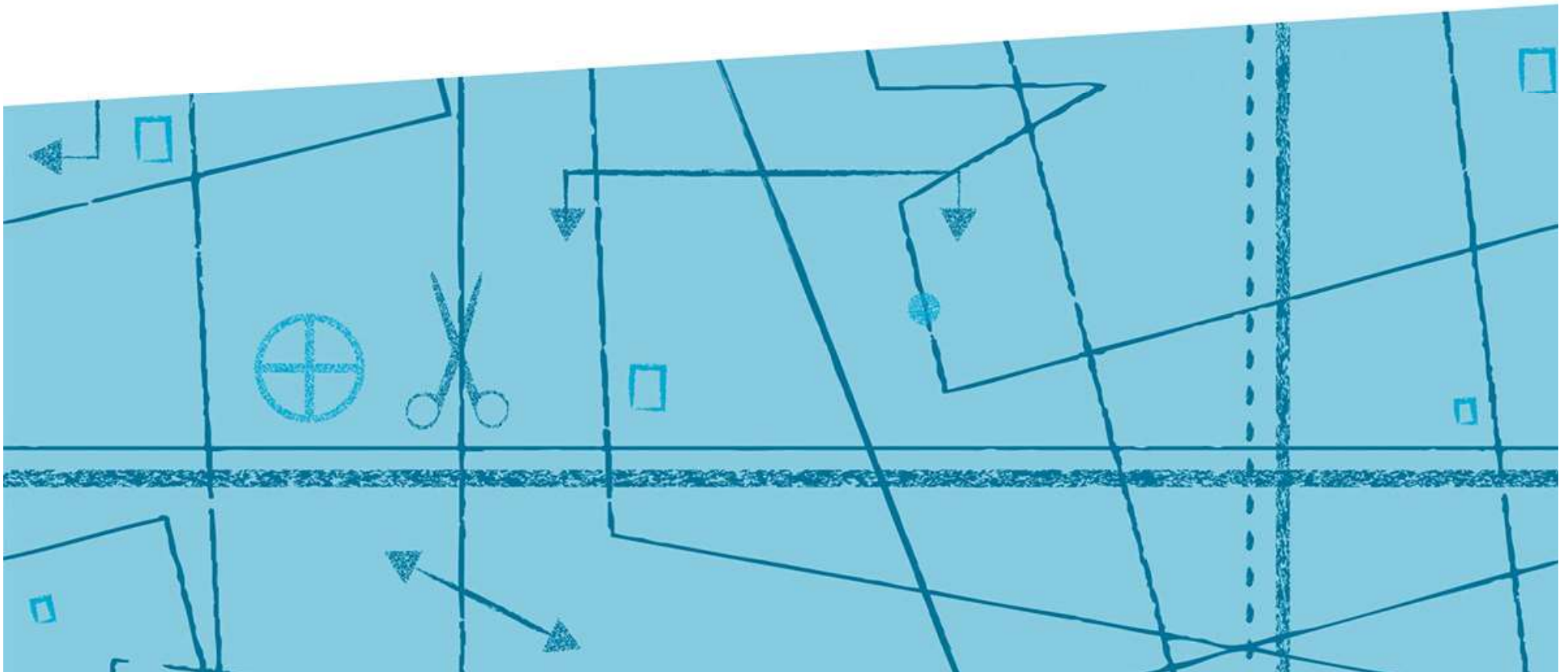




Partnership for  
Sustainable Textiles

# Overview of Basic Training Modules

## Chemical Management



# Introduction

## Target of the Basic Training

Creation of awareness and promotion of basic knowledge about sound chemical management in textile supply chains, with a focus on the wet processes.

## Contents

Covers all relevant aspects of the textile environmental and chemical management, including wastewater and sludge treatment.

Introduction in the international framework for chemical management (e.g. SAICM, Chemical Conventions, Industry initiatives (ZDHC) etc.) and occupational safety.

Excluded are the subjects of gaseous emissions, treatment of solid waste and climate change

# Introduction

## Target groups:

Producers: Decision makers and middle management responsible for production,  
Second tier providers (wet processes)

Brands: Employees responsible for compliance, quality assurance, purchase and  
agents

→ broad impact by integration of multipliers and first-tier producers.

## Modular Trainings:

Classroom training with examples and exercises

Total time of training should not exceed one day



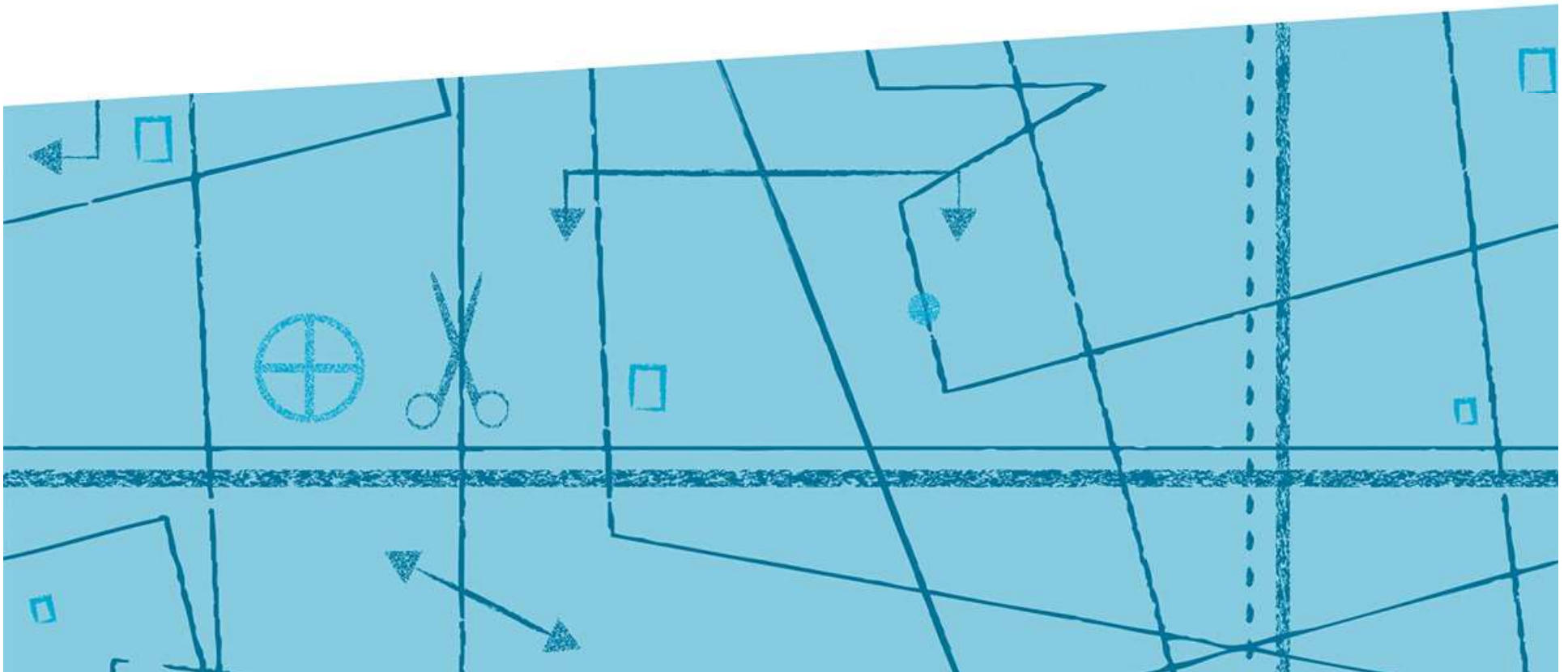
# Introduction

Module 1: Chemicals in Textiles	30 min
Module 2: Chemical Management	90 min
Module 3: Good Housekeeping	45 min
Module 4: Wastewater and Sludge Treatment	60 min
Module 5: Health Protection and Occupational Safety	60 min
Module 6: Risk Analysis and Action Planning	60 min
Module 7: Evaluation and Possible Next Steps	15 min
Total time:	6 h



# Chemicals in textiles

## Why you should be aware



# The apparel industry is one of the biggest polluters on the planet

Textile mills generate **one-fifth of the world's industrial water pollution** and **use 20,000 – 40,000 chemicals, many of them carcinogenic**, to make clothes.

For **every kilogram of fabric, an estimated averaged of 0.4kg of chemicals are used, containing around 300 different substances.**

Workers in the textile industry have a **higher risk to develop cancer.**

Around 35% of primary **micro-plastics** released by machine washing **synthetic clothes ultimately ends up in the environment**

1. Source: <https://www.nrdc.org/issues/encourage-textile-manufacturers-reduce-pollution>, new source
2. Source every kg of fabric: Schaefer, T. (2017): "Integriertes Chemikalienmanagement entlang der Textilen Kette" in ISWA (eds.) (2017) Chemikalien- und Umweltmanagement in der Textilen Kette, Kolloquium zur nachhaltigen Textilproduktion. Stuttgart: Deutscher Industrieverlag
3. Source cancer risk: Singh, Z., Chadha, P. (2016) „Textile industry and occupational cancer”, Journal of Occupational Medicine and Toxicology ,11(39)
4. Source microplastic: Boucher, J. and Friot D. (2017). *Primary Microplastics in the Oceans: A Global Evaluation of Sources*. Gland, Switzerland: IUCN.

## Externalisation of cost

**Externalized costs are costs generated by producers but carried by society as a whole.**

A textile producing factory may pollute water by dumping waste in the river without paying for it. Fifty kilometres downstream, the local government has to clean the water to use it as drinking water.

- **Externalizing costs means companies show higher profits, but society is paying for them.**




## Cost of inaction

There is a need to assess the cost of inaction for the textile sector!

→ It is very valuable for **all** industries to reduce the use of hazardous chemicals in their production and products.

### Some general facts:

- One worker dies every 15 seconds from toxic exposures at work
- 2,780,000 workers globally die from unsafe or unhealthy conditions of work each year.
- Inaction by States and businesses on this global public health crisis is estimated to cost nearly 4 per cent of global gross domestic product, or virtually \$3 trillion.
- More and more companies are being sued for compensation

- 
1. Sources: : Hämäläinen, P., Takala, J. and Kiat, T.B. (2017) *Global Estimates of Occupational Injuries and Work-related Illnesses*. Singapore: Workplace Safety and Health Institute
  2. Eijkemans G. (2018) "1748 The importance of workers' health to advance the United Nations Sustainable Development Agenda" *Occup Environ Med* 75 (Supp. 2) A2





## You are important!

Because it is up to you  
how healthy you,  
your employees and  
neighbours stay and  
if you continue to live  
in a **safe environment**



## The use of harmful chemicals in the textile sector has consequences for the environment

- Water pollution
- Pollution of soil and farmland
- Hazardous waste generation
- Pesticides used for cotton



## Water pollution

- Growing cotton needs a lot of water and often used pesticides are polluting soil and groundwater
- Effluents from textile production pollute freshwater resources and eventually the ocean
- Used hazardous chemicals can even build up in the food chain



## Pollution of soil and farmland

- Hazardous chemicals in wastewater can pollute soil and farmland along rivers
- Sewage sludge containing hazardous chemicals is being applied to land as a soil supplement
- Contaminated soil can lead to contaminated food that is grown on these fields; therefore chemicals can enter the food chain



Source: Zubris, K.A.V. and Richards, B.K (2005) „Synthetic fibers as an indicator of land application of sludge“, *Environmental Pollution*, 138(2):201-11.

## Hazardous waste

- Hazardous waste in the textile production has to be handled and stored correctly
- It cannot be dumped on ordinary landfills or dumping sites
- The less hazardous chemicals are being used in production the less hazardous waste is generated





## What can you do to be an environmental hero?

- Use ambitious MRSL's such as ZDHC's
- Use non-hazardous chemicals as alternatives
- Go organic: use organic certified materials e.g. certified organic cotton (less hazardous chemicals)
- Recycle as much as you can
- Use a waste water treatment plant
- Do not dump sewage sludge or hazardous chemicals in the environment
- Safe water and energy, wherever possible

# The use of harmful chemicals in the textile sector has consequences for human health

## Harmful chemicals are linked to many diseases:

Infertility

different types of cancer

asthma

skin problems

heart diseases and others

lower sperm quality

neurological problems

allergies

lung problems



# The use of harmful chemicals in the textile sector has consequences for human health

Health consequences can occur in humans along the life-cycle of textiles:

→ farmers, workers in production and retail, in consumers, in waste handlers, and in the community around production and waste handling

Diseases can lead to death or severe ill-being. This has also negative consequences for the families, due to income loss, high medical cost etc.





# The use of harmful chemicals in the textile sector has consequences for human health

## Some examples:

A study by the US National Institute for Occupational Safety and Health found a link in textile workers between length of exposure to formaldehyde and leukaemia deaths (Pinkerton et.al. 2004).

Women who work in textile factories and are exposed to synthetic fibres and petroleum products at work before their mid-30s seem to be most at risk of developing breast cancer later in life. For example, women working with acrylic and nylon fibres have an increased risk of developing breast cancer compared to the normal population (Labreche 2010).

A study of textile workers in Shanghai, China found an elevated risk of a spontaneously aborted first pregnancy associated with exposure to synthetic fibres and mixed synthetic and natural fibres (Wong et al 2009).

# Health problems



## What can you do to be a health hero?



- Train employees to handle chemicals safely
- Establish a safe storage system
- Protect especially pregnant women from hazardous chemicals
- Implement OSH (ventilation system, protection gear etc.)
- Substitute and eliminate hazardous chemicals in your production
- Go organic: use organic certified materials e.g. certified organic cotton (less hazardous chemicals)
- Minimise waste

# General Information and Useful Tools

- Partnership of Sustainable Textiles

<https://www.textilbuendnis.com/en/>

- GIZ: Sustainable Industrial Areas SIA working group:

<https://www.sia-toolbox.net/home>

