

“Current Industry Initiatives adequately address sustainability Issues ”

Fact or Fiction?

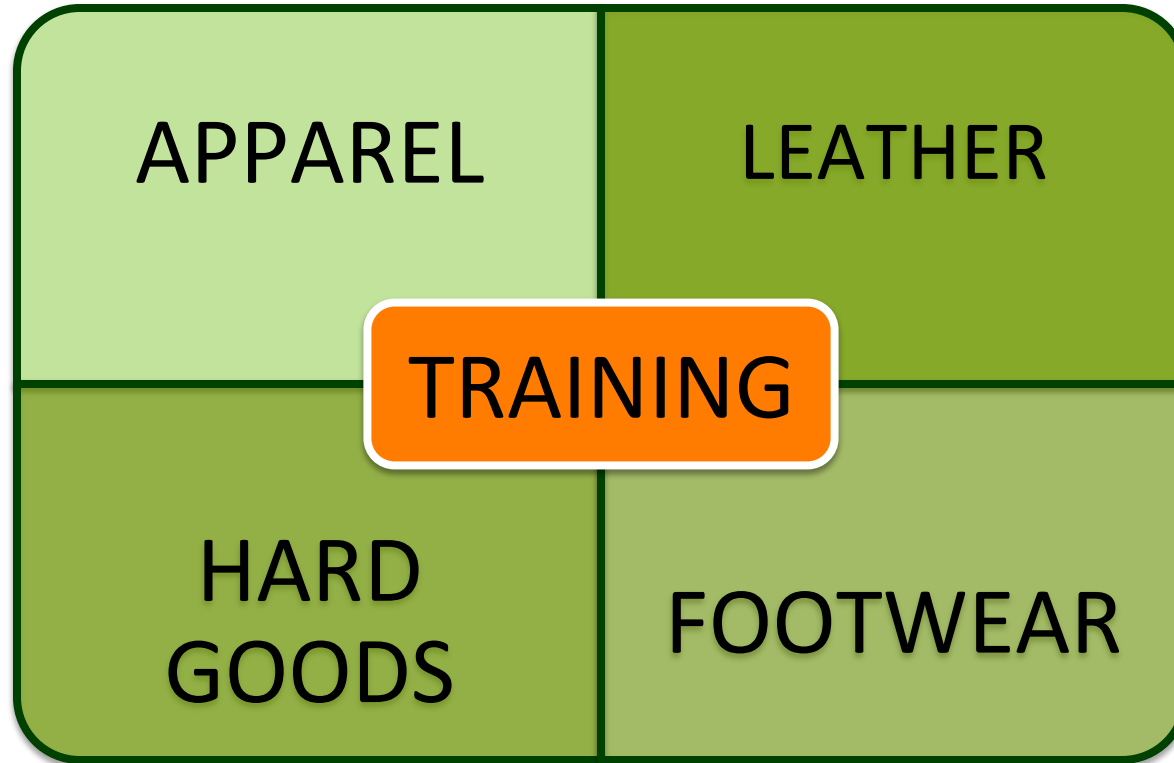


NIMKARTEK

Ullhas Nimkar

Planet Textiles 14th Oct- Shanghai - 2015

A Company of Sustainability Professionals



CHEMICAL MANAGEMENT

RSL / MRSL SERVICES

DYE HOUSE ASSESSMENTS

Education at your Doorstep - Globally



E Learning
&
In-person

E Learning

Certified Chemical Management
Professional course

Cost effective with Low Carbon Footprint

Possible in any Global Language



Disclaimer

Views expressed in this presentation are solely of the speaker based on his 25+ years in the Industry having analysed over a few hundred thousand samples of Chemicals and Products for restricted chemicals over the years on behalf of global brands & chemical companies



APPRECIATED : FACT



NOT APPRECIATED: FICTION

Contents of this Presentation



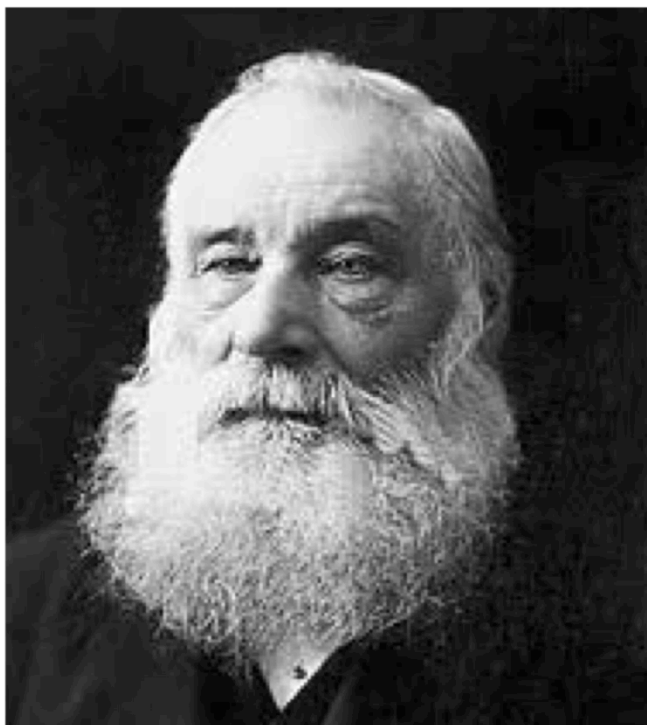
Why Sustainability is no longer a matter of Choice

Textile Industry Initiatives over the years

Way Forward



Innovators who changed the world in Colour & Chemistry



Sir William Henry Perkin

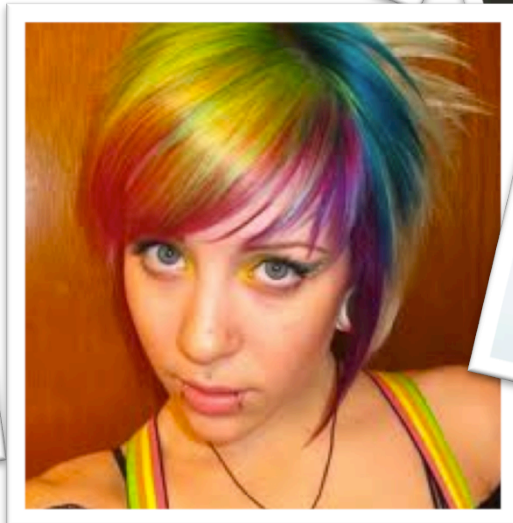
1856 First Synthetic Dye



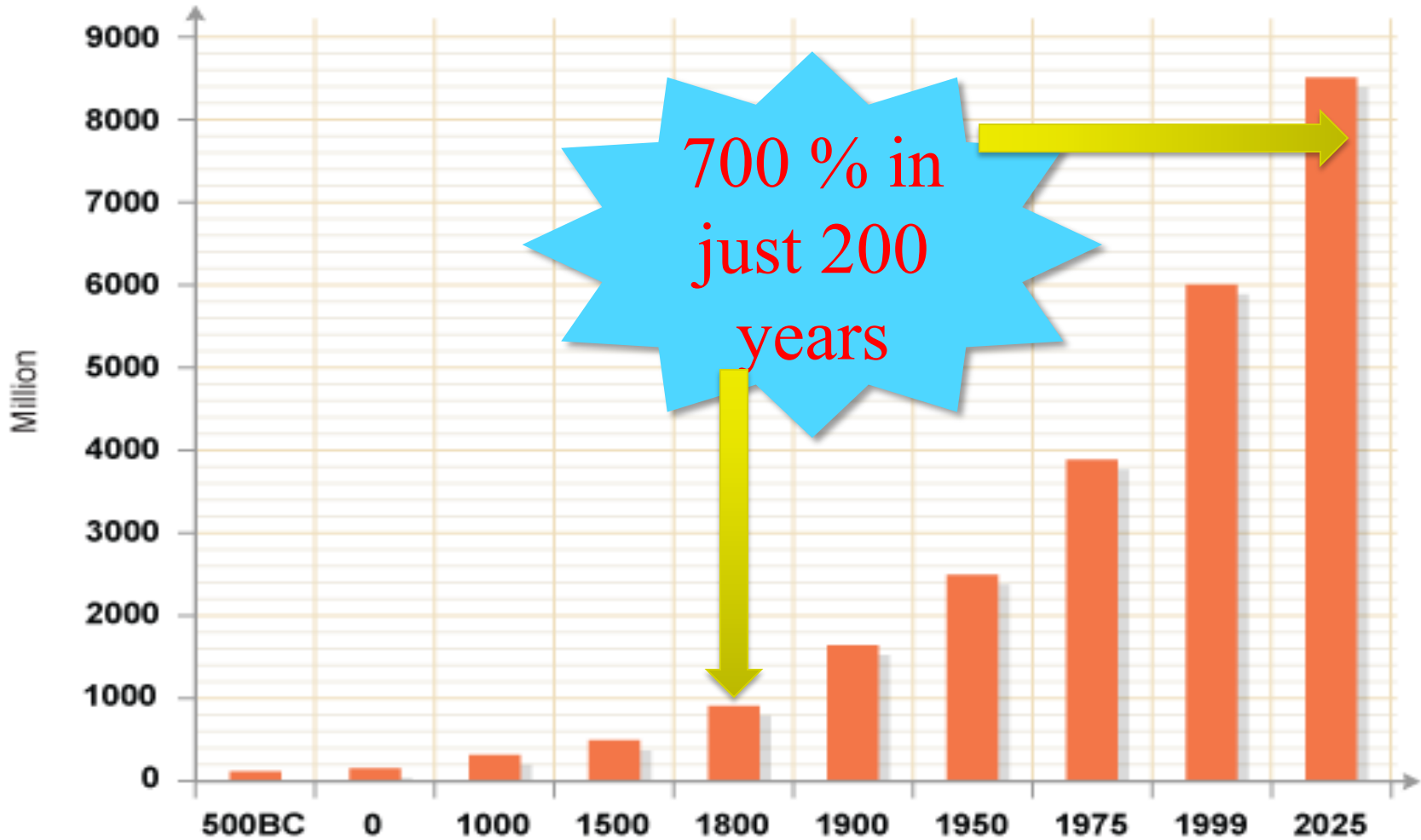
Prof. Ian Rattee

1956 First Reactive Dye

Man started enjoying the fruits of Chemical innovations from Sunrise to Sunset...



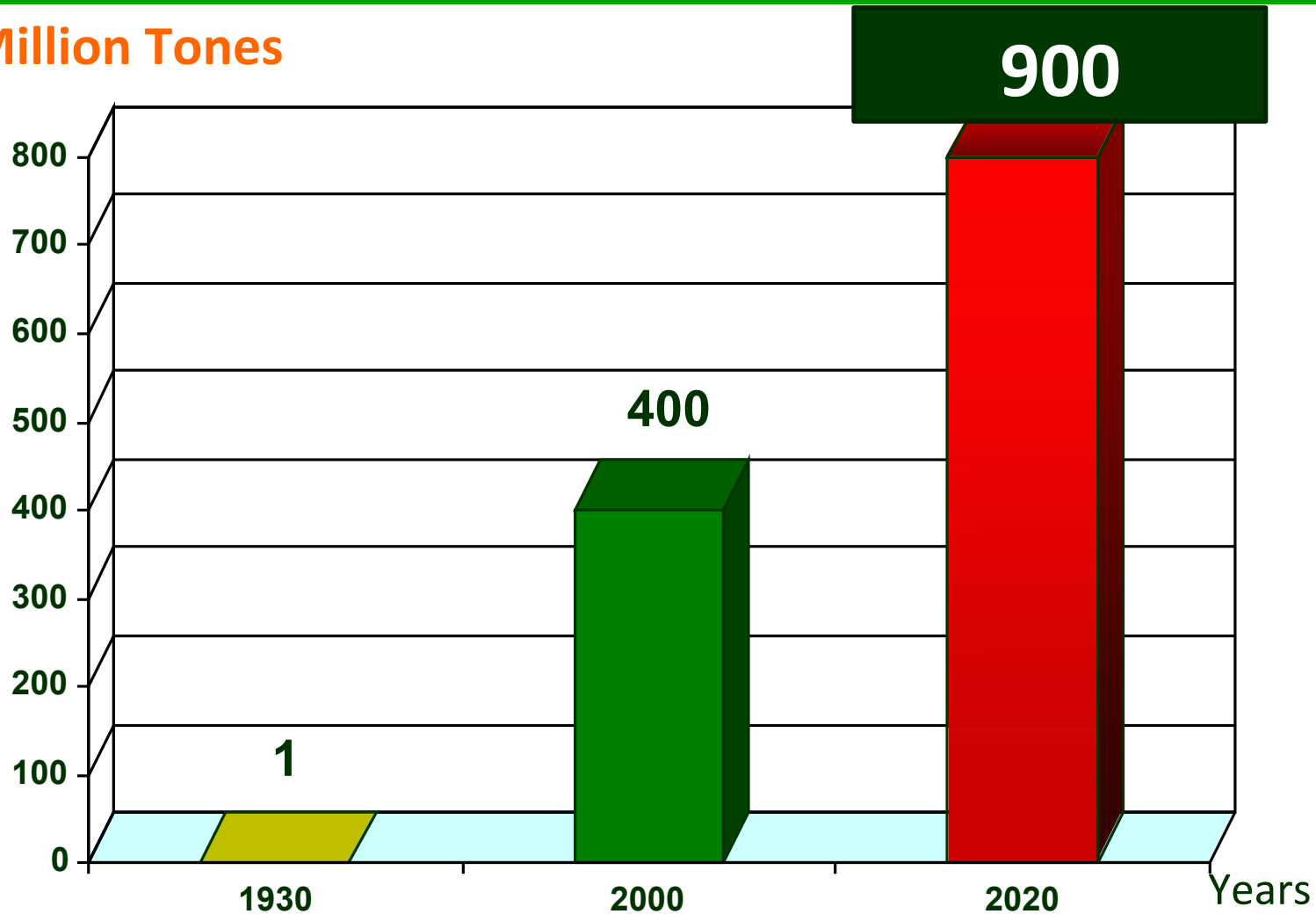
Population Explosion



Chemical Production has Exploded



Million Tones



Impact of chemicals on the Environment



ENVIRONMENT



Discharge of harmful chemicals



Air Pollution



Contaminated water



Hazardous waste

Impact of Chemicals on Human Health

HUMAN HEALTH

Carcinogenic

Mutagenic

Toxic to Reproduction

Endocrine Disruptors



Ecological Footprint today

Measures

How fast we consume resources & generate waste



COMPARED TO

How fast Nature can absorb waste & generate new resources.



Today's ecological footprint = 1.7 planet earths.

Do you still think
Sustainability is a matter of
CHOICE ?

Let us Wake Up....before its too late.

In the interest of Posterity

For the Future of our Children

Contents of this Presentation

Why Sustainability is no longer a matter of Choice







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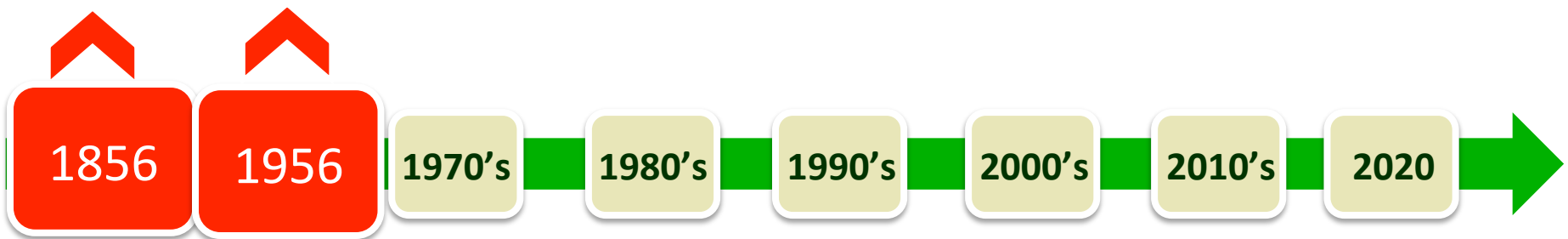
Way Forward



Years 1856 to 1956

- Innovation in Dyes and Chemicals 
- Growing Consumption during wars 
- Most production in Europe 

- Little concern for Environment or Sustainability 



Textile Industry from 1950's

- Several Initiatives taken in each decade
- Did these initiatives address the requirements of the industry ?



1950's

1960's

1970's

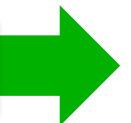
1980's

1990's




2000's

2010's

2020



The 50's decade

- Invention of Polyester !
- New dyes, pigments, finishing chemicals
- Machinery advancement 
- Concerns about Rhine Pollution starts 
- Not much action about it 



1950's

1960's

1970's

1980's



1990's

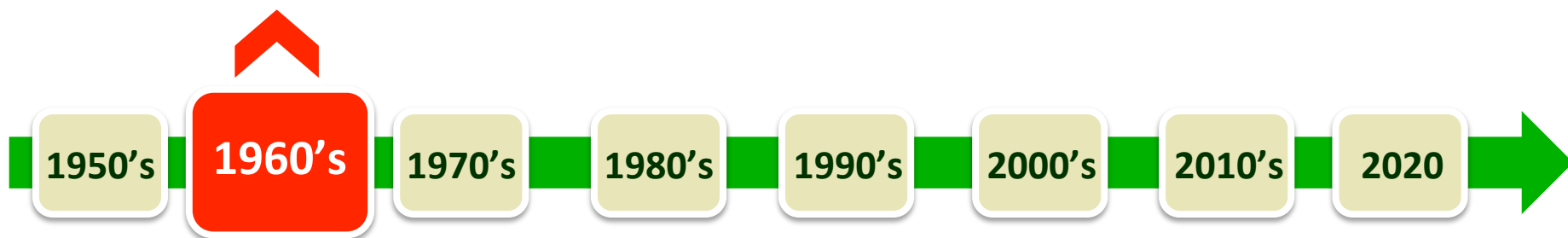
2000's

2010's






2020

The 60's decade

- The 1960's were the age of development of functional finishes
- Several new textile and leather finishes were developed 
- The impact of new chemicals on human health and environment was not adequately studied. 



The 70's & 80's decades

-  ■ Rhine Pollution severe
-  ■ The chemical industry moves Eastwards and 500 Dye Factories come up in India
-  ■ Chemical Industry Globalisation
-  ■ Focus on making processes and machinery more resource efficient – low use of water, energy - Innovations in Chemistry and Machinery
-  ■ Growing focus on hazardous chemicals & waste but again little action

1950's

1960's

1970's

1980's








1990's

2000's

2010's

2020

The 90's decade

- German Legislation leads to restricted chemicals in Products (RSLs) 
- Criteria for Consumer safety 
- Limits for chemicals in final product 
- Complex Documents 
- Brands began compete to make their RSL stricter 
- No clear actions or direction to supplier 
- RSLs - A mere paper trail 

1950's

1960's

1970's

1980's

1990's

2000's

2010's

2020

The millenium decade

- RSL's grew in scope 
- Became even more complex 
- Less than 5% of the industry truly implemented it 
- EU REACH harmonised EU legislation 

1950's

1960's

1970's

1980's

1990's

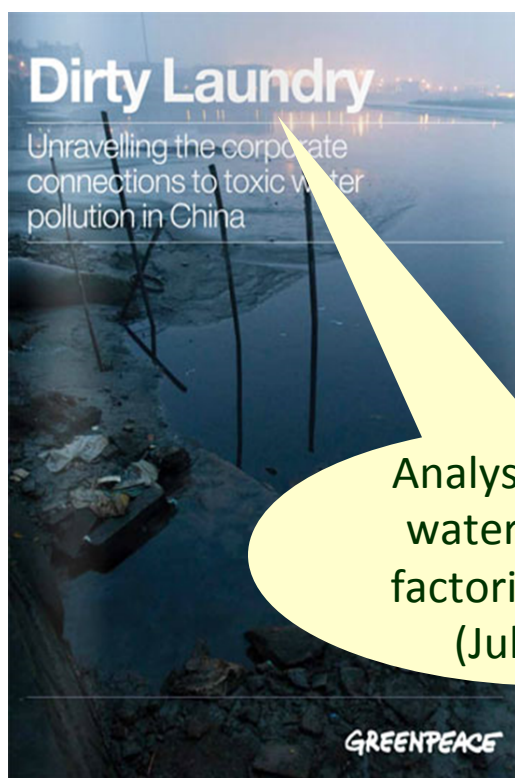
2000's

2010's

2020



2010..... Towards a new world

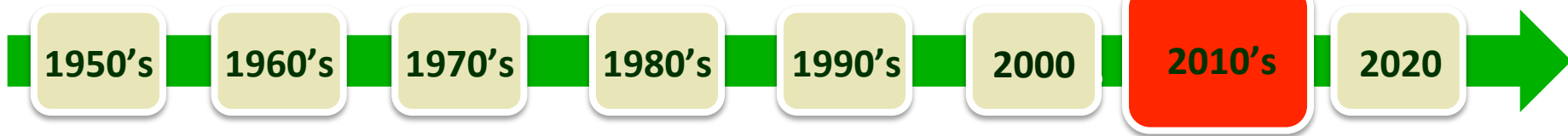


Analysis of waste water from two factories in China (July 2011)



78 articles from stores tested for NPEOs (58 fail)

Home Laundering of articles





Greenpeace Detox



Greenpeace challenged the Brands to commit their entire Supply Chain to shift to use of Zero-Toxic chemicals across all pathways.



2011 - Brands Commit



ZERO DISCHARGE OF HAZARADOUS CHEMICALS



NO HAZARDOUS WASTE ACROSS ALL PATHWAYS



RSL

ZDHC



AIR EMISSIONS

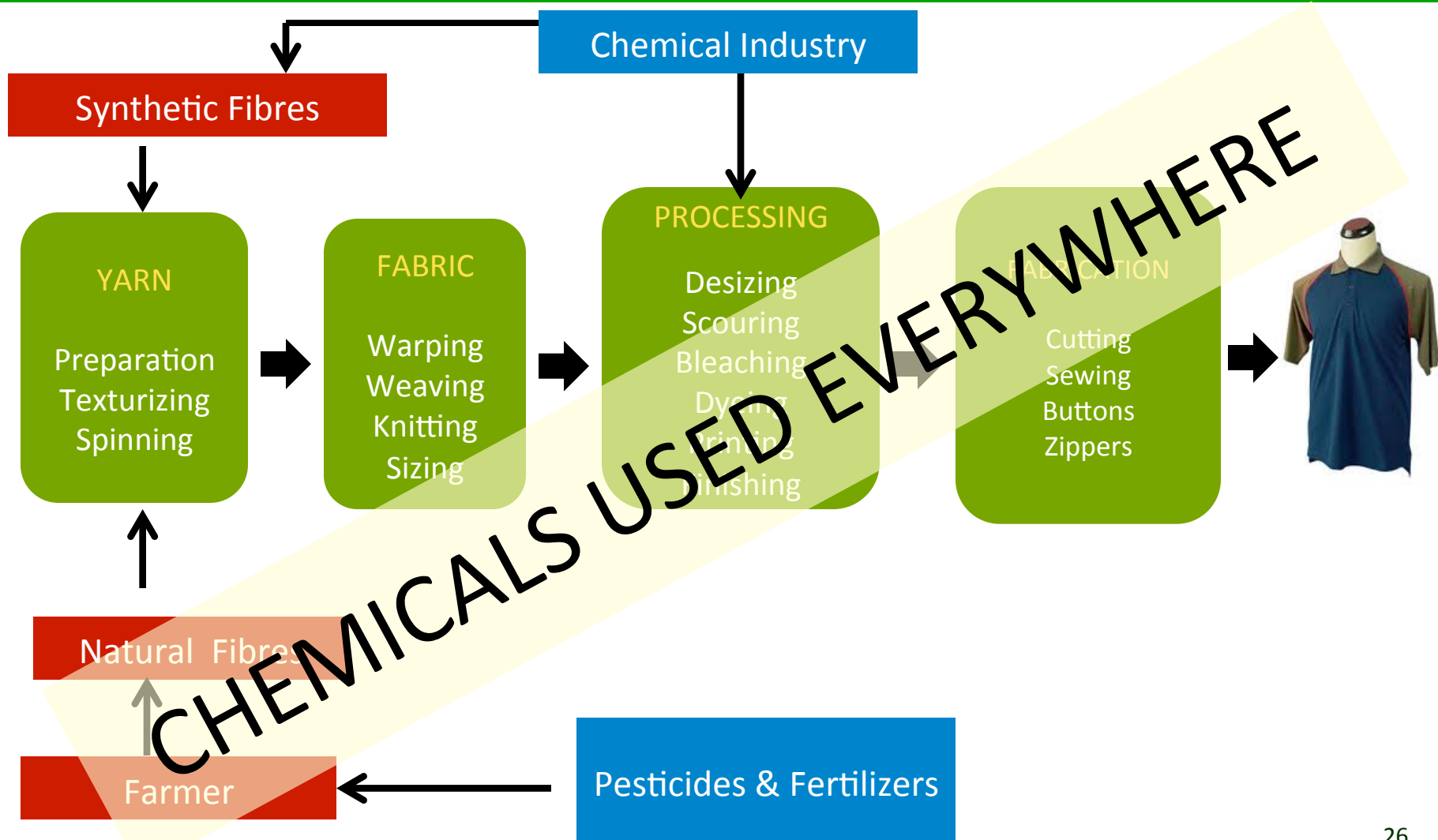


WASTE WATER



SLUDGE

Complex textile supply chain



Complete Chemical Management



WASTE WATER DISCHARGE



SLUDGE & AIR

CONSUMER SAFETY



WORKER HEALTH & SAFETY

Work Safe

Be Safe 27

The Chemical Balance



Clean INPUTS



Clean OUTPUT

Industry Initiative – ZDHC MRSL



Manufacturing Restricted Substances List



Defines Limits for harmful substances in Input Chemicals

The ZDHC MRSL



ZDHC MRSL					
CAS No.	Substance	Group A: Raw Material and Finished Product Supplier Guidance	Group B: Chemical Supplier Commercial Formulation Limit	Potential Uses in Apparel and Footwear Textile Processing	General Techniques for Analysing Chemicals
Alkylphenol (AP) and Alkylphenol Ethoxylates (APEOs): including all isomers					
104-40-5, 11066-49-2 25154-52-3 84852-15-3	Nonylphenol (NP), mixed isomers		250 ppm		
140-66-9 1806-26-4 27193-28-8	<div style="background-color: #76b82a; color: white; padding: 20px; text-align: center;"> <h2>LOGIC</h2> <h1>CLEAN INPUT = CLEAN OUTPUT</h1> </div>				Liquid chromatography-Mass spectrometry (LC-MS), Gas chromatography-Mass spectrometry (GC-MS)
9002-93-1 9036-19-5 68987-90-6					
9016-45-9 26027-38-3 37205-87-1 68412-54-4 127087-87-0					
Chlorobenzenes and Chlorotoluenes					
95-50-1	1,2-dichlorobenzene	No intentional use	1000 ppm	Chlorobenzenes and chlorotoluenes (chlorinated aromatic hydrocarbons) can be used as carriers in the dyeing process of polyester or wool/polyester fibres. They can also be used as solvents.	GC-MS
Other mono-, di-, tri-, and tetra-, hexa-, penta-, chlorobenzenes and mono-, di-, tri-, and tetra-, hexa-, penta-, chlorotoluenes			Sum = 200 ppm		
Chlorophenols					
25167-83-3	Tetrachlorophenol (TeCP)	No intentional use	Sum = 20 ppm	Chlorophenols are polychlorinated compounds used as preservatives or pesticides. Pentachlorophenol (PCP) and tetrachlorophenol (TeCP) are sometimes used to prevent mould and kill insects when growing cotton and when storing/transporting fabrics. PCP/TeCP can also be used as a preservative in print pastes.	GC-MS
87-86-5	Pentachlorophenol (PCP)				
Mono-, di-, and tri- chlorophenols			Sum = 50 ppm		

Can MRSL achieve Zero Discharge?

- Can eliminate certain intentional chemicals
- Sampling & Test methods not standardised
- Analytical Competence needs to be scaled up

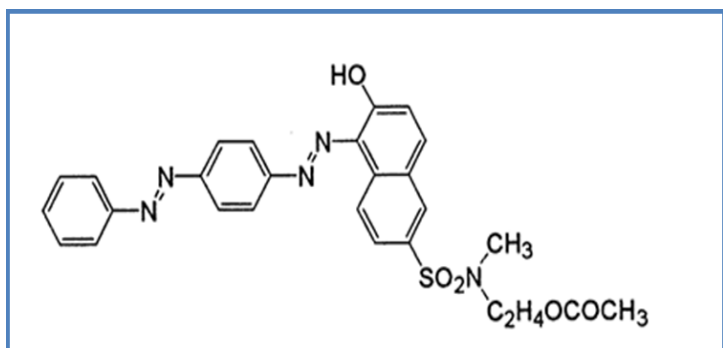


Hazardous chemicals due to breakdown not taken into account.

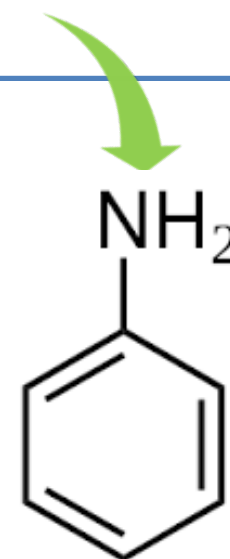
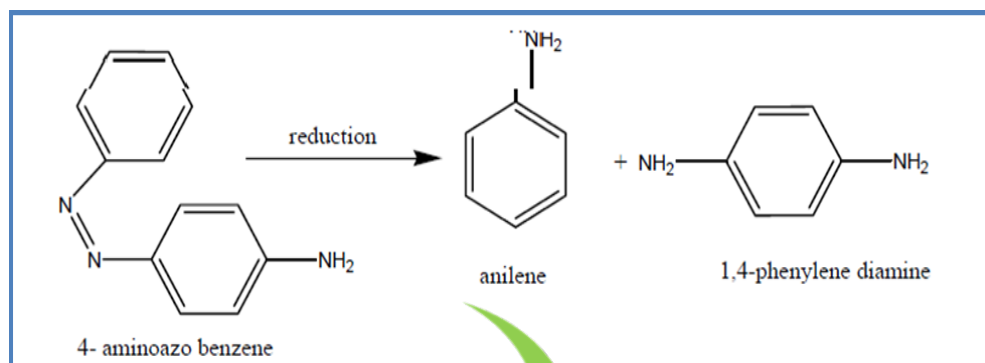


Degradation Metabolites

Example



C.I. Disperse Red 151



Aniline

MRSL cannot control harmful chemicals that are formed as a result of degradation

China Discharge Standards

GB

中华人民共和国国家标准

National Standard of the People's Republic of China

GB 4287-2012
Replace GB 4287-92

Aniline Compounds

纺织染整工业水污染排放标准

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

(Release)

Issued on Oct. 19, 2012

Implemented on Jan. 01, 2013

Issued by Ministry of Environmental Protection and General Administration of Quality Supervision, Inspection and Quarantine (AQSIQ) of the People's Republic of China

4 Control requirements of pollutant discharge

4.1 From January 1, 2013, to December 31, 2014, the existing enterprises shall execute the discharge limits of water pollutants specified Table 1.

Table 1 Discharge limits of water pollutants and standard water discharge of unit product for existing enterprises

Unit: mg/L (PH, except chromaticity)

No.	Pollutant Item	Limit		Monitoring location of pollutant discharge
		Direct discharge	Indirect discharge	
1	pH value	6-9	6-9	Wastewater total discharge outlets of enterprise
2	Chemical oxygen demand (COD _{Cr})	100	200	
3	Biochemical oxygen demand after 5 days	25	50	
4	Suspended substance	60	100	
5	Colority	70	80	
6	Ammonia-nitrogen	12 20 ⁽¹⁾	12 30 ⁽¹⁾	
7	Total-nitrogen	20 35 ⁽¹⁾	30 50 ⁽¹⁾	
8	Total phosphorus	1.0	1.5	
9	Chlorin dioxide	0.5	0.5	
	Adsorbable organic halogen (AOX)	15	15	
11	Sulfides	1.0	1.0	
12	Iodometric Aniline compounds	1.0	1.0	
13	Chromium (6)	0.5		Wastewater discharge outlets of workshops or production

Other MRSL Concerns

- Influent water contains harmful chemicals 
- Can Chemical companies guarantee chemicals free of unintentional impurities 
- Can you rely on supplier declarations 
- Too many different MRSLs from Brands 
- Confusing 
- Global Chemical Co's have 15% market share involved 
- Local chemical companies catering to 85% ignored 

SAC - Higg Index

- The SAC released the Higg Index. This is an excellent tool that helps factories map water, energy and chemical usage
- Will this initiative help the Brands achieve Zero Discharge of Hazardous Chemicals?
- It does not give implementation steps and corrective actions that a facility needs to take





End of Fate – No Concern

What is the fate of chemicals at end of life?

7 Billion plus.....average 7kg per person per year....



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Chemicals in wastewater are less than 10%,
Balance chemicals in Fabric
.....will reach the Environment some day



Landfill Leachates – Not of concern today

- Textiles are not disposed in secure landfills
- They will degrade with time
- Dyes and Chemicals in them will also degrade
- These will leach with time into the environment reaching the same water bodies
- Studies & Research has already started on this
- Industry will need chemicals that break down safely



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WAY FORWARD - First steps ...

Awareness, training and engagement of all stakeholders in the supply chain

Use modern tools such as Online training for effective rapid communication

WAY FORWARD - Strategy

Immediate

1. Stop intentional use of all restricted chemicals
2. Encourage recycling
3. Use technologies that consume less water and energy
4. Develop documents that tell the Industry **WHAT TO DO** rather than what not to do
5. Develop Positive lists of chemicals

Long term

1. R&D to develop input chemicals with low or no contamination
2. Involve Governments to develop legislations in manufacturing countries
3. Involve all stakeholders of the supply chain

WAY FORWARD

Innovation through Disruptive Technologies

- Waterless Dyeing – supercritical CO₂ dyeing
- Digital colouration
- Bio-mimic finishing
- Bio-engineering of colourants
- Designing for recycling and circular economy
- Chemical scrutiny until end of fate
- Use of degradable materials
- Colouration without chemistry



Vision for a New Paradigm

Can Brands think of incorporating sustainability parameters in their sourcing criteria with suppliers ?

- Cost
- Product specification
- Performance criteria
- **Sustainability Criteria**



Thank you

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