



# “GET UN-POISONED AND STAY HEALTHY”

From forever chemicals to plastics, pesticides and heavy metals, how can we protect ourselves against the harmful chemicals that we habitually eat and drink? *Hatty Willmoth* investigates

In 1999, a US lawyer filed a lawsuit against chemical giant DuPont on behalf of a farmer whose cows were dying.<sup>1</sup>

Fans of actor Mark Ruffalo may recognise this story as the basis of the 2019 film *Dark Waters* — in turn based on Rob Bilott’s memoir *Exposure*.

For Bilott, who ordinarily advised and defended large chemical companies, it was the start of a lengthy legal battle that led to the eventual naming and shaming of PFAS — these days known as ‘forever chemicals’.

Developed in the early 20th century, PFAS were first used to coat military tanks. After the Second World War, production turned domestic and they were soon being used in domestic products including non-stick pans, waterproof clothing and food packaging.

Bilott discovered that these chemicals almost never break down, building up in the environment and living organisms in a process called ‘bioaccumulation’. A study his legal team fought for, conducted on blood samples from tens of thousands of people, eventually concluded there was a probable link between ingesting PFAS and a plethora of diseases.

Fast forward to 2022 and PFAS have been in the news a lot. Whether you’ve noticed or not, more and more studies about these mysterious pollutants have revealed potential links with an increasing number of diseases. Their environmental impact isn’t great either.

## IN BRIEF

- Toxic substances are found on foods and in cooking equipment and packaging.
- ‘Forever chemicals’ are thought to have affected every population in the world.
- Buying organic whole foods, cooking from scratch, washing and peeling vegetables, and avoiding plastic may reduce exposure.
- Some people recommend detoxing.

But what are forever chemicals? How do they and other toxic substances affect us? And what can we do to protect ourselves from them?

### Per- and polyfluoroalkyl substances

Today, PFAS are believed to be present in the blood of every population on the planet.<sup>2</sup> They are in the oceans, the air,<sup>3</sup> and even on Mount Everest.<sup>4</sup> Beyond non-stick pans, PFAS are in some waterproof makeup, furniture, carpets, waterproof clothing and shoes.

A significant source is grease-resistant packaging; a Consumer Reports investigation this year tested 118 food-packaging products from US fast food chains and found evidence of PFAS at every retailer it looked at.<sup>5</sup>

In Europe too, use of PFAS in packaging is widespread. A 2021 study in six European countries, including the UK, concluded that PFAS are widely

used in disposable food packaging and tableware by fast food chains, takeaway restaurants and supermarkets, especially in moulded fibre products frequently — but erroneously — marked as ‘biodegradable’.<sup>6</sup>

All this corroborates evidence that people who regularly eat fast food may have more PFAS in their blood.<sup>7</sup>

The study described in Bilott’s book linked PFAS to increased risk of kidney cancer, testicular cancer, thyroid disease, high cholesterol, pre-eclampsia and ulcerative colitis. They have also been associated with breast cancer, decreased vaccine responses in children, changes in liver enzymes, low infant birth weights, diabetes and increased blood fats,<sup>8</sup> and animal studies link them to birth defects, delayed development and newborn deaths.<sup>8</sup>

### Symptomatic of a wider problem

Yet PFAS are not so extraordinary. We live in a world filled with artificial chemicals; up to 100,000 have been synthesised since the Industrial Revolution.<sup>9</sup> Many of these may harm our health, but they continually enter our bodies, often through what we eat and drink.

However, there are ways we can protect ourselves; Dr Jenny Goodman, a doctor who practises ecological medicine and author of *Staying Alive in Toxic Times*, says understanding these risks can be “liberating”.

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*"If you simply knew what was wrong and didn't know that there were any solutions, it would be depressing"*

and didn't know that there were any solutions, it would be depressing," she says. "But finding out how much is wrong is step one to changing it."

We must pay attention, she says, due to the growing prevalence of diseases such as cancer, diabetes and dementia.

"We have all these horrendous illnesses that were very, very rare a couple of hundred years ago, and are now so common that people are beginning to act as if there's nothing they can do.

"We have two options. We can be fatalistic, wait to see what we get, and then throw ourselves upon the mercy of the men in white coats, or we can take a good long hard look at the causes.

"We are eating and drinking the causes of those global epidemics, and there are individual changes you can make in your own life to get unpoisoned and stay healthy."

### **Pesticides and buying organic**

According to Goodman, "the single most important thing you can do" is buy organic. Organic meat comes from animals reared without hormonal injections or antibiotics and, crucially, organic farming uses no artificial insecticides, pesticides, fungicides or herbicides — the collective term for which, Goodman points out, is 'biocides'.

"[This] literally means 'substances that kill living things'," she says. "That includes us, unfortunately.

"They are implicated in cancer, infertility, in all sorts of endocrine [hormone-related] disorders, and they are neurotoxins [dangerous to the nervous system] because they were originally derived from nerve gas."

Indeed, some farmers have taken legal action against weed killer manufacturers over links with Parkinson's disease and cancer.<sup>10</sup> But it is perfectly possible to farm without harsh chemicals, as insisted by those involved in the regenerative farming movement.

"These are farmers who were doing it chemically," explains Goodman, "and have changed their minds. They really know that if it's in the soil, it's on your plate. And if you're eating pesticides, you're going to get pesticide poisoning. It's as simple as that."

### **'But it's too expensive!'**

The most common objection to buying organic is the price, to which Goodman

offers three responses.

"One is," she says, "well, it shouldn't be. Write to your MP and ask why the government is subsidising the huge agrochemical farmers that are damaging us and the planet, and not subsidising the little organic farmers who make us so much healthier.

"The second one is, what proportion of your income do you spend on food? We're accustomed to cheap food, but it isn't really cheap; the price is the torment of the battery hens and the poison that we're eating.

"If you go back to the 1950s, we spent 33% of our total income on food. It's now about 8%. And that's really shocking. We have to readjust our priorities."

Thirdly, Goodman acknowledges that organic meat is significantly more expensive than non-organic alternatives, but says: "If you're eating horrible, very cheap and cruelly farmed battery chicken, full of chemicals, five times a week, you can instead afford to eat top quality organic, free-range chicken once or twice a week. You don't need meat every day."

It remains true that eating entirely organic food is unattainable for many. In that case, registered nutritional therapist Dr Kirstie Lawton recommends referring to the Environmental Working Group's (EWG) 'Dirty Dozen': a list of 12 foods to prioritise when buying organic food to avoid pesticides. They include strawberries, apples and tomatoes, but you can find the full list on the EWG's website.<sup>11</sup>

And if that too is out of your budget, even washing and peeling your fruit and vegetables will go some way towards limiting your biocide exposure.

### **Phthalates and bisphenols**

What about plastic? That is a significant source of toxicity in our modern lives, especially in the form of phthalates and bisphenols. Known as 'plasticisers', they make plastic soft and pliable but can disrupt the hormones that influence puberty and fertility.<sup>12</sup> Indeed, a 2017 study revealed that male fertility has dropped by 50% over the last three decades; in her 2021 book, Shanna H Swan hypothesised that pollution is to

blame, notably PFAS, phthalates and bisphenols.<sup>13</sup>

Phthalates and bisphenols have also been linked to cancer, liver damage, thyroid disease, learning disabilities and attention-deficit disorders.<sup>14</sup>

And they're in our food. Last year, researchers tested 64 top menu items from US retailers, including McDonald's, Burger King and Domino's. Almost all outlets tested positive for phthalates; 80% of items contained a phthalate linked to asthma and 70% contained one tied to infertility.<sup>14</sup> In supermarkets too, plastic packaging and plastic-lined tin cans may contain phthalates and bisphenols which can transfer into food if heated.

### **Micro- and nanoplastics**

We also ingest plastics in the form of micro- and nanoplastics. Their effect, and how long they stay in the body, is contested, but some studies suggest they can stretch and deform cell membranes, for example disrupting the efficacy of red blood cells transporting oxygen.<sup>15</sup>

Early exposure is thought to be particularly dangerous, however a 2020 study found microplastics in the placentas of pregnant mothers.<sup>16</sup> Various emerging studies suggest that exposure in the womb might increase the likelihood of babies being born too small,<sup>17</sup> developing asthma as school-age children,<sup>18</sup> and suffering long-term damage to immune systems.<sup>16</sup>

Once born, babies may also be more at risk of ingesting micro- and nanoplastics than adults, for instance by putting plastic toys in their mouths or by bottle-feeding.<sup>19</sup> Meanwhile, according to one recent study, adults ingest around a credit card's worth of nanoplastics each week,<sup>20</sup> finding their way into our organs and blood,<sup>21,22</sup> notably from teabags, cling-film, fast food and supermarket packaging, plastic-lined cups, and plastic water-bottles.<sup>23</sup>

### **Additives**

Goodman also advises reading labels and looking for added chemicals before buying. Not everything complicated-sounding is bad — for instance, *Lavandula angustifolia* just means lavender — but she says to check for (and avoid) synthetic chemicals and vague listings like 'natural flavourings'.

"The word 'natural' is completely

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meaningless in that context,” says Goodman. “You can define anything as natural because it’s all been made from materials found on planet Earth, but that doesn’t mean it’s safe. Petrol is natural, made from ancient dead trees. That doesn’t mean it’s okay to drink it.”

For added flavour, manufacturers are allowed to just write ‘flavour’. “You can’t look it up to see, is it safe? Is it dangerous? It could just be lemon juice, or it could be some really nasty carcinogenic chemical. You don’t know.”

Moreover, something like bread is “a real minefield” because manufacturers can add things early on in the production process and not declare them on the label. “If they add ingredients to the flour,” she says, “they don’t have to declare them on the loaf of bread because they haven’t actually been added to the bread.”

Even better than checking the label, therefore, is buying things without ingredient lists and making your own food. Goodman says: “Eat real food. Just eat basic foodstuffs: organic meat, eggs, fish, dairy, fruit and veg, peas, beans, grains, nuts, seeds — and cook. Bake your own bread.”

### Heavy metals

Other toxins that we may ingest in large amounts include mercury, nickel and aluminium. Dubbed ‘anti-nutrients’ by epigenetics biochemist Dr John McLaren-Howard, these heavy metals are believed (by Goodman and McLaren-Howard but not everybody) to push out nutrients that we need, like zinc, selenium, sulphur and silicon. This, they argue, can lead to deficiencies and many other health issues: neurological and psychiatric disorders, autoimmune

diseases, cancers, dementia, and damage to the kidney, liver, bones, heart, lungs, hormones, and DNA.

Others, including Lawton, simply say that heavy metals can disrupt the efficiency of the liver in expelling toxins.

“But again,” says Goodman, “if you know what the sources are, you can avoid them. If you’re cooking some fish in the oven, and you’re squeezing lemon juice on it, you can put a ceramic lid on the pot instead of wrapping it in aluminium foil. If you’re wrapping it in aluminium foil and you’ve got something acidic there, you’re leeching the aluminium into your food, whereas if you’re wrapping your sandwiches in it, then it’s not really going to make contact.”

### Detoxification

Our bodies can expel many of these chemicals. Lawton explains: “Detoxification is a process that the body undergoes continually.

“The body releases toxins by breaking them down in the liver and excreting the by-products through passing stool, through urine via the kidneys, through breath via the lungs, and via the skin.”

Yet detoxification is a highly contested subject. Opinion varies on the extent to which we can improve this process with external methods.

Goodman, however, argues that methods of detoxification may be necessary due to the extent of pollution our livers encounter, and recommends seven in her book: saunas, vegetable juicing, Epsom salt baths, colonic hydrotherapy and irrigation, supplements, high-dose vitamin C and sprouting.<sup>24</sup>

Lawton instead says: “The liver is vital

in the detoxification of a wide variety of toxins and chemicals. To support detoxification, we require a number of essential amino acids, sulphur containing foods, cruciferous vegetables and other nutrients.”

### Changing behaviour

Knowing that we are exposed to harmful substances can be terrifying; yet it can also be empowering as it allows us to change our behaviour.

To repeat Dr Goodman: “We can be fatalistic, wait to see what we get, and then throw ourselves upon the mercy of the men in white coats...[but]...there are individual changes you can make in your own life to get un-poisoned and stay healthy.”

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