

CHEMICAL POLLUTION AND THE RELEASE OF NOVEL ENTITIES VS FAST FASHION INDUSTRY



**ECOSYSTEMS AND
ECONOMICSS
SUMMER-2022**

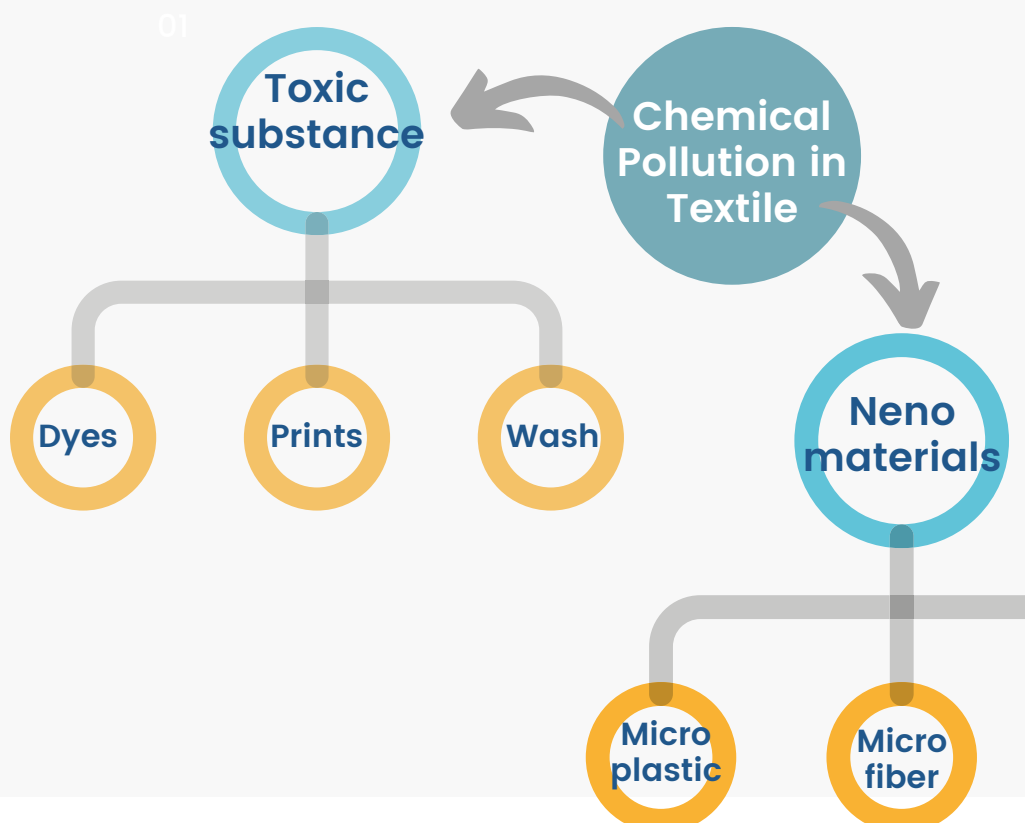
**MD Maruful Islam
AMD Akademie Mode & Design**

Planetary Boundary as Novel Entities

Planetary Boundaries is a framework that outlines nine global biophysical boundaries that establish a safe operating space for humans on earth. It is based on science and looks at sustainable environmental boundaries. Whereas the "fashion industry" is the second-largest polluter in the world. Some fashion researchers propose a method for integrating the viewpoint of the borders with the initiatives to enhance the influence of the fashion supply chain on the environment. For instance, persistent chemical compounds have dramatically decreased bird populations and hampered marine animal reproduction and growth.

Chemical Pollution in Novel Entities

In this section, we'll explain one of the nine boundaries—"The release of novel entities"—by focusing on toxic substances (dyes, prints and wash) and neno materials (microplastics, microfiber) in relation to the fashion industry, whose rapidly expanding activities have now reached a point where they may endanger the planet's ecosystem and the health of its inhabitants.



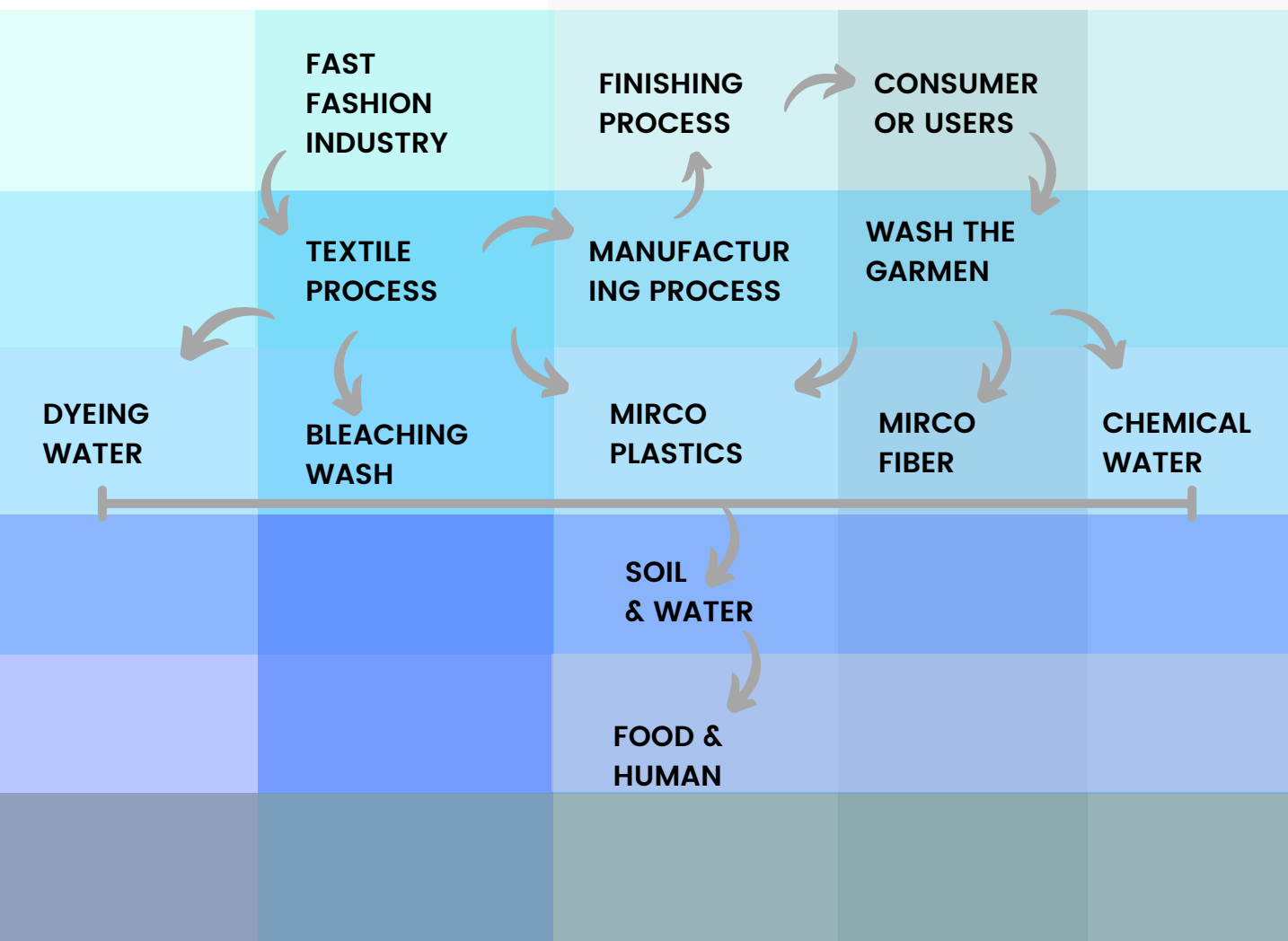
Toxic chemicals

Emissions of hazardous and persistent elements, including radioactive materials, heavy metal compounds, and synthetic organic pollutants, are some of the most significant environmental changes brought on by humans, because of the fashion industry trend. locating hazardous chemicals in the earth system and Identifying chemical contamination.

" Chemical hazards in the earth system.

- These substances might have unanticipated consequences on the physical environment (by affecting atmospheric processes and climate).
- Toxicity can refer to the effect on a living organisms, such as an animal, bacterium, or plant
- It is difficult to reverse the effect. This unpredictable result is only now becoming realized. After that, the issue is spreading on a global scale.

Despite the complexity of novel entities at the planetary boundary and the lack of a comprehensive examination of this problem. Boundary values are thus still undefined.



The dangers of toxic substances and microplastics & microfibers

Definition

- When textile materials like fibers, yarns, and fabrics are "dyed," such as with pigments from a special solution containing dyes and certain chemicals, this is referred to as toxicity.
- Broken-down plastic debris, synthetic fibers, and beads found in personal hygiene products are all examples of micro plastics & microfibers.

In the Textile process

- Chemicals used in the bleaching ,dyeing, printing, washing processes are crucial components of textile so that the fashion industry may produce clothing in a variety of colors looks. After these process that washed "unfiltered chemical water" drained into freshwater and pollute environment.
- First, clothes are washed during the finishing process and some garments again washed in washing plant in the industry, and then customers wash the clothes again and again after using them. The clothing releases "mirco plastic" into the water with each wash. and reported in South Korea, 50 percent higher than the previous record.

Consequences on planet

According to research, these substances may have possibly irreversible effects on both humans and animals as well as the physical environment (by affecting atmospheric processes and climate). Ecosystems far from the source of the pollution may experience significant impacts, including lower fertility and the potential for long-term genetic harm. We are unable to measure even one chemical contamination border at this time.

Future Strategy

The Planetary Boundaries (PB) framework and Life Cycle Assessment are two ground-breaking analytical tools that fashion academics propose as a method for bridging the perspective of planetary boundaries with the fashion business (LCA).

Toxic Substances

When dyeing fabrics, factory should use Zero Discharge of Hazardous Chemicals (ZDHC). Need implant Air dyeing technology. Prior to releasing used dyes water, adequate treatment is required for every plant. Also Utilizing activated carbon adsorption to remove dyes.

Micro Plastics & Micro Fiber

The fashion industry's best alternative is to employ high-quality fabric. Use dust-filter bags for laundry at home. Implement waste control is needed in the fashion sector. Utilizing activated carbon adsorption to remove dyes. Reduce the total amount of polyester fabric used. using biodegradable yarn.

Reference

Outside the Safe Operating Space of the Planetary Boundary for Novel Entities, 2022.

<https://www.stockholmresilience.org/research/planetary-boundaries/the-nine-planetary-boundaries.html>

The nine planetary boundaries, 2015.

<https://pubs.acs.org/doi/10.1021/acs.est.1c04158?fig=tgr1&ref=pdf>

Dangers of microfibres and microplastics, 2018.

<http://www.thethamesproject.org/dangers-microfibres-microplastics/>

House of Commons Environmental Audit Committee, Fashion: it shouldn't cost the earth 19 February 2019.

<https://publications.parliament.uk/pa/cm201719/cmselect/cmenvaud/1952/1952.pdf>

Dangers of microfibres and microplastics, 2018.

<http://www.thethamesproject.org/dangers-microfibres-microplastics/>

