

ALICE / FORREST



HARRIET / SPARK

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micro plastics
**MAS
SIVE**
problem

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micro plastics



They're pretty tiny (micro in fact),
so why are they such a big deal?



This book aims to answer everything you ever wanted to know about microplastics.

Our motivation comes from how much we still have worth protecting, backed up by some solid knowledge of the big issues.

Microplastics are a massive issue, but ultimately this is a hopeful story. There are scientists on the cutting edge of research, there are companies making more sustainable products, and there are things all of us can do

to make a difference.

As we learn more about plastic pollution, the focus is shifting from the big, obvious pieces we see in our day-to-day lives, to the more insidious, teensy tiny bits. This kind of plastic may seem smaller and more inconsequential, but microplastics are increasingly being revealed as the true threat posed by plastic. So while we still encourage you to skip the plastic bottles, cups, straws (and all single use plastic really), this book is a way to help us all understand

this threat more deeply, and how we can combat it.

The book follows a series of questions, to provide some answers and share some science on the topic of microplastics. We hope to communicate the magnitude of this problem and, most importantly: give you some easy & tangible tips, tricks and DIYs to help you to be part of the solution.

**With oceans of hope,
Alice and Harriet**

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What is microplastic anyway?

Microplastic is basically small pieces of plastic, less than



5 millimetres.

That's about the size of a sesame seed.



Plastic doesn't go away, so when it ends up in the ocean it keeps on breaking into smaller and smaller pieces, eventually becoming nanoplastics, Nanoplastics are really small, less than 0.001mm and usually only visible with a microscope.

Where does microplastic come from?

Microplastics come from two main sources:

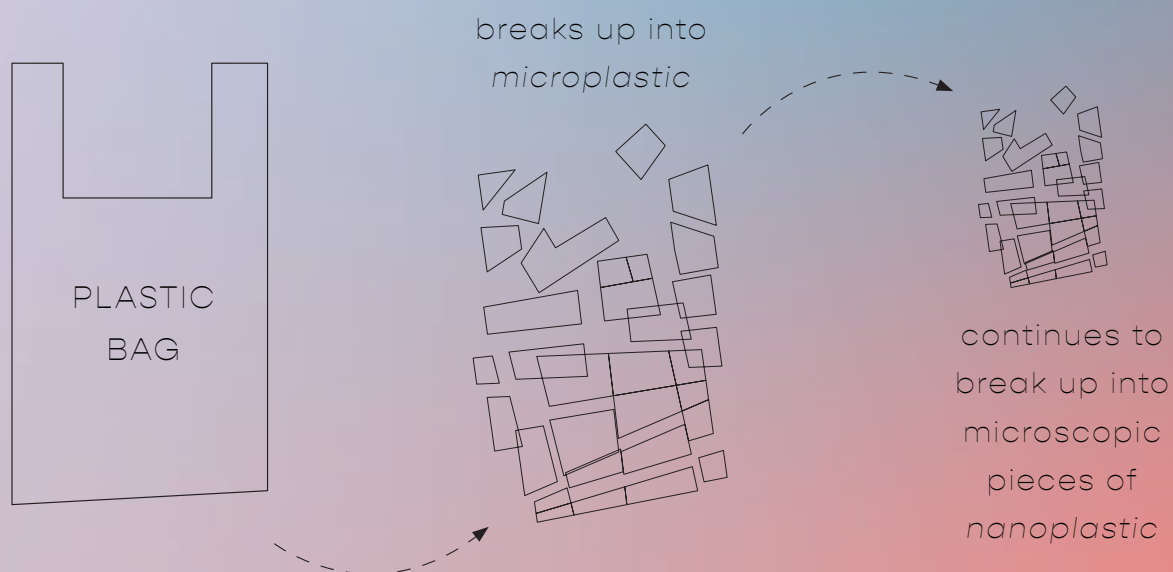
1. Primary

Plastic which is intentionally small, and manufactured as tiny pieces. This includes nurdles (plastic pellets which are used in the manufacturing process) and microbeads, like the tiny beads found in exfoliating facewash.

2. Secondary

Broken down pieces of bigger plastics, including fragments of bottles, bags etc as well as polyester fibres from clothing. This could happen when a plastic bottlecap is gradually fractured by wind, waves and sunshine into smaller bits.

Microplastics generally aren't captured by wastewater treatment facilities (sewage plants), and flush straight out into the ocean. Just like larger plastics, most waste comes from the land, not ships.



SunButter. natural, creamy, sun

MICRO / PLASTICS

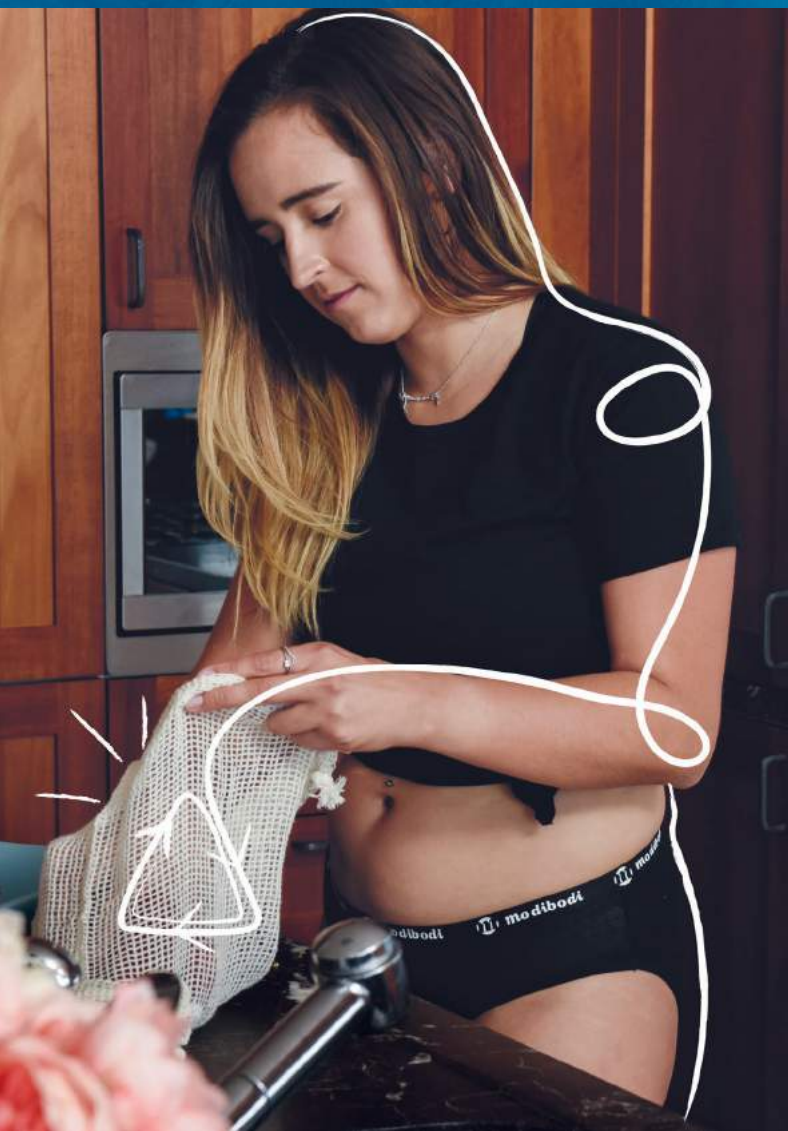
protection. PROTECTING PEOPLE & OCEANS

MASSIVE / PROBLEM



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When a plastic bottle cap
is gradually fractured by
wind, waves and sunshine
into smaller bits it becomes
microplastic.



What are the biggest sources of microplastic?

CLOTHES (MICROFIBRES)

Just one garment can shed over 1900 fibres per wash, and a single washing machine load can release over 700,000 fibres.

COSMETICS (MICROBEADS)

Every time you use Olaz Anti-Wrinkle Cream for example, you're putting around 90,000 plastic particles on your face.

FRAGMENTS (MICROPLASTICS)

Plastic in the ocean doesn't go away, it just breaks up into smaller pieces, creating the huge problem of microplastic.

Why is microplastic a problem?

The biggest problem caused by microplastics is their ability to transfer pollutants and potentially harmful chemicals into organisms and ecosystems. This causes a range of impacts like:

- poisoning the food chain
- polluting soil & groundwater
- leaching chemicals into animals and people
- decreased reproductive success in a study on oysters
- reduced eating and less energy in crabs

Right now, we don't fully understand the extent of this issue or its impact on people.

~~~~~

What we do know is that as plastic particles break down, their physical and chemical properties change. As plastic disintegrates it can leach additives like Bisphenol-A (BPA) and phthalates (hormone disruptors). Even though they're small, they have a large surface area for toxic compounds to bind to. Many of the chemicals introduced by plastic have been found in people, and have been linked to health issues in animal studies.

The small particles can also be a big problem. Nano-particles can cross cellular barriers (e.g. from blood to the brain, or into a placenta), changing gene expression and biochemical reactions. They can damage cells, change immune system responses and tiny pieces can lodge in our body. The small pieces can also build up to cause blockages. We don't fully understand the impacts yet, but these tiny plastics are breaking into our cells.



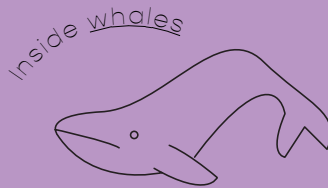


Scientists have found  
that some wild corals  
are *feeding on* tiny shreds  
of plastic trash.

# Where has microplastic been found?

We're literally eating our own trash, as tiny plastic pieces are inside our food. This can introduce toxic chemical additives like PCBs, flame retardants and pesticides into our bodies.

In drinking water, salt and beer. Studies found more than **90%** of salt and bottled water contains microplastics, and over **83%** of tap water.



At large concentrations in the wild waters of Antarctica and Inside Arctic sea ice.

Eaten by coral, leading to bleaching and tissue necrosis.



Raining from the sky. A study in the Pyrenees found **365** microplastic particles per square meter falling from the sky every day.



In sunscreen – up to **100** trillion particles in one product.

At the bottom of the deep sea, in the sediment, water and animals down there.

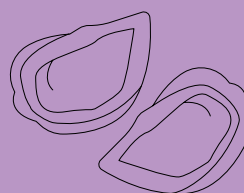
In soil & freshwater. Terrestrial microplastic levels may be **4-23** times higher than marine ecosystems.

Inside people, and their poop.



Blowing ashore in sea spray. Up to **136,000** tonnes is estimated to arrive in water droplets from the sea every year.

Inside seafood, like fish and oysters. Seafood eaters could be ingesting up to **11,000** particles per year.



In flying insects like mosquitos.

In soft drinks, like Coca Cola.

# How much microplastic is there in the ocean?

Obviously this stuff is a little tricky to count. Once in the ocean, it sinks, washes up on beaches, moves around in ocean currents, breaks into smaller pieces, and is eaten. There is some research trying to give us a number though.

Floating microplastic globally has been estimated somewhere between 35,500 metric tonnes (from a [2015](#)

[study](#)) and 236,000 tonnes (from a larger [study in 2016](#)), which is the weight equivalent of almost 8000 humpback whales. These numbers are actually less than the expected amounts (based on how much plastic is going into the sea).

Basically, the answer to this question is: A Lot. And also: a lot more than what should be in there.

# What's happening with microplastics legally around the world?

This is a bit of a mixed bag, as microplastics are an emerging issue and many governments are yet to act, which is why we need to take matters into our own hands.

Additionally, banning primary microplastics is a step in the right direction BUT considering that

most microplastics are secondary (fragments of bigger plastics) it needs to go hand-in-hand with banning all single-use plastics. With plastic production on track to double in the next 20 years, and scientists forecasting that by 2050 there'll be more plastic in

the ocean than fish, this problem is only growing. In many cases, such as in Australia, strong leadership by our governments and companies is severely lacking. This is why it's so important that we as individuals act now.

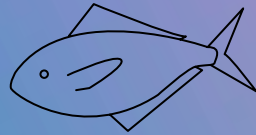
**USA:** in 2015, President Obama banned microbeads in cosmetics.

**UK:** in 2018, a ban on manufacture & sales of microbeads in personal care products & cosmetics came into place.

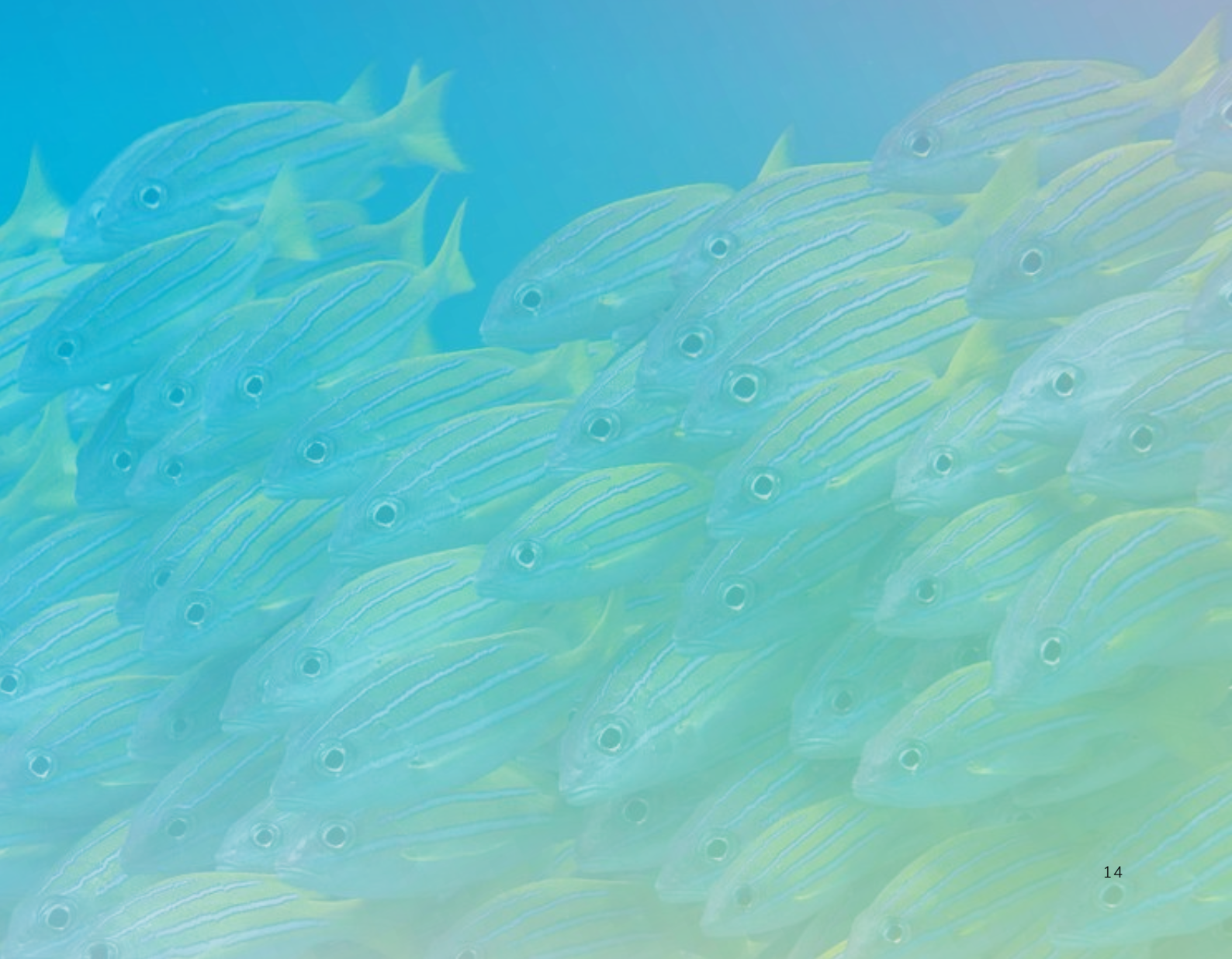
**Europe:** in 2019, a law was drafted to phase out 90% of microplastics (36,000 tonnes) including products like cosmetics, paints and detergents. Prior to this several European countries like France & Sweden had implemented their own bans.

**Australia:** in 2015, a voluntary phase out of microbeads in cosmetics, cleaning and personal care products was announced –currently there is no legislation in place to ban products containing microbeads.

**Taiwan & New Zealand:** in 2018 implemented a ban on importation & manufacture of rinse-off cosmetics with microbeads.



By 2050, there could  
be more plastic in our  
oceans than *fish*.



# If the fish eat plastic, and it's in their stomach, what happens when I eat the fish?

There's still so much we don't know about this, but broadly it can be broken down into 2 issues:

## Issue 1

*Physical pieces of plastic.*

The big bits pass through the fish intestines and are probably pooped out (see #2). The smaller bits are a different story – the first study to document this found microplastics in crabs, which came from the mussels they were eating. Since then we've learnt that plastic can move around both inside individuals, and up the food chain, and that it's likely we're eating tiny plastic pieces along with our seafood. And not just seafood – one study estimated that the average person is eating around 50,000 particles of

plastic a year in a typical American diet (plus an additional 90,000 if you only drink bottled water). We're just beginning to understand the impact of this – last year evidence showed human immune cells dying while attacking microplastic.

## Issue 2

*Persistent Organic Pollutants (POPs – toxic chemicals).*

Even if the plastic doesn't cause physical harm, it can transport pollutants such as DDT or PCBs into the animals. The transfer of POPs from ingested plastic into tissue and fat has been documented in fish & seabirds. These are likely to bioaccumulate, or build up, in top predators (like seals, or humans).

So basically this is an area we're just beginning to understand, but according to the first ever plastic health summit held last year; “Nobody can deny anymore the potential danger of microplastics to our health.”

- Maria Westerbos  
(Director, Plastic Soup Foundation)



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# AUSMAP: Shedding light on microplastics in Australia



Before we start to tackle the growing microplastic crisis, we need to understand their impact so far. AUSMAP (The Australian Microplastic Assessment Project) is investigating just how much microplastic is ending up on Aussie beaches by surveying hundreds of coastlines around the country.

**We chatted to AUSMAP's Research Director, Dr Scott Wilson, about the findings of the project so far.**



# Interview with Dr Scott Wilson

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## How many beaches have you surveyed so far?

Through AUSMAP the community has surveyed over 250 beaches around Australia, including some from our near neighbours. Some beaches have had been sampled numerous times so the total number of samples is well over 300. This number is continuing to grow as more and more communities get involved.

## What have you found? Have the results surprised you?

The findings are interesting and really show that population centres are the primary source and that most of what washes up on a shoreline is locally derived. As you move away from these centres, levels are generally low, with zero microplastic found in a number of locations remote from major settlements. The numbers we are finding is not surprising but what is the variable nature of the plastic signature. For instance, at Manly Cove in Sydney monthly data is showing us that the



dominant microplastic moves from hard plastic fragments in the warmer months to polystyrene foams in the cooler months. This trend is consistent over the last two years and tells us factors like weather and both land and water activities can influence what we find.

### **What beach has the most microplastic?**

While we have several beaches that have recorded over 1000 microplastics per square metre, the highest microplastic loads are consistently being found on the beaches around West Lakes in South Australia. The highest is just over

9500 microplastics per square metre. This is a semi-enclosed estuarine system that is the sink for runoff from surrounding housing and industry as well as recreational activities on the water.

### **How could we prevent microplastic entering our waterways?**

It is difficult to stop microplastic because of their very size which makes them hard to control. While mesh inserts on drains and fine filtration in treatment plants are effective to some degree, they are costly and don't stop all microplastics. The best way reduce inputs to our waterways is to

reduce the amount of plastics we use, particularly single use items.

### **What can people do to reduce their impact in regards to microplastic?**

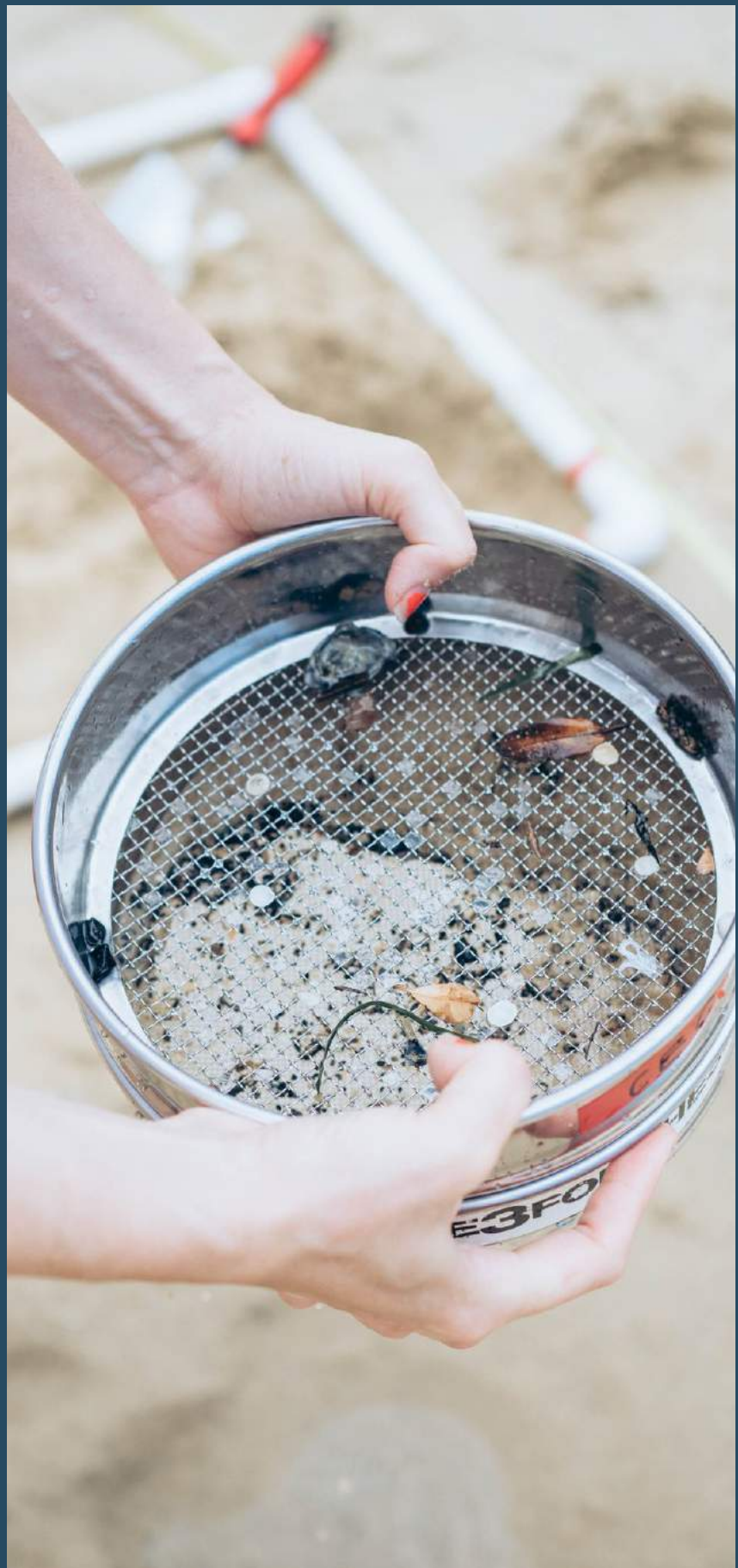
By reducing our own plastic footprint we reduce the potential for litter and for microplastic plastic shedding (the process of fibres and fragments emitted from a product). For instance, every time you cut or tear open a plastic package up to 250 microplastics per cm are released. Clothing and furnishing choice and how we care for them can help. Avoiding or reducing synthetic materials is easier said

than done. But if you just can't get by without your active wear then wash them in a monofilament bag and use cold water, liquid detergent and a front loading washing machine if possible. This will reduce the amount of fibres released. And while microbeads have been removed from most cleaning products they can still be found, so checking labels for terms like polyethylene or polypropylene or their codes PE or PP will help you spot them. Every step at reducing your plastic footprint is a step in the right direction.



**AUSMAP is a citizen science project, which means anyone can get involved.**

**Learn more about the project and how you can volunteer [here](#).**



# Coconut Bowls

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Coconut Bowls up-cycle discarded coconut shells into beautiful reusable bowls that replace single use items, while promoting a healthy, sustainable lifestyle for both people and the planet.

Billions of of Coconut Shells go to waste every year, instead Coconut Bowls reclaim these wasted shells and hand-craft them into beautiful reusable bowls, perfect for your smoothies & brekkies!

From tree to table, Coconut Bowls are the perfect sustainable solution to plastic pollution! Join the conscious coco community today with code "MADEBYNATURE" for a 10% discount.

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fair food forager



"The app gives information to consumers about how the food provider scores on food waste, plastic waste and sourcing local sustainable and cruelty-free food"

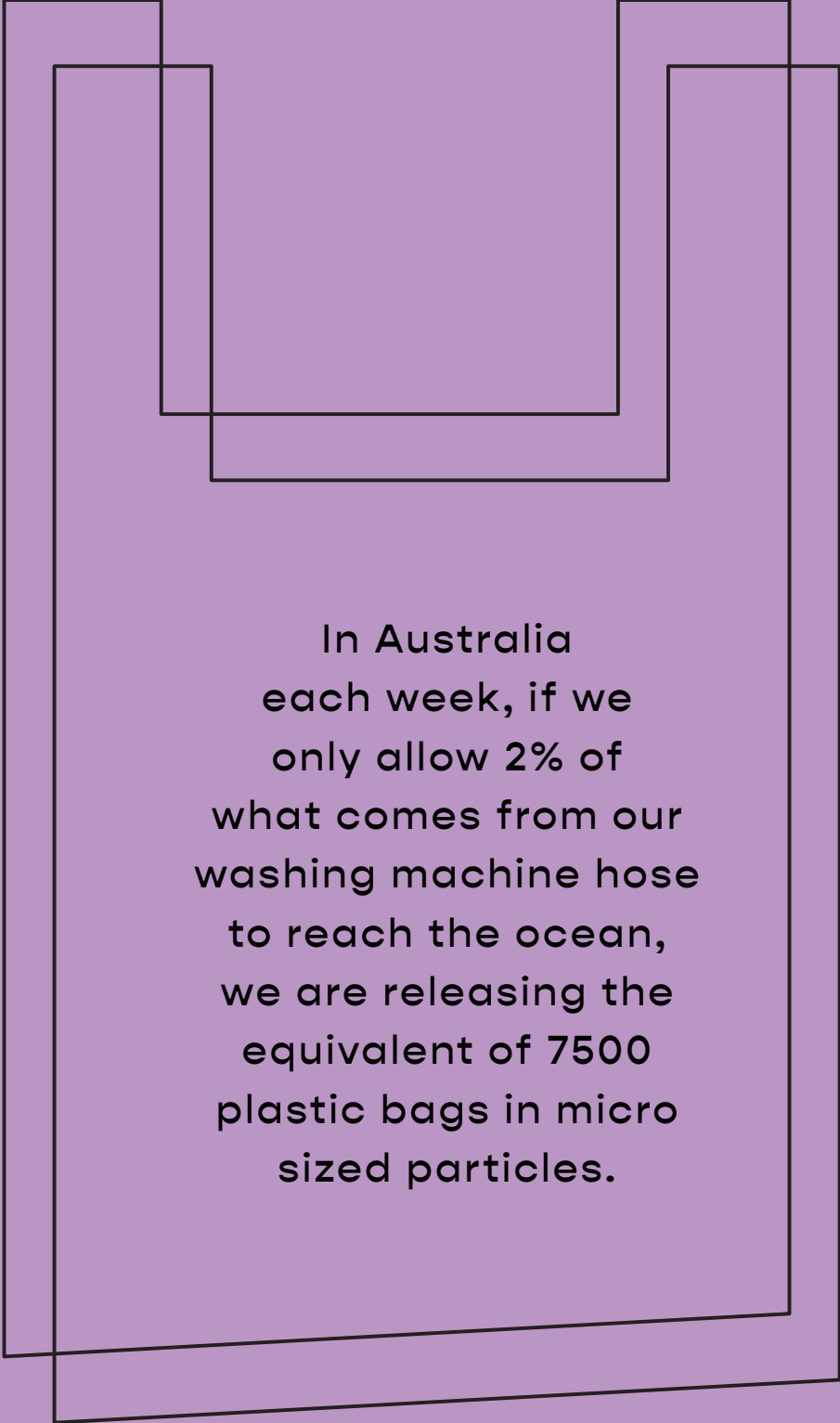
the guardian



## How it works

- Search sustainable food near you
- Suggest or check-in at a food venue
- Rate, like and comment on fair food
- Follow people and fair food businesses
- Post images and share experiences





In Australia  
each week, if we  
only allow 2% of  
what comes from our  
washing machine hose  
to reach the ocean,  
we are releasing the  
equivalent of 7500  
plastic bags in micro  
sized particles.

# Are clothes made from recycled plastic really a solution?

Turning plastic items, like bottles, into useful things, like yoga pants and swimsuits, in theory is a great idea. However it does raise some issues. Is this supporting the plastic industry by giving us an excuse and a reason to have plastic bottles?

More importantly, are these clothing items then shedding tiny plastic fibres into the ocean, and thus exacerbating the problem?

Some companies, like

Patagonia, have admitted that their products are part of the issue and are investing into research to capture microplastics. Others like Ternua are researching fabric alternatives that won't shed fibres.

Not all synthetic fibres are created equally – higher quality & tighter knit fabrics shed less. And many companies now provide instructions for their customers – like

Shapes In the Sand Swim who encourage washing using the Guppy Friend bag, or rinsing swimsuits in buckets instead of anywhere with a drain.

This is something that needs to be addressed. For now, recycled plastic clothing seems to go into the same category as general synthetic fabrics. If you do have synthetic clothing, there are ways to wash more responsibly.

## How to wash your clothes responsibly:

- Simply washing your gear less has a big impact. Hang your clothes in the sun to give the bacteria a fresh UV heave-ho.
- When you wash, use a front load washer. These are shown to impart a quarter of the damage of a top loader.
- Use liquid detergent and cold wash.

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# Microplastics: the teeny tiny crisis hiding in our wardrobe



After interviewing hundreds of designers, change-makers, academics, creatives and fashion insiders, [Clare Press](#) has some damn good insights into the world of sustainable fashion. Clare is the presenter of the [WARDROBE CRISIS](#) podcast and author of [Rise & Resist, How to Change the World](#).

**We chatted to Clare about microplastics, the fashion industry and navigating the tricky world of ‘sustainability’.**

# Interview with Clare Press

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## **Can you shock us with a stat from the fashion industry relating to microfibres?**

Microplastics are tiny pieces of plastic smaller than 5mm. According to Fashion Revolution, as much as 34.8% of microplastics in the oceans come from fibres. In [this](#) Sydney Morning Herald article, Dr Mark Browne says his research 'shows that microfibres can make up over 85 per cent of debris on shorelines.

## **When it comes to fashion, what should we be looking for to avoid plastic microfibres?**

The obvious choice is to avoid synthetic clothes, but because nearly 70% of what we wear is made from plastic fibres (polyester, nylon, elastane, acrylic) that's easier said than done. Polyester is

ubiquitous because it is cheap and easy to care for. You don't have to iron it; you can chuck it in the washing machine. Synthetic fabrics also have many qualities people look for, particularly in sportswear - would you buy leggings without stretch in them? Or a bikini? So, yes, I would counsel avoiding synthetics where possible, but also consider garment care. According to [this](#) recent study by researchers at the University of Leeds, washing at 25C on a 30-minute cycle sheds fewer microfibres into waste water.

## **What more would you love to see happen to tackle this issue?**

We need more research. In Sydney, UNSW School of Biological, Earth & Environmental Sciences researchers Dr Mark Browne

and Dr Emma Johnston have been awarded a hefty grant to look into how clothing brands and washing machine filters can reduce fibre emissions and their ecological impact. Browne was one of the first scientists to identify the issue of microfiber pollution coming off clothing via the domestic washing process back in 2011. How can we combat that? The jury is still out. I had a conversation with Browne at the end of last year and asked about Guppy Bags - he told me there's not enough evidence to show that they work. And there was me, recommending everyone use a Guppy Bag! I'd like to see more investment in research coupled with stronger regulation - that washing machines must be fitted with filters, for example.



**What do you think of plastic being recycled into clothing? Do you think the fact a second life has been found for the plastic outweighs the fact it could be shedding microfibres in the wash?**

Aha! Here you have the perfect case study for the complexity of sustainable fashion (or indeed sustainable anything). People often want an either/or answer, but it can depend on your criteria and your values.

Say you're vegan; you will choose animal-free leathers (usually plastic, or bonded with plastic glue) over environmentally regulated, low-impact biodegradable vegetable tanned leather, because leather doesn't align with your values. I know we're not talking about leather here, but you see what I mean.

Another example: I prefer a wool sweater over an acrylic one, and I could make the argument that the synthetic one harms

marine life, because every time you wash it thousands of tiny plastic fibres escape with the waste water. I could tell you that these pollutants bio-accumulate and when humans eat fish, they're also eating plastic - and you could tell me, 'Well, duh, don't eat fish then. It's cruel anyway.' We'd talk each other around in circles looking to prove each other 'wrong'.

If we accept that there is no 100% right answer when it comes to choosing one product over another, my view is that recycled is better than virgin, because recycled has a much lower carbon footprint, and also addresses waste. Will those recycled polyester trackies made from plastic bottles collected from shorelines eventually end up back in the ocean from whence they came, albeit in a different form? Maybe! Do brands sometimes greenwash that they are 'saving the oceans' when all they really did was switch a small portion of

their collections over to recycled rather than virgin synthetics? Yes! Are many swim brands that choose high quality recycled nylon in order to try to make a difference doing the best they can? Yes! Makes your head spin, doesn't it?

**So what can we do?**

The good news is that the fashion industry is changing, thanks partly to the rising consumer demand for more sustainable product and pressure from activists. Tech advancements are allowing brands to make better choices. Everyone is getting educated together. Seven years ago, when I started working in this space there was little consumer understanding of these issues - now it's off the charts. Don't feel guilty - get informed. You can start with the Wardrobe Crisis podcast. Episodes 1, 7, 47, 111 and 112 all address the issue of ocean plastics. Find them [here](#).

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[www.earthbottles.com.au](http://www.earthbottles.com.au)

# How can we tell if products contain microplastics?

Unfortunately there is no secret word that gives away hidden microplastics. There are however some fun words you can look for.

There's a more comprehensive list of words [here](#), and a list of products to choose or avoid at [Beat the Microbead](#).

Polyethylene (PE)

Polypropylene (PP)

Nylon

Polyethylene terephthalate (PET)

Polymethyl methacrylate (PMMA)

Polytetrafluoroethylene

~~Glitter~~  
is  
just  
tiny  
*sparkly*  
pieces  
of  
**PLASTIC**

While there are “eco” glitters made from biodegradable materials, there is some research suggesting that these also cause harm when they end up in the environment.

It's best to just avoid the sparkly stuff. You could get crafty with a hole punch and some leaves instead.

# What are some hidden sources of microplastics we may not know about?

Microbeads, and broken bits of big plastics, are more obvious sources of microplastic. But there are many stealthy sources you may not have considered.

Here's a few:

## PAINT

Many paints are made with synthetic substances, which enter the environment as the paint breaks down, or even just when rinsing brushes. In the UK, painted road markers have been linked to plastic in river sediment. In the Arctic high amounts of plastic were found in the sea ice, some of which was paint from ships.

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## TYRES

Tyres are made from plastic along with rubber, and as they wear down they release 63,000 tonnes of plastic dust per year in the UK alone.

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## TENNIS BALLS

The fluffy yellow bit on the outside is PET (the same plastic used for bottles).

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## TEA BAGS

some standard tea bags are sealed with a plastic glue.

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## CIGGIE BUTTS

a non-biodegradable plastic that sheds little fibres when littered.

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## SEWAGE

is often spread on fields as fertiliser, taking with it several thousand tonnes of microplastics that end up in the soil.



the reason the coffee stays in the paper cup is a thin layer of polypropylene lining, which is left behind when the paper cup eventually breaks down.

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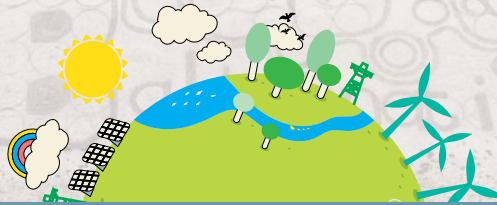
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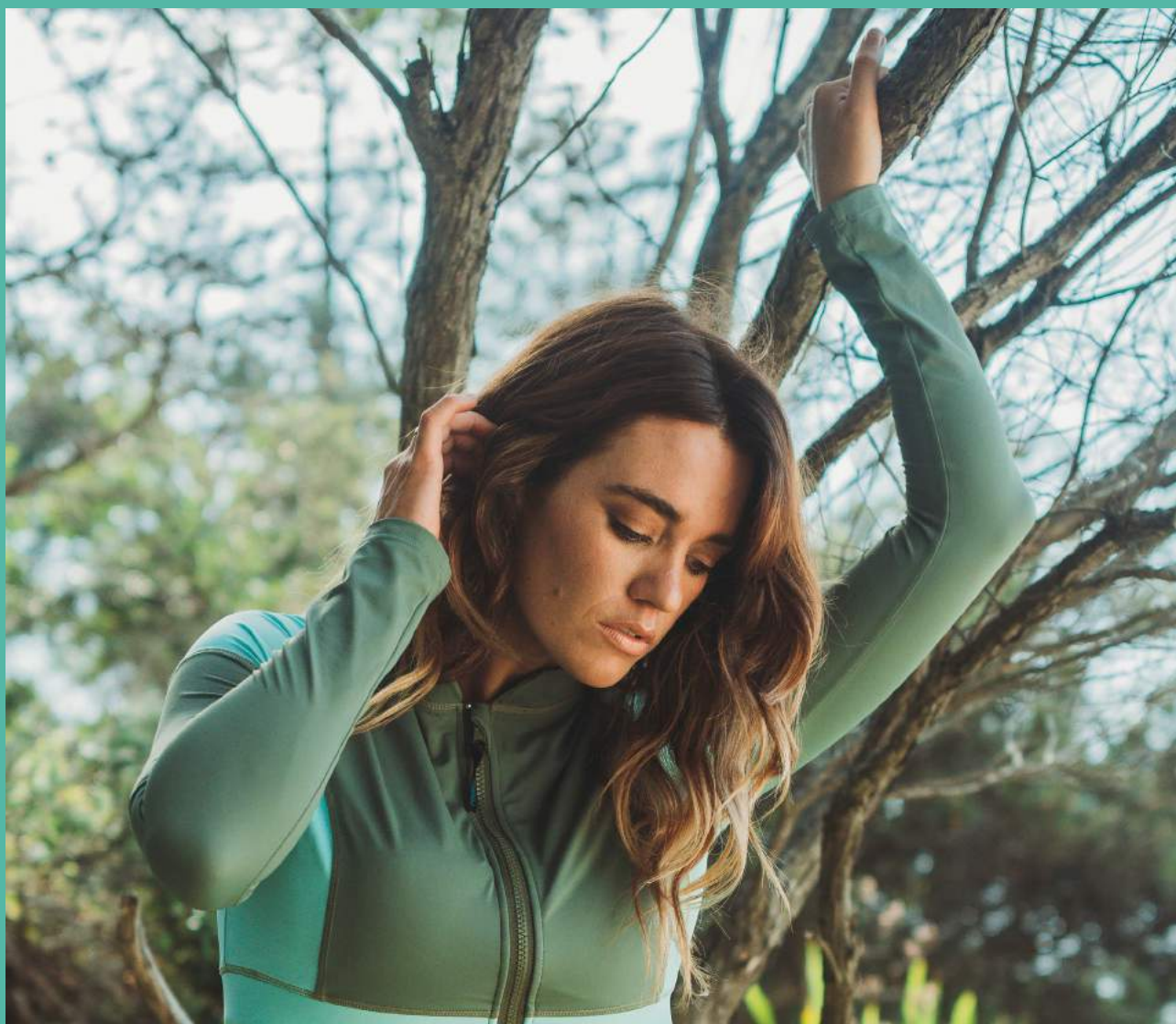
Pod Star capsules are available to fit Nespresso®, Espressotria, Caffitaly and Aldi K-Fee machines. Check our online compatibility guide.

**Available from [podstar.com.au](http://podstar.com.au)**



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# How your workout could be harming the oceans



Biologist and swimwear designer, Claire O’Loughlin washed a single piece of clothing hundreds of times to gain a better understanding of its impact on the ocean. Claire is dedicated to learning more about this problem, and using her findings to create bold change.

**We chatted to Claire about her work, why active-wear is particularly problematic and what the fashion industry needs to be do to be part of the solution.**



# Interview with Claire O'Loughlin

## **From your work, it looks like activewear is a prime offender for microplastic. Why is this?**

Active wear is almost always synthetic and it absolutely doesn't exist as 100% natural fibre, no matter what. The green wash is in the phrasing. A brand may state natural fibre, but there is always a stretch filament involved like lycra, elastane or spandex. Call it what you will, I call it polyurethane and it is toxic. At the moment it is unavoidable. This is an area of real research interest for me, as no one has looked for it in the ocean yet. Research to date focuses on the base fibres, the nylon (polyamide), acrylic and polyester. Active wear was one sixth of all apparel in 2014. By 2016 it had grown to a quarter, it's on track to be 50% soon if not already.

## **How did you assess the impact of activewear on our oceans?**

The first decision I made for my brand was that if I was going to proceed at all, it was going to be using a regenerated fibre. However, only if it did not cause more microplastic pollution than conventional alternatives. I ran the most extensive regime of laundry tests that has been done to date, as a cheeky undergrad. Some four hundred washer cycles and many hours in the library later I was able to quantify the microplastic burden coming from our washing machines. We live in a country with fantastic waste water treatment. However, it's still not truly been quantified how much micro plastic we are able to capture before effluent is returned to the ocean. I went with the absolute most conservative figure

of best practice filtration, utilised my own figures and those of the existing literature and did the math. I then had it peer reviewed by much more esteemed scientists and published the numbers. In Australia each week, if we only allow 2% of what comes from our washing machine hose to reach the ocean, we are releasing the equivalent of 7500 plastic bags in micro sized particles. This is a shocking and grave number. We have 1% of the washing machines on the planet. Times it by 100 and you have a global best case scenario.

## **What should I wear when I'm getting a sweat on instead, or how can I stop the shedding of these plastics?**

We need to realise the consequences of our clothing choices. If you



have the option to choose a natural fibre, or cellulosic, choose that. Synthetic for items that are going to get wet, at this point in time is the most practical choice. However, for dry activity, even with sweat, you really need a natural based fibre. At this moment, a biodegradable stretch fibre is not available, but it is on the horizon. Work is happening. Pay a bit more, get the better quality and natural alternative, for both your health and the planet's health.

**What are your thoughts on swimwear and active wear that uses recycled plastic (like plastic bottles)?**

This keeps me up at night. I know the regenerated nylon product I use has outstanding qualities. But it still contributes to the microplastic pollution burden. I'm feeling more and more that these fabrics are green wash. They enable guilt free purchasing and a marketing focus that is still misguided. I'm moving away from them as fast as I can. My next season will still contain them, but



they must be cared for properly and all brands should take their product back at the end of its life cycle and actively seek responsible ways to recycle them. I hope to have wholly natural fibres, meaning fully biodegradable from 2022.

**What would you like to see the fashion industry do to take action on micro plastics?**

Real action needs to be taken, not just an assessment that says this is going to be challenging. Which is what I have seen

occur in the past two years. The simple fact is, if we make garments of quality, it will automatically reduce micro plastics. That requires a shift from a throw away mindset. There are already known qualities in textiles that will reduce micro plastic breakage of fibres. Such as the longer the staple fibres (the many fibres that are twisted together to make length of yarn) the less breakage. I'm not a textile scientist, but I've looked in both environmental journals

and textiles for research on this issue. You'll find it in environmental journals, but none in textile journals. This just doesn't make sense. We know it is an environmental problem, we need to stop demonstrating that and work out how we are going to fix it.

**Claire is continuing to research microplastic and wants to empower designers to make better choices.**

**You can learn more about her work [here](#).**



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Solutions

**“The most common  
way people give up  
their power is by  
thinking they  
don’t have any.”**

- Alice Walker

We all have the power to make a difference on this issue. In the way we live, the businesses and products we give our money to, and the governments and policies we support.

We are deliberately avoiding technological fixes here, because they are yet to be proven to work - particularly on the large scale we need them to - and because as individuals there are better things we can be focusing on, right now, to make a difference.

## Speak up



Talk to companies about your concerns.

## Swap



Switch out products for better alternatives. If you have products at home which already contain microplastics: send them back to the manufacturer, with a note about why you're doing it.

## Here's some examples



### Paint

Buy paint with natural oils used instead of synthetic plastics.

### Tea

Loose leaf tea tastes better, and doesn't come in little plastic bags.

### Cosmetics

choose microplastic free products. If you're not sure, check out [this list](#).



# microfibres

there are a bunch of ways to tackle this issue, ranging from swapping what you wear to catching some or all of the bits before they reach the ocean:

## Stop



### To stop releasing fibres:

- Avoid cheaply made, “fast fashion” clothes
- Buy natural fibres like hemp and cotton

## Catch



### To catch the fibres:

- [Guppy Friend](#) washing bag (catches 79% of fibres)
- [Cora Ball](#) (catches 26% of fibres)
- Buy a washing machine filter to attach to your machine

## Reduce



### To reduce the shedding:

- Wash less frequently
- Wash with a full load (less friction)
- Colder wash settings

microbeads

Check your products to see if they contain microbeads, and choose natural alternatives

## Look



for products with the Zero logo. [Learn more here.](#)

## The BIG solution

The BIG problem with microplastics, is that it comes from all the bigger pieces of our trash. So this isn't just about avoiding microbeads and fibres but also reducing single use plastics in your life in general.

For larger plastic pieces (the source of most microplastics) there are hundreds of ways to reduce our personal plastic use, as well as business and commercial waste.

- changing personal habits,
- shopping more consciously (voting with your money),
- supporting legislation changes,
- donating or volunteering with organisations
- and spreading the word.

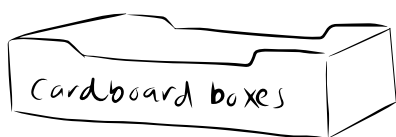
Ultimately reducing our consumption, repairing and reusing what we have, and choosing bulk food / plastic free items when we shop, will already make a huge difference. For some ideas, check out our other e-book '[Part of the Solution](#)'.

# Simple switches

Moving away from single use plastics is not an overnight fix, but there are so many ways to make a positive difference. While it can appear the problem comes from other people, places and countries, we know that high-income countries like Australia generate more plastic waste per person, and recycling is not a solution. So the best thing we can all do right now is just start with one thing, and go from there. Here's some ways to get started:

## Synthetic clothes

Behind packaging, the textile industry is the second largest waste generator in the world. Buy less, buy better quality, hold a clothes swap or get to a Seaside Scavenge.



## Plastic bags

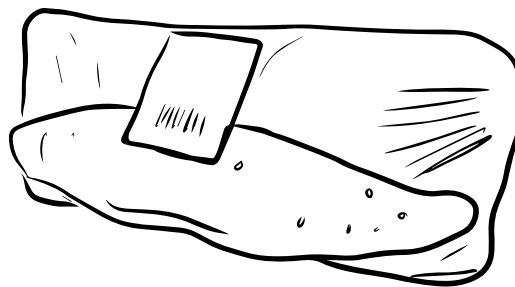
Take your own cloth bags, and smaller ones for fruit & veg or use a box.

## Shampoo bars

Swap the bottle for a bar! Our pick is **Hemp Collective**, who make awesome shampoo & conditioner bars with refillable containers.

## Food packaging

Shop at bulk food stores or farmers markets and take your own refillable containers.



## Cling wrap

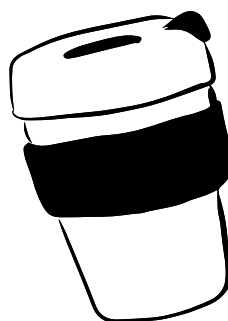
Switch to beeswax or silicon wraps, or reusable containers.

## Takeaway food containers

When you order, tell the restaurant you'll BYO container. If this isn't an option, dine in or pick another restaurant.

## Plastic bottles

Get a reusable bottle, install water filters at work and get a soda stream for bubbles at home.



## Takeaway coffee cups

Why not use a reusable cup, a real cup, or even a jar?

Tim Silverwood

[@timsilverwood](https://twitter.com/timsilverwood)

We're only scratching the surface of understanding the pervasiveness of microplastics in our society. In particular, I'm deeply concerned about how much we're breathing in and consuming (eg from synthetic carpets,

building materials, the food we eat and the fluids we drink). In my house I have a complete aversion to synthetic stuff, everything is made from natural fibres and materials. It frightens me how much micro and nano plastic

swirls around our planet, I'm confident if we can understand more about the impacts to human health we might be able to generate rapid action to address the problem. We've got so much work to do!

Anita Horan

[@anitafromaustralia](https://twitter.com/anitafromaustralia)

We know micro-plastics are an enormous environmental problem, from snack food wrappers, to water bottles, to synthetic clothes fibres, all of which are now being ingested and breathed in by humans and animals. I feel, when it comes to micro-plastics, we need to think big and find our biggest plastic culprits. Examine both your waste and recycling bins before collection. What are your biggest culprits? Focus

your energies starting there. Some easy tips are; buy naked bread from a bakery, ditch bottled body and cleaning products. Grow some greens and buy as much 'nude food' as you can. I have regular 'cook up' days and make large quantities and freeze it in portions. Buy natural fibre clothes from thrift shops. And don't view plastic as a gift - play the fun game to see how often you can say 'No Plastic Please' with

a huge smile. Don't expect perfection of yourself. I allow myself a little leeway, it reduces my anxiety and I feel much better when I reach a realistic goal. Follow and support activists social channels for helpful tips, education and lots of comradery. The key is to create a total societal shift away from plastic and I believe we are on the very cusp of this happening. It's an exciting time.

Laura Wells

[@iamlaurawells](#)

ExXpedition was a brilliant way to bring together passionate women from all walks of life to understand the real impacts of microplastic pollution on our oceans, wildlife and humans.

Having the ability to actually participate in and conduct the scientific methods and experiments

for the scientists studying the effects of plastics is such a valuable and rare experience as a citizen scientist. That tangible hands on approach of collecting, sorting, recording and understanding the data and seeing exactly what is in our oceans, provided the women onboard with a broader perspective of how

we are all required to solve the plastic pollution crisis.

No matter where we live or who we are we can all use our voices, our vigor and our votes to stem the manufacture of unnecessary plastic and stop it from entering our oceans and us!

Brinkley Davies

[@brinkleydavies](#)

The ocean is vast, and although making simple changes in your day to day life, may not seem like it has an impact, it does.

Travelling a lot I have witnessed some of the most polluted places, which is a strong contrast to the pristine waters I have grown up around.

Cutting out things in your daily life which are single use, and swapping them for re-usable alternatives is one of the best changes you can make. Im never without a re-usable coffee cup, and drink bottle, other easy swaps you can make are using a metal straw, re-usable bag, the list goes on. Using natural products such as natural skincare,

home-made skincare, haircare will cut out both your hard plastic usage, and make sure you aren't using micro-beads which are one of the most toxic additions to our oceans.

Always remember that whatever you use, ends up somewhere, so be mindful, be smart and remember we are all connected.

Kate Nelson

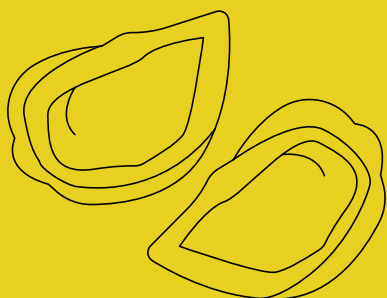
[@plasticfreemermaid](https://twitter.com/plasticfreemermaid)



We can conceptualise the break up of big plastic pieces, macroplastics breaking up into microplastics polluting our oceans, the little bits that continue to break up into nano plastics. What's hard to imagine is that we are surrounded by clouds of these invisible microplastics at all times. Our synthetic carpets, clothing, curtains, countertops, food

packaging, car seats—is all shedding these tiny fragments of plastic. We inhale them and ingest these little plastic bits that disrupt our endocrine systems and ultimately can lead to obesity, depression, and reproductive issues including infertility. What I suggest is to minimise your risk by minimising you're exposure. If you can go with natural fabrics you are supporting a much needed

industry and also investing in your health. If you can buy less plastic packaged foods, you will have less waste and be preventing the food from a sprinkle of microplastics every time you open the packets. If you can wash your clothes by hand and contain the waste water to your garden, you can prevent millions of plastic micro fibers from entering the waterways.



# Resources



From plastic-free periods to underwear made from trees, our resource directory features a whole heap of organisations and businesses working to help you reduce your impact on the planet.

## **B Alternative**

Be the change.  
B Alternative - providing low impact environmental solutions to individuals, businesses and community groups.

[b-alternative.com](https://b-alternative.com)



## **Bhumi Organic Cotton**

Sustainable Bedding,  
Bath & Basics

Sleep better knowing every Bhumi purchase has a positive environmental & social impact.

[bhumi.com.au](https://bhumi.com.au)



## **Blue Heron Botanicals**

Zero Waste skincare.  
Mindfully crafted for you and the planet.  
Migrate to wellness.

[blueheronbotanicals.com](https://blueheronbotanicals.com)



## **Bushy Underwear**

Underwear made in Australia from Eucalyptus trees. Ergonomically designed to eliminate friction from chafe & wedgies.

[bushyunderwear.com](https://bushyunderwear.com)



## **Coconut Bowls**

Made by Nature & Crafted by hand, turn your meals into masterpieces with Coconut Bowls!

[@coconutbowls](https://www.instagram.com/coconutbowls)

[coconutbowls.com](https://coconutbowls.com)



## **Earth Bottles**

Earth Bottles: alternatives to single use plastics.

[earthbottles.com.au](https://earthbottles.com.au)



## **Eco Max Brushes**

Sustainable alternatives for everyday living. Plastic free, ethically handmade plant fibre kitchen, household and body brushes.

[important.com.au](https://important.com.au)



### Fair Food Forager

Sustainable food directory, social feed, podcast, blog & shop. Download it now.

[fairfoodforager.com.au](http://fairfoodforager.com.au)



### Gemma Lee Suits

Gemma Lee designs playful wetsuits & swimwear from eco-conscious materials. Ethically crafted across Australia & New Zealand.

[gemmalesuits.com](http://gemmalesuits.com)



### Grounded Packaging

Helping sustainable businesses remove plastic from their supply chain. Check out the Grounded range today.

[groundedpackaging.co](http://groundedpackaging.co)



### Hemp Collective

Hemp Collective grows hemp with sustainable farming practices. They handcraft plant-derived hair & body care products in the Byron Shire.

[hempcollective.com.au](http://hempcollective.com.au)



### Life Cykel

Life Cykel is an evolutionary mushroom biotechnology company focused on creating sustainable and harmonic ecosystems.

[lifecykel.com](http://lifecykel.com)



### Mighty Good Basics

Ethical, fair trade, organic cotton underwear and basics. Changing the world from the bottom-up.

[mightygoodbasics.com](http://mightygoodbasics.com)



### Modibodi

Modibodi is the new way to period – it's time to ditch the disposables and switch to reusables.

[modibodi.com](http://modibodi.com)



### Ocean Rebels

Ocean Rebels champions lasting change by thinking differently, acting boldly, and taking action. Join us.

[tiffanyduong.com](http://tiffanyduong.com)



### One For Life

700ml reusable glass water bottle with Yulex lid made from FSC certified natural rubber.

[oneforlife.com.au](http://oneforlife.com.au)





### **Peloton Against Plastic**

Avoiding plastic from Hanoi to Bangkok - A fun film to motivate change.

[pelotonagainstplastic.com](http://pelotonagainstplastic.com)



### **Peppermint Magazine**

Peppermint is a quarterly print publication focused on style, sustainability and substance. Subscribe today!

[peppermintmag.com](http://peppermintmag.com)



### **Plastic Pollution Solutions**

We are dedicated to addressing plastic pollution at a grassroots level through creative, engaging education.

[plasticpollutionsolutions.com.au](http://plasticpollutionsolutions.com.au)



### **Podstar**

The Australian coffee pod business on a zero waste and zero plastic mission.

[podstar.com.au](http://podstar.com.au)



### **RIPL**

Beautifully designed, minimal products that fund the collection of ocean plastic in Indonesia.

[riplgoods.org](http://riplgoods.org)



### **Seabin Foundation**

Seabin Foundation is an Australian charity using Seabin Smart Tech for litter prevention through data, education & community engagement.

[seabinproject.com](http://seabinproject.com)



### **Sunbutter**

Check us out! Australia's first plastic-free packaged reef-safe sunscreen. Protecting People & Oceans.

[sunbutter.com.au](http://sunbutter.com.au)



### **Underwater Earth**

Revealing the ocean to the world using a powerful combination of creative storytelling and innovative technology.

[underwater.earth](http://underwater.earth)



### **Wild Search**

Our ethos is simple: care for the planet and she will care for you back.

[wildsearchaustralia.com.au](http://wildsearchaustralia.com.au)

# So, what now?

Microplastics are a HUGE issue, an issue that many governments and businesses aren't really addressing and that scientists are just beginning to understand.

Bigger plastics break down into smaller plastics and tiny plastics are being manufactured at a staggering rate around the world in cosmetics and cleaners.

Fibres are constantly shedding from our

clothes. Our wildlife, our oceans, even our food is now full of the stuff. It's a little terrifying.

Fortunately, like the larger plastic problem, we already have all the solutions we need. The positive side of this story is that right now you can act to make a difference.

**With every action you make every day, you can be working towards a planet with less plastic. What are you waiting for?**



With every  
action you  
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day, you can  
be working  
towards a  
planet with  
~~less plastic.~~  
What are you  
waiting for?

# About us



Alice Forrest  
*Author*

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aliceforrest.com

Alice Forrest is a conservationist & marine biologist based in the hills of Byron Bay on Australia's east coast. Alice's passion for the natural world and the creatures who inhabit it has led to a range of incredible adventures, from studying blue whales in the Indian Ocean to seabirds and plastic on remote Henderson Island. She is happiest when interacting with wildlife, and passionate about protecting what she loves. Alongside degrees in Conservation and Marine Biology, Alice is a PADI Divemaster and SSI Freediver and has worked extensively in the marine tourism industry sharing her love of the ocean with others.



Harriet Spark  
*Designer*

@grumpyturtlecreative  
grumpyturtlecreative.com

Harriet is a dive instructor turned graphic designer and videographer who is passionate about conservation through creative communication. Harriet spent her early twenties on the Great Barrier Reef, teaching scuba diving. Experiencing the beauty of the underwater world first-hand, and learning about the threats this ecosystem faces, led her to swap her fins and mask for a pencil and computer. Harriet runs a creative studio called Grumpy Turtle Creative and runs Operation Straw, an underwater cleanup initiative designed to empower people to tackle the prolific amount of plastic waste found in our blue backyard.



**Video and design for brands that give a damn.**  
grumpyturtlecreative.com

