicity (Severe)
GHS Label

Potassium Dichromate

Safety Data Sheet extract

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- CANCER HAZARD by inhalation – Contains hexavalent chromium.
- AVOID DIRECT CONTACT WITH THIS MATERIAL.

Carcinogen
GHS Label

Potassium Dichromate

Safety Data Sheet extract

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- Do not eat, drink or smoke in areas where potassium dichromate is being used or stored.
- Keep containers closed when not in use.

Environmental Toxicity
GHS Label

Dichromate is on the list !

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SVHC – Substances of Very High Concern

- carcinogenic
- mutagenic
- toxic for reproduction
- persistent, bioaccumulative and toxic
- scientific evidence of probable serious effects to human health or the environment

SVHC is a public list of substances for which the European Chemicals Agency requires a special authorization

Replacements are available !

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- 1997, the first LANASOL® CE dyes initiated the replacement of Chrome dyes
- 2008 Huntsman withdraw from production and sales of chrome dyes
- No more outdated technique
- Sustainable wool dyeing

Replacement of Chrome dyes = LANASOL® CE

- for similar cost
- with similar fastness level and shade
- safer for the preservation of wool fibers, resulting in significant commercial benefits throughout the various production steps
- reliable efficiency in wool dyeing


CHANGE AHEAD
"Real change happens when the pain of staying the same is greater than the pain of changing."
~ Sheldon Kopp
American psychotherapist 1929-1999

Youngor – an example from China

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CHINA: Clothing giants accused in Greenpeace campaign

By just-style.com | 13 July 2011

Apparel companies including Nike, Adidas, H&M and PVH are being targeted by a Greenpeace campaign highlighting toxic water pollution linked to the clothing supply chain.

Guotai Dyeing Factory (Well Dying Factory Limited) is accused of toxic water pollution. Photo credit: Qiu Bo/Greenpeace

Following a year-long investigation, Greenpeace activists protested outside the world's largest Adidas store in Beijing, and a nearby Nike store, to draw attention to the claimed release of hazardous chemicals from two textile processing facilities in China.

The environmental pressure group said it had found the toxic chemicals in samples of waste water discharges from the Youngor Textile City Complex and the Well Dyeing Factory, by the Yangtze and Pearl River deltas.

- **July 2011:** Youngor's cotton mill was target of the first Greenpeace action
- **December 2011:** Even not directly involved, Youngor's wool mill decided to move fully away from chrome dyes within 2 years

Replacement of Chrome dyes:
Youngor's initiative to regain the confidence of the brands

Lanificio Ermenegildo Zegna

An example from Italy

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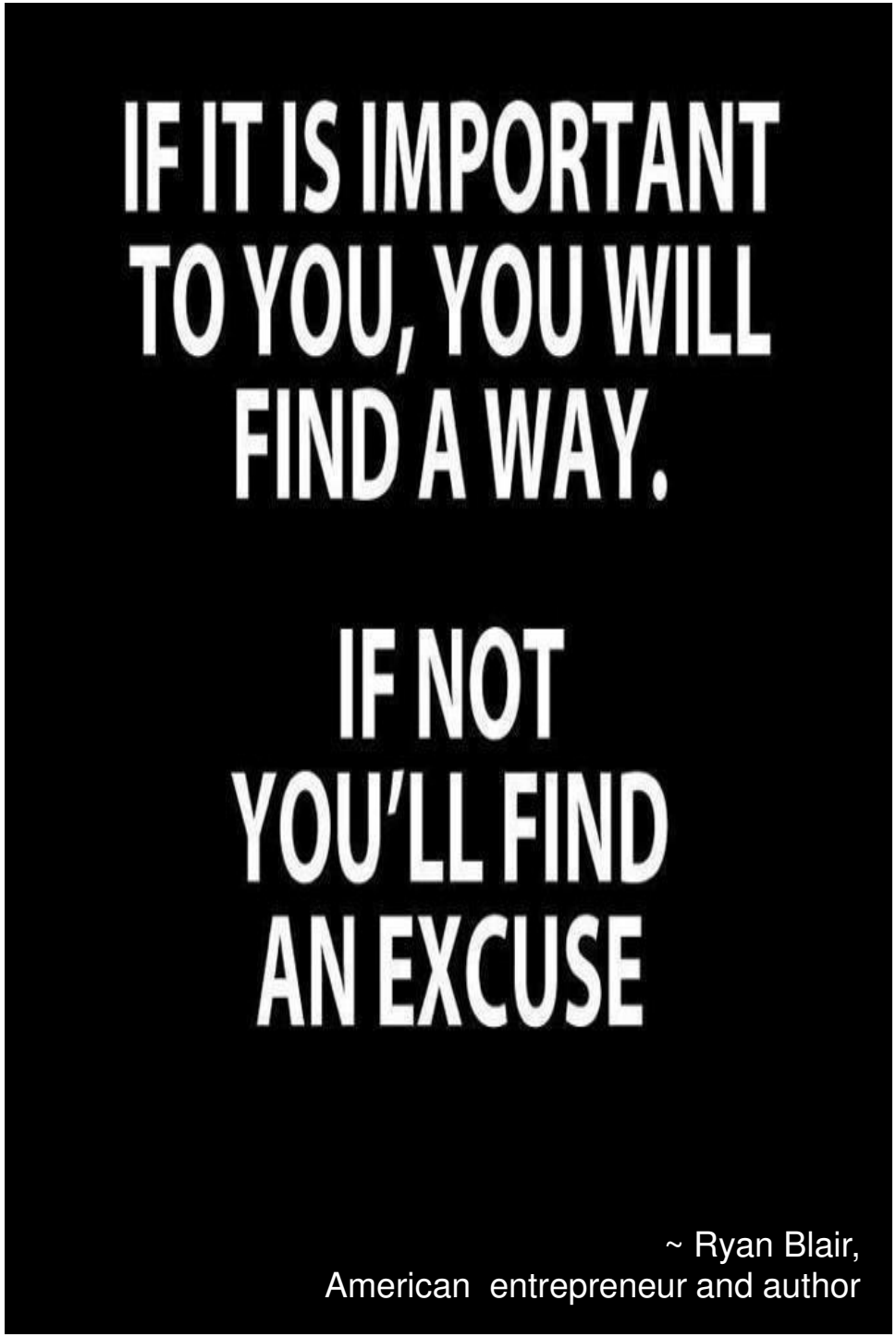
- Under Italian legislation, any mill using Chromium VI need to implement special health and safety measures as the **mishandling is considered a criminal offense**.

- Lanificio Ermenegildo Zegna e Figli made the change after a two-year pilot trial with Huntsman Textile Effects showed that the chrome-free dye was more effective in dyeing wool in black shades over chrome dyes.

Ermenegildo Zegna's statement:
Chrome free dyes are the way to go, given the Italian wool industry's push towards greater standards of environmental sustainability.

"The flare of Chrome Black cannot be attained!"



Proving that LANASOL provides a deeper shade of black than Chrome

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- In 2008 Huntsman did a global anonymous survey among customers and internal wool experts
- Two wool samples were dyed to the limit of saturation with:
  - LANASOL® Deep Black CE-R
  - Chrome Black
- Both samples (labelled only as A & B) were shown to over 100 experienced wool dyers over the world
- They were asked one simple question
  - Which sample shows the deeper black?

Proving that LANASOL provides a deeper shade of black than Chrome

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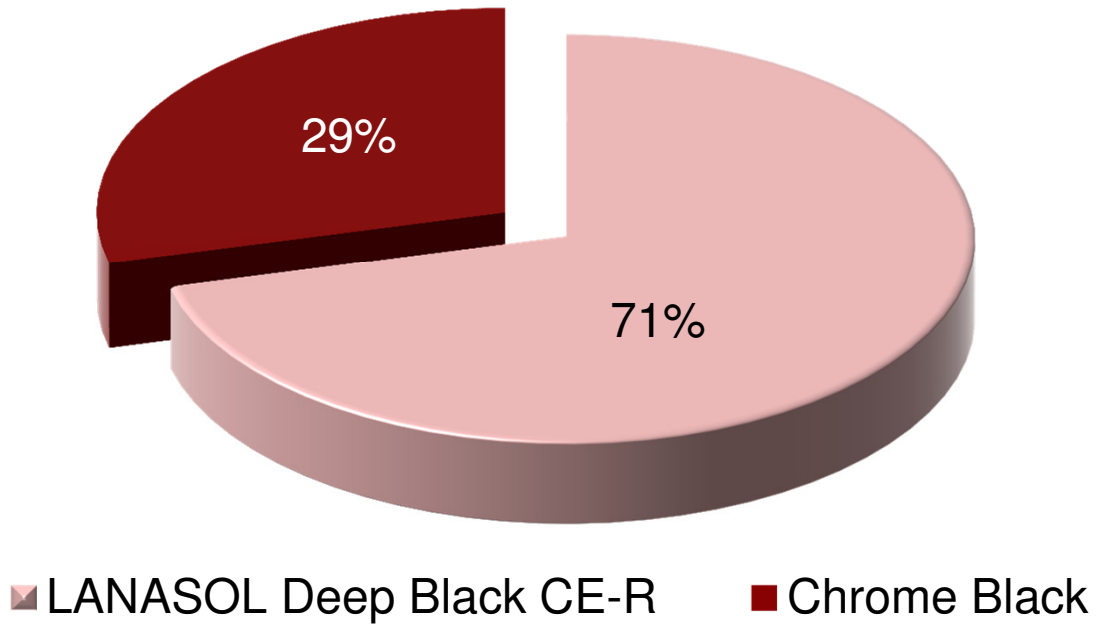

Out of 100 experienced wool dyers:
71 voted that LANASOL achieved a deeper black

Breaking News from China

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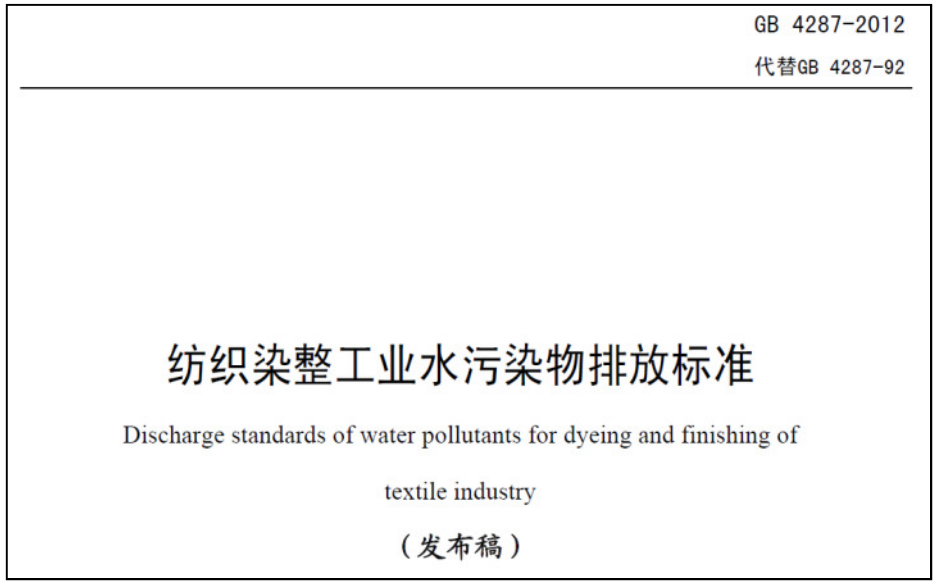
Actual changes in the Chinese legislation for the textile industry


GB 4287-2012
代替GB 4287-92

纺织染整工业水污染物排放标准

Discharge standards of water pollutants for dyeing and finishing of textile industry

（发布稿）

- From Jan. 1st, 2015 on, limit for **Cr (VI)** for existing manufacturer is **0 mg/l**.
- From Jan. 1st, 2013 on, limit for **Cr (VI)** for newly established manufacture is **0 mg/l.**

From 01 January 2015:
Chrome dyes can no longer be used!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Your partner in solving the industry's toughest challenges