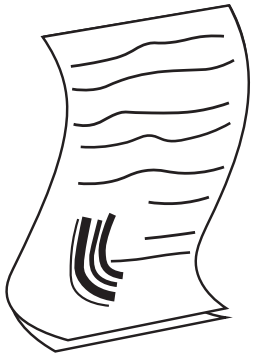
CALCULATE YOUR CLOTHES LANDFILL LIFE

HOW LONG DO FABRICS TAKE TO DECOMPOSE?

Pick two items of clothing



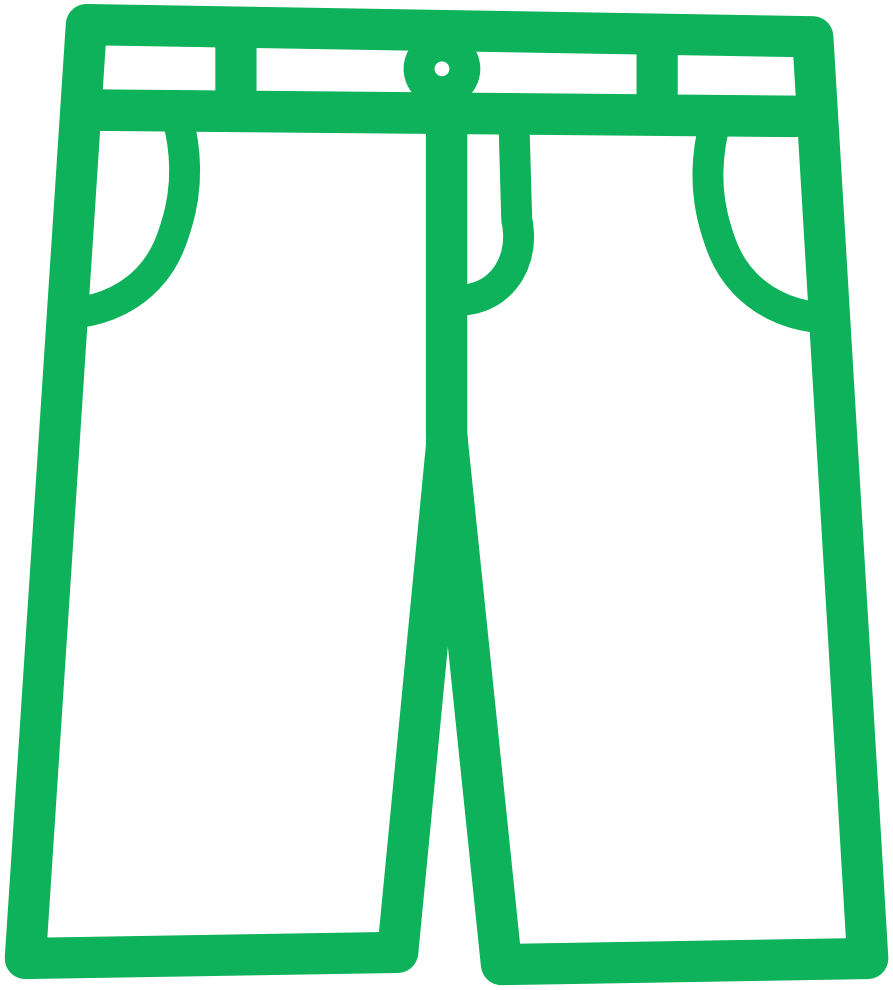
Check the label what is the material

Using the information cards calculate how many years in total your clothes would be in landfill for

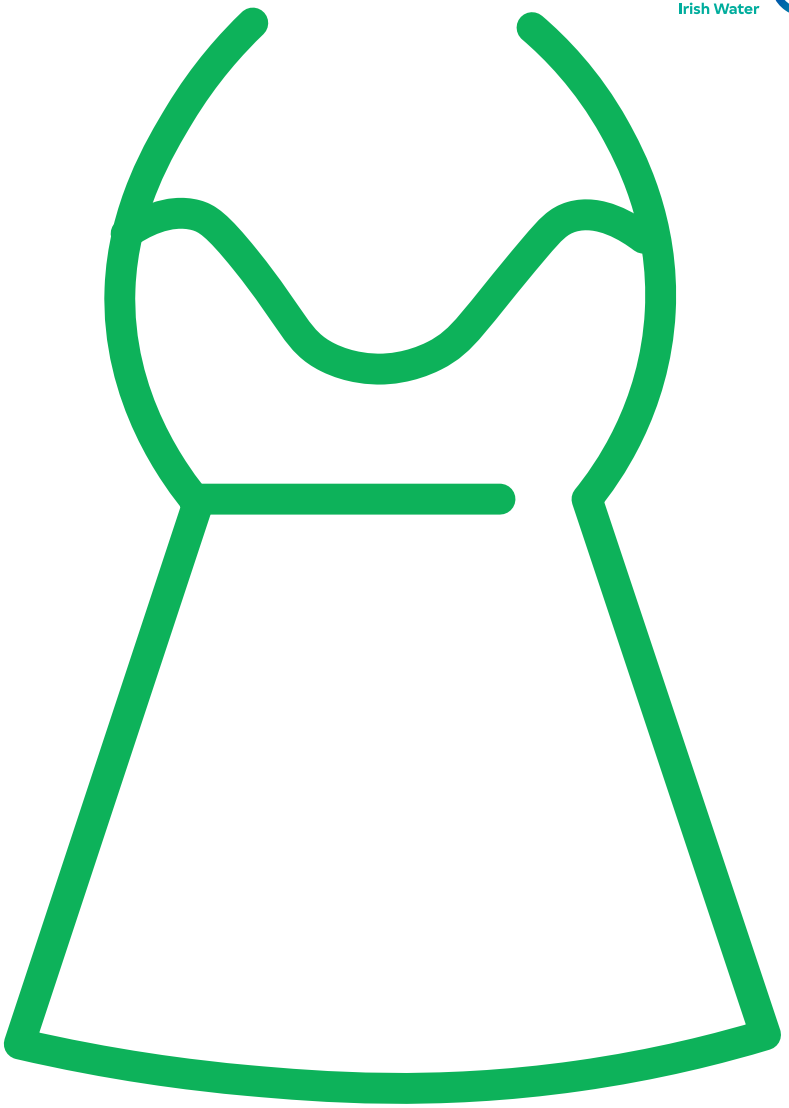
Cotton

Linen

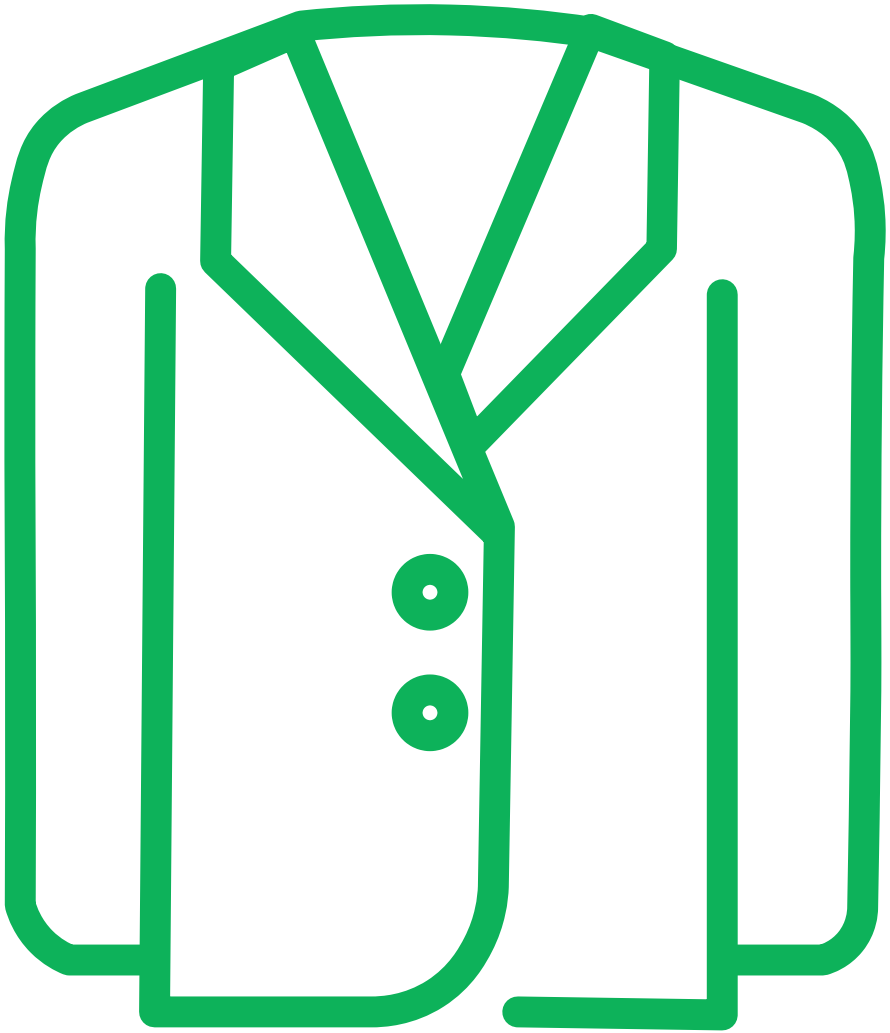
Bamboo



Denim

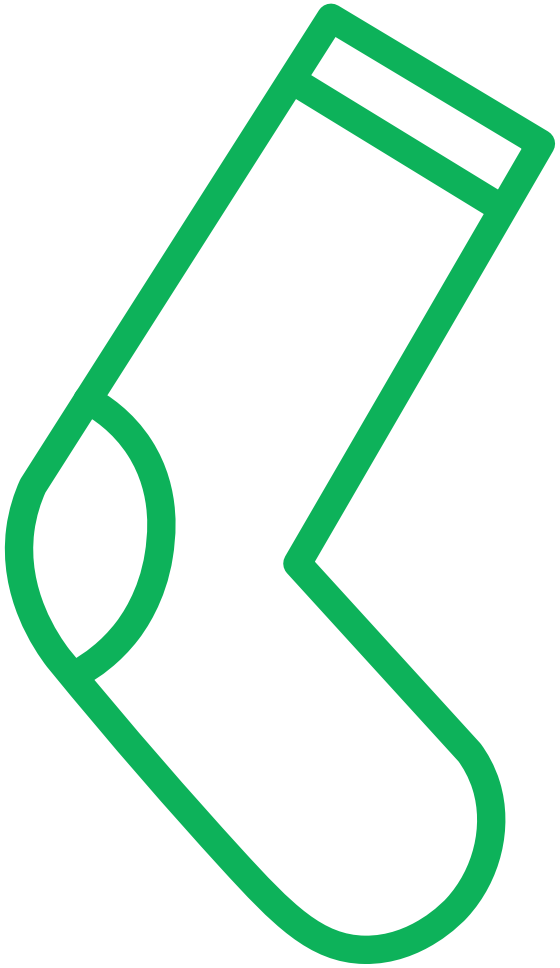


Silk

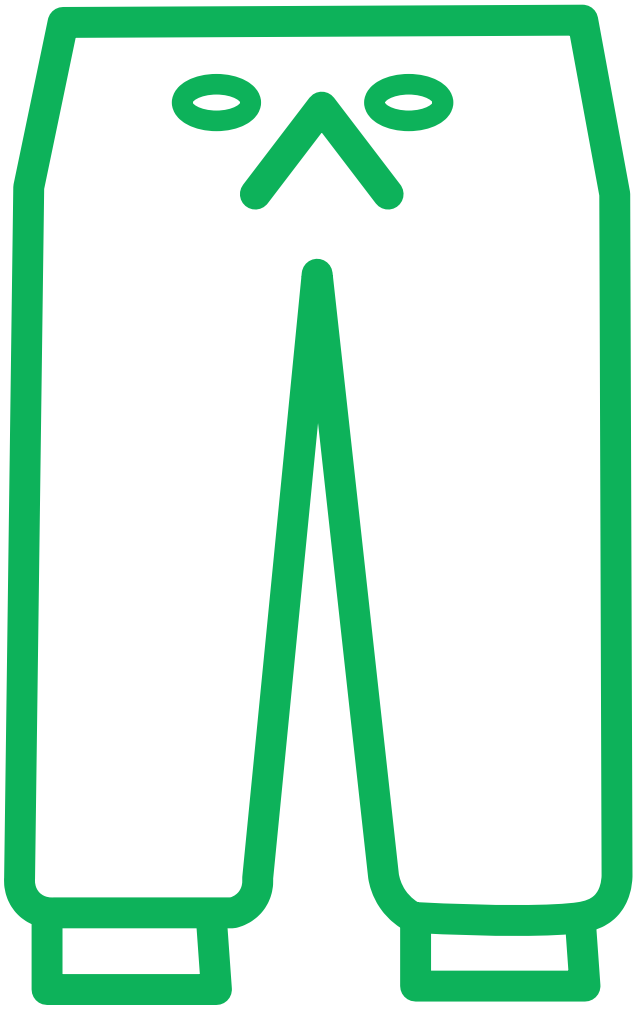


Wool

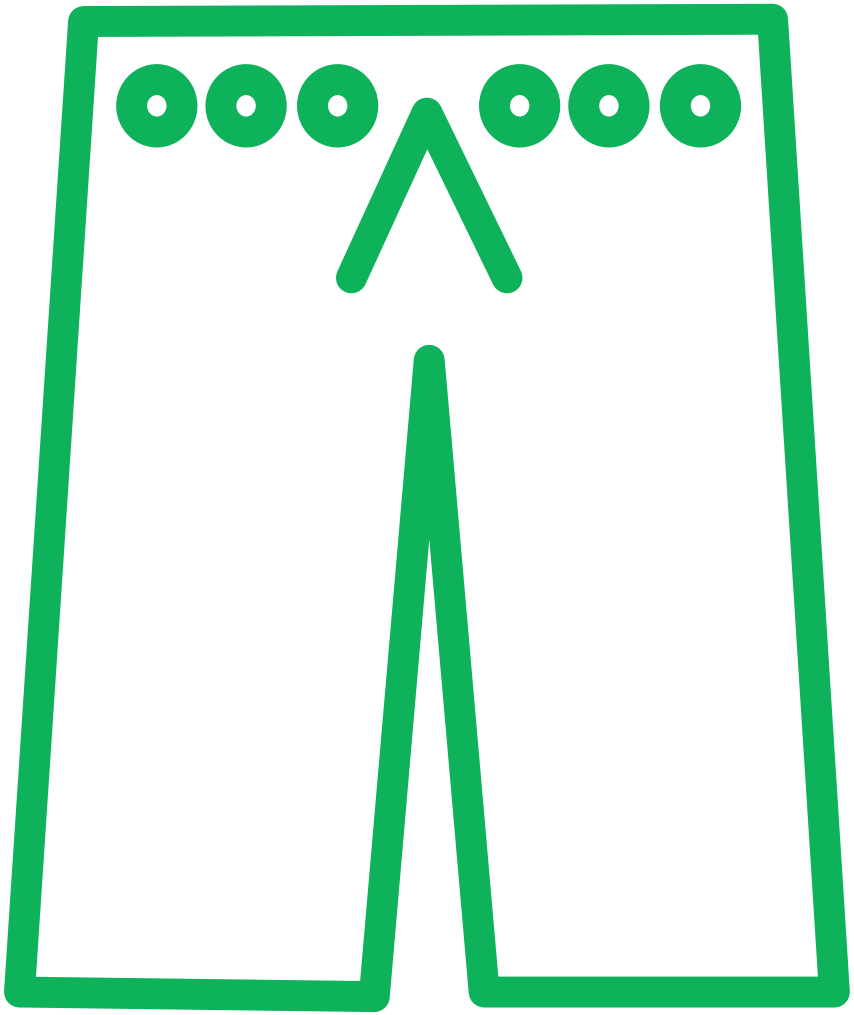
Rubber



Nylon



Polyester



Spandex

1 week to 5 months

about 2 weeks

10 to 12 months

1+ year

1 to 2 years

1 to 5 years

50 to 80 years

30 to 40 years

20 to 200 years

unknown

Answer Cards
how long for fabrics to decompose

What is Spandex?

Spandex, also sold as elastane or Lycra, is a polyurethane fibre. It is rarely used on its own and is almost always blended in at a few percent.

- **Sportswear and swimwear.** The original use and still the biggest, covering leggings, swimsuits, cycling shorts, sports bras and rash vests, where it can run to twenty percent or more.
- **Everyday clothing.** This is the real change of the last two decades. Stretch jeans, chinos, shirts, t-shirts and work trousers now routinely carry two to five percent elastane. Most people wear it daily without knowing.
- **Socks, tights and underwear.** Ribbed cuffs, waistbands, sock tops and hosiery all depend on it.
- **Medical and support textiles.** Compression stockings, elastic bandages, orthopaedic braces and post-surgical garments.
- **Fit and sizing.** Brands add it partly to reduce fit problems and returns, because a stretchy garment fits more body shapes than a rigid one. That commercial reason is why it has spread so far beyond sportswear.
- **Household and other.** Fitted sheets, upholstery, car seat covers and the ear loops on face masks.

Elastane is a small share of fibre production by weight but turns up in a very large share of garments, and even two percent is enough to stop a garment being recycled. Mechanical shredding cannot handle it and most chemical recycling processes cannot separate it out. It is also a polyurethane, so it does not break down. That makes it a clear example of a material added in tiny amounts for comfort that carries a very high environmental cost when clothing is disposed.

Cotton	→	1 week to 5 months
Linen	→	about 2 weeks
Bamboo	→	1+ year
Denim	→	10 to 12 months
Silk	→	1 to 2 years
Wool	→	1 to 5 years
Rubber	→	50 to 80 years
Nylon	→	30 to 40 years
Polyester	→	20 to 200 years
Spandex	→	unknown

The Water Footprint of our Clothes

Water is one of the most important resources on our planet, playing a vital role to ensure that people, animals and plants can survive. We are often not aware of the amount of water we are **actually** consuming, and how much of it is needed to manufacture products we use on a daily basis.

Virtual water is the quantity of water that is used indirectly for producing goods and services. It refers to "hidden" water which is used over the different stages of manufacturing and during the transport of products, from agriculture to industry, right up to the end consumer.

The **water footprint** is an indicator of the total water used by a country, region, or person, which takes into account both direct and indirect consumption of water.

It is comprised of three main components: green, blue, and grey water footprints.

The blue water footprint covers surface and groundwater which is used in the manufacturing of goods and to provide services

The green water footprint relates to rainwater used in agriculture

The grey footprint relates to contaminated water which results from manufacturing

The average water consumption in the Republic of Ireland is approximately **133 litres per person per day** (Uisce Eireann). This includes drinking water and service water, e.g. used for washing and showering – in this case, we are dealing with our **blue water footprint**. However, the average **virtual water footprint** for one person in the Republic of Ireland is considerably higher, coming in at around **3,600 litres per person per day** (Water Footprint Network). The majority of this is due to the consumption of food and drinks, as well as due to using energy and materials.

Green-Schools
An Taisce

Guess the Water Footprint of our Clothes

A pair of jeans	
One pair of underwear	
One T-shirt	
One hoodie or sweatshirt	
One pair of socks	
One kilogram of raw cotton	
One kilogram of polyester fiber	

Guess the environmental impact of our clothes

Aviation is responsible for 2% of all greenhouse gas emissions. What percentage is the Fashion industry reponsible for?	
What percentage of all clothes in the world is made of plastic?	
What percentage of microplastics in our ocean is the textile industry responsible for?	
What percentage of industrial water pollution globally is due to the treatment and dyeing of clothes?	
What percentage of textiles are recycled globally?	

7,250 litres

3,350 litres

1,500 litres

850 litres

375 litres

7,000- 21,000 litres

100 - 150 litres

10 %

70 %

35 %

20 %

12 %

Answer sheet

Activity 1

7,250 litres of water to produce one pair of jeans

3,350 litres of water to produce one hoodie or sweatshirt

1,500 litres of water to produce one shirt

850 litres of water to produce one pair of pants or boxers

375 litres of water to produce one pair of socks

7,000 - 21,000 litres of water to produce one kilogram of raw cotton

100 – 150 litres of water to produce one kilogram of polyester

Answer sheet

Activity 2

Fashion is responsible for 10% of all greenhouse gas emissions

70% of all clothes in the world are made of plastic

The textile industry is responsible for 35% of microplastic pollution in the oceans

20% of industrial water pollution globally comes from the treatment and dyeing of textiles

Roughly 12 %of collected clothing is recycled in some form, usually downcycled into insulation, mattress filling or wiping cloths, less than 1 percent is old clothes becoming new clothes.

Statement Cards - for discussions

Why polyester's water figure looks so low

The 100 to 150 litre figure comes from a factory, not a field. Polyester is made from oil and gas in a sealed industrial process. Most of the water is cooling water, which moves around the machinery and goes back into the system rather than being used up. There is no plant to water, so there is no irrigation and no rainfall to count.
The figure also stops at the point where the fibre is made. It leaves out dyeing and finishing. Polyester has to be dyed at high temperature using chemicals that do not dissolve in water, so that stage carries a water cost of its own.
There is a bigger gap. Water scientists use the term grey water, meaning the amount of clean water you would need to dilute the pollution from a process until it is safe again. Polyester begins in oil and gas drilling and refining. The reaction that turns those chemicals into fibre usually needs a catalyst containing antimony, a heavy metal. None of that pollution shows up in the litres per kilogram figure.

So polyester does well on one question and badly on another. It uses very little water. It does more harm to the water it touches. The usual figure only measures the first of those, which is why a low number is not the same as a low impact.

Why cotton's figure varies so much

Cotton is not one crop grown one way. The number changes depending on where the plant grows and how it gets its water.

Most of cotton's figure is rainfall. Water scientists call this green water, meaning rain that lands on the field and is taken up by the plant. More than half the world's cotton is grown this way, with no irrigation at all. Farmers in Benin, Burkina Faso and Bangladesh use almost no water from rivers or wells, and their cotton sits at the bottom of the range.
The top of the range comes from dry countries. Cotton in Turkmenistan, Uzbekistan and Egypt has to be irrigated because there is not enough rain. Much of it is flood irrigated, where water is run across the whole field and a lot of it evaporates or drains away before the plant can use it. Flood irrigation often applies half as much again as the crop actually needs. Turkmen cotton can pass 20,000 litres per kilogram.
Yield matters too. A farm that grows more cotton on the same land spreads the same water across a bigger harvest, so the figure per kilogram drops. Two farms can use similar amounts of water and still look very different on paper.

This is why the range is misleading on its own. It adds rain, which falls whether the cotton is there or not, to water pumped out of rivers and underground stores that refill slowly. Those are not the same thing. Cotton's real problem is not that the plant is unusually thirsty. It is that a lot of it is grown in places with no water to spare.

How flax and hemp compare

Flax, which linen is made from, and hemp both need far less. Both sit at roughly 1,500 to 3,500 litres per kilogram of fibre, around a quarter to a third of cotton. The reason is where they grow. Flax for European linen is grown in Normandy, Flanders and the Netherlands, where there is enough rain that farmers do not irrigate at all. Hemp grown in Ireland and Britain runs on rainfall too.

Statement Cards - for discussions

Why is less than one percent of clothing is recycled into new clothing?

Recycling a jumper is far harder than recycling a bottle. A bottle is one plastic with one label to take off. A jumper is usually several materials at once.

Most clothes are blends. A t-shirt might be cotton mixed with polyester, with a little elastane so it stretches. Recycling machinery works on one material at a time, and there is no cheap way to pull a blend apart. Chemical processes that can separate blends do exist, but only at small scale. Zips, buttons, prints and coatings have to come off first as well, mostly by hand.

Even a single fibre garment gets weaker. Shredding cotton makes each strand shorter, and short fibres spin into weak yarn, so recycled cotton has to be mixed with new cotton to hold together. The loop leaks a little every time round.

Cost decides the rest. New polyester made from oil is cheap, so brands have little reason to pay more for fibre made from old clothes. Most recycled polyester in shops today comes from drinks bottles, which arrive clean and sorted.

Most clothing is never collected for recycling at all. It goes to landfill or is burned. The European Union only made separate textile collection compulsory in January 2025, so Ireland is at the start of this.

None of this is a technical mystery. Clothes are not designed to be taken apart, and so far nothing has made it worth anyone's while to change that.

How much microplastic is in the ocean?

Nobody can give an exact number, and every estimate so far has turned out to be too low.

The best-known figure counts only what floats. Scientists sampling the surface estimated about 171 trillion plastic particles adrift in 2019, weighing roughly 2.3 million tonnes, and climbing steadily since around 2005.

The surface is the smallest part of the story. A study published in Nature in 2025 measured microplastic below the surface at scale for the first time. In the top 200 metres of the Atlantic alone, researchers estimated between 11 and 21 million tonnes. That is several times the global surface figure, from one ocean and one layer of it. Australian researchers estimated another 14 million tonnes in deep sea sediment, where fibres settle once they sink.

Clothing is a large part of this. The International Union for Conservation of Nature estimates that about a third of the microplastic released straight into the ocean comes from washing synthetic clothes. Fibres shed by a fleece or a pair of leggings pass straight through a washing machine filter and then through a wastewater treatment plant.

The totals keep rising, and not only because more plastic is arriving. They rise because researchers keep looking somewhere new and find it already there.

Statement Cards - for discussions

Why dyeing pollutes

Dyeing means putting colour into fabric. Finishing is everything done afterwards to change how the cloth behaves, softening it, making it crease resistant, waterproof or flame retardant. Both stages use large volumes of water mixed with dyes, salts, bleaches and other chemicals.

Only some of the dye fixes to the cloth. The rest leaves in the wastewater along with the chemicals used to bond it. Where a mill has proper treatment, that water is cleaned before it returns to the river. Where it does not, the river takes it as it is. Along rivers near textile mills in Bangladesh, India and China, residents have described being able to tell which colour is in fashion by looking at the water.

The European Parliament estimates that around a fifth of global clean water pollution comes from textile production, mostly from dyeing and finishing. Treat that number carefully. The European Commission and the United Nations repeat it, but none of them name a study behind it and no one has published how it was worked out. It is the best guess available rather than a measurement. The pollution is real and well documented. The exact share is not.

Why the numbers are uncertain

The European Parliament estimates that around a fifth of global clean water pollution comes from textile production, mostly from dyeing and finishing. The European Commission and the United Nations repeat that figure. None of them name a study behind it, and no one has published how it was worked out.

That is worth thinking about, because the reasons the figure is shaky tell you something about how the industry works.

Most clothes are made a long way from where they are sold. Around eight in ten textiles bought in Europe are made outside it. Researchers writing in Nature Reviews Earth and Environment point out that this alone makes total chemical use very hard to establish.

The same researchers found that even the companies making the clothes often do not know where their fabric was dyed, or how. Dyeing is usually subcontracted to separate mills further down the chain.

The rules are not clear. Chatham House found that existing water standards tend to cover one crop or one measurement rather than the whole picture, and that the countries where most dyeing happens do not have the same regulations as the European Union.

The main scheme that does collect wastewater test results, the Zero Discharge of Hazardous Chemicals programme, is voluntary. It covers factories linked to brands that chose to join, so it tells you nothing about the rest.

So the pollution is real, well documented and plainly visible in the rivers where it happens. What is missing is a reliable global total. When you meet a confident percentage for something like this, it is worth asking who worked it out.