

Nontoxic Activewear Guide – PFAS 'Forever Chemicals' in Workout Leggings and Yoga Pants

Analysis by [Mamavation](#)

September 11, 2024

STORY AT-A-GLANCE

- › Mamavation tested 32 activewear brands for PFAS chemicals, finding 25% contained detectable levels in the crotch area. Levels ranged from 10 to 284 parts per million organic fluorine
- › PFAS in clothing can come from intentional treatments for stain/water resistance, manufacturing equipment lubrication, cleaning chemicals, or sprays used during production
- › PFAS exposure is linked to numerous health issues including reduced immunity, metabolic diseases, cardiovascular problems, fertility issues, and increased cancer risk
- › When shopping for activewear, consider natural materials like cotton for low-impact activities. For high-impact, scrutinize synthetic materials, especially those advertised as "buttery soft"
- › Mamavation categorized brands as "Not Our Favorite," "Better," and "Best" based on PFAS levels and sustainability practices. The "Best" category includes organic and eco-friendly options

Are you looking for nontoxic activewear like workout leggings and yoga pants? Whether you wear your activewear for leisure or for activity at the gym, we aren't judging. But what we ARE judging is the 32 workout legging and yoga pant brands that we sent to an EPA-certified laboratory to test for indications of per- and polyfluoroalkyl substances (PFAS), a toxic class of chemicals linked to a number of serious health conditions.

Mamavation ranked 32 pairs of activewear including workout leggings and yoga pants based on indications of PFAS "forever chemicals" and we are naming names in this report including what we discovered from brands like more casual LulaRoe, Athleta, and Lululemon.

You've trusted Mamavation to bring you topics like [best green beauty makeup brands sans PFAS](#), [best cookware sans PFAS](#), and [best organic mattresses sans PFAS](#), now join us for our consumer study on women's activewear including workout leggings and yoga pants. Continue reading below to the very end for the raw data from all the brands we tested.

Disclosure: *This content of this post was reviewed by Pete Myers, Chief Scientist at Environmental Health Sciences, Adjunct Professor of Chemistry at Carnegie Mellon University, and co-author of [Our Stolen Future](#) and Scott Belcher, Research Scientist with the Center for Environmental and Health Effects of PFAS at North Carolina State University.*

The content was also medically reviewed by Sondra Strand, RN, BSN, PHN. Donations were provided by Environmental Health News and Mamavation community members. Mamavation has only "spot-checked" the industry and thus we cannot make predictions about brands and products that we have not tested. Products and manufacturing aides can change without notice so buyer beware.

This post contains affiliate links, with some to Amazon, which means Mamavation will receive a portion of those sales and we will use that to pay ourselves back for the testing. You can also give a tax-deductible donation to our consumer studies [here](#) through Environmental Health Sciences. Click "yes" when asked if the gift is in honor of someone and type "Mamavation." Thank you!

Toxic PFAS 'Forever Chemicals' Inside Activewear Apparel



The athletic apparel industry has been relying on PFAS and other types of toxic chemicals for decades to bring sweat wicking, stain resistance, water resistance, quick-drying fabric, and other types of nonstick qualities to textiles used for high-performance clothing.

Whether you purchase high-rise leggings made of polyester, nylon, and spandex or high waist yoga pants made from cotton or water bottles, workout clothes have changed over the years. Today your workout clothes made from your favorite activewear brand can be treated with a concoction of undisclosed chemicals we know very little about from sizes xxs to xxl and beyond.

Your lightweight pair of leggings with a snug waistband and tight seams around your thighs help you get the best workout in cold weather, hiking in the mountains, wearing bike shorts on your favorite route, spinning in spin class, stretching in yoga class, working hard with your personal trainer, or playing tennis.

But even if you are just lounging in the comfort of your own home, what you surround your skin with matters. The problem is we do not know how problematic dermal exposure to PFAS is.

"While we know that PFAS can be absorbed through the skin we don't have much information about how much would be transferred from activewear products. It's unlikely to be 0," says Pete Myers, Chief Scientist at Environmental Health Sciences, Adjunct Professor of Chemistry at Carnegie Mellon University, and co-author of [Our Stolen Future](#).

The other problem in activewear apparel is we have no idea what activewear brands are exposing us to PFAS "forever chemicals" so this is the challenge Mamavation has decided to take on. We may not be able to tell you HOW bad this exposure is, but at least we can help you get a better idea of where it's coming from.

Main Findings of Mamavation's Consumer Study on Activewear and PFAS 'Forever Chemicals'

Mamavation sent 32 pairs of activewear, mostly workout leggings and yoga pants, to an EPA-certified lab to test for organic fluorine, which is an indicator of PFAS. These products were purchased between June and November from Amazon.com, Nordstrom, Target.com, and several other websites.

Products were photographed and not taken out of their original packaging and then were sent to a third-party EPA-certified laboratory. Each pair of activewear was tested for organic fluorine in the crotch area. The laboratory results are summarized below:

- The crotch area is the most common area to find detectable organic fluorine, which is a marker for PFAS, including inside the crotch of LulaRoe leggings, which we found at 284 parts per million (ppm)!
- 25% of the workout leggings, yoga pants, and leisure leggings we sent to the lab came back with detectable levels of organic fluorine, and here's the good news – 75% of the pairs we tested did not contain any detectable levels.
- Detectable levels we found ranged from 10 parts per million (ppm) all the way to 284 parts per million (ppm) organic fluorine.

- Because most brands are able to produce leggings without the use of PFAS, this tells us it's not essential as a chemical treatment in women's leggings and should be immediately phased out.

To see the final results of each brand, scroll down to the very bottom where we share the lab results of each brand tested.

PFAS 'Forever Chemicals' Are Linked to Terrible Health Outcomes

PFAS chemicals are linked to several health problems ranging in seriousness. Here is the list of health problems (PFAS) perfluorinated chemicals are linked to from over decades of research:

Reduction in immunity

Reduced vaccination response

Metabolic diseases like obesity and diabetes

Cardiovascular disease

Affect the growth, learning, and behavior of infants and older children

Increased risk of allergies and asthma in young children

Lower a woman's chance of getting pregnant

Increase the chances of miscarriage

Increase cholesterol levels

Low sperm count

Smaller penis size

Increase the risk of kidney and testicular cancers

If you feel like you've been exposed to PFAS, the Agency for Toxic Substances and Disease Registry, a division of Community Health Investigations has [created this fact sheet](#) to use when talking to your doctor. While regulating authorities struggle to catch up, it would be wise to limit your daily exposure to PFAS within consumer products.

What to Look for When Purchasing Nontoxic Activewear and Want to Avoid PFAS 'Forever Chemicals'



Now that we know 25% of the activewear Mamavation tested came back from the lab with indications of PFAS, what do we do when purchasing high-quality activewear and athleisure loungewear? Your activewear is your most important workout gear out of all your accessories. Here's our best advice for purchasing the best workout leggings and yoga pants in the future.

- **Workout leggings** — Most of the workout leggings for high impact were made of synthetic materials like polyester, spandex, and nylon, which are based on petrochemicals. So you'll have to pay close attention to the report findings here because not all pants made from synthetic materials had an indication of PFAS. However, if you are looking for low impact, sticking to natural materials like cotton greatly improves your chances of avoiding PFAS.

The best workout leggings are going to offer you a sense of comfort and ease, versatility and durability when changing from one activity to another while using the least amount of toxic materials and treatments possible. Bonus points if you have some type of hidden pocket where you can stash your mobile phone.

- **Yoga pants and leisure leggings** – If you are looking for the best yoga pants or leisure leggings, there are more safe options. Whether it's your best yoga leggings to do your hot yoga or a simple yoga session in your favorite studio or at home, your pair of yoga pants will be hugging your body.

The best piece of advice is to scrutinize synthetic materials made from petrochemicals that are "buttery soft." LulaRoe, which is a brand known for being "buttery soft" had results as high as 284 parts per million (ppm) in the crotch area. Best to stick with natural fabrics like cotton if you are purchasing for low impact.

Regulation and Movements to Protect Your Family from Exposure to PFAS Through Clothing

Are there any laws protecting your family from PFAS in clothing? Not really. Many toxic chemicals can find their way into your clothing without a label. Here is some of the good news and bad news about the movement to ban PFAS in apparel:

- **Globalization safety nightmares** – Even though some chemicals, like formaldehyde which is linked to cancer, are regulated, most brands are manufacturing clothing overseas where those regulations are mostly nonexistent or far behind the United States or European Union.
- **California's Prop. 65 list doesn't cover clothing treatments** – Some states like California go further in restricting chemical usage through Prop. 65, but in that case, they only need to notify you the chemical is there. However, most PFAS chemicals used on clothing are not part of the restricted list yet. Older legacy chemicals like PFOA and PFOS are on the Prop. 65 list. Therefore, other states may need to take the lead here.
- **Priorities on PFAS are elsewhere** – Other state governments are taking legislative and regulatory actions to phase out PFAS, but most of the focus right now is on [drinking water](#), groundwater cleanup in areas by military bases, food packaging, [cookware](#), carpets and rugs, upholstery, and personal care products like [makeup](#).

States like California and New York are looking into regulating textiles, but no legislation has been passed yet. Maine signed a law banning all PFAS compounds, but the law **doesn't go into effect until 2030**, so it's not impacting the textile industry yet.

- **NGO movements** – There is some movement with organizations like Toxic-Free Future and its Mind the Store Campaign who are pressuring outdoor apparel companies like REI to stop using PFAS in their clothing and gear.

The Mind the Store Campaign works with major retailers to reduce and eliminate dangerous chemicals while also producing an **annual retail report card** to help us understand which retailers are working to protect our families. One retailer that has improved a great deal over the years is Target and it's evident by their non-detect laboratory results in this report.

Sources of PFAS Contamination in Activewear from Experts

There are several ways that PFAS can get into your workout leggings and yoga pants. Here are some potential issues we found from interviews with experts that may cover what we are seeing in the laboratory results.

- **Treatments for stain or water resistance** – The first way that PFAS can find its way onto your activewear is on purpose as treatments by the manufacturer. These treatments are very rarely disclosed on the label, but they serve the following functions:
 - stain resistance
 - water resistance
 - moisture-wicking
 - sweat-wicking

Activewear that was tested by our laboratory found detectable levels of organic fluorine mostly around or inside the crotch area making it look like an intentional treatment of some kind on the fabric. This was something we also ran across when we tested the [most popular period underwear products](#) for indications of PFAS as well.

- **Sprays and lubrication on equipment** – Sometimes manufacturing equipment requires the use of lubrication to keep it running smoothly. Trace amounts of those lubrications can come off the machine and onto the fabric. In addition, sometimes equipment is sprayed with chemicals to keep things from sticking to machinery.

This is also another way that trace amounts of PFAS can get on a piece of clothing. It's also possible that manufacturing equipment could be covered in a PFAS "nonstick" chemical OR utilize fiberglass that has been treated with a PFAS chemical.

- **Clean-out chemicals** – The manufacturing equipment and storage equipment must be cleaned out in between uses to prevent the spread of bacteria and cross-contamination. Some cleaners used by manufacturing plants are made with fluorinated ingredients and their trace amounts can get into your product if they are not rinsed off properly.

Mamavation's Consumer Study on Women's Activewear and Indications of PFAS Details

Mamavation will first explain how we structured our study then will present the findings. Each pair of activewear was tested for organic fluorine, which is an indicator of PFAS, in the crotch area. Organic fluorine testing is a useful test when looking for PFAS. There is no standardized testing for PFAS in textiles, so there are many ways to do it.

Looking for the presence of organic fluorine is more useful in identifying if any PFAS compound is present. When using testing to identify and isolate PFAS compounds, the testing is more restricted. Only 150 of these PFAS compounds can be identified in an

University lab leaving over 9,000 unidentifiable. Therefore, looking for organic fluorine allows us to look at the bigger picture and will inform our audience better.

To determine what activewear to test, we used information gathered from the Mamavation community when we asked what brands they were wearing. The products were purchased from Amazon.com, Target, Nordstrom, or directly from their own websites between June and December 2021. They were sent to a third-party laboratory unopened in their original packaging after pictures were taken.

Each pair of activewear was tested at least once for total fluorine. If fluorine was detected, we ran an additional test that determines organic fluorine. The lab method commissioned by Mamavation was ion-selective electrode and oxygen flask combustion. The limit of detection level was 10 parts per million (ppm). In other words, some Activewear products that tested 0 may have had levels beneath 10 parts per million. Our tests weren't sensitive enough to detect lower than 10 ppm.

Update: *Additional products have been added to this consumer study since original publish date.*

- **Not our favorite activewear: workout leggings and yoga pants** – Our EPA-certified lab detected organic fluorine in the following products, listed below. We recommend you choose other products.

Athleta Girl Chit Chat Shorts – 17 parts per million (ppm) organic fluorine

Boody Motivate 3/4 High Waist Tights Black – 17 parts per million (ppm) organic fluorine [updated 3/23]

Gaiam High Rise Waist Yoga Pants Performance Compression Workout Leggings – 15 parts per million (ppm) organic fluorine

Knix HiTouch High Rise Leggings – 19 parts per million (ppm) organic fluorine

Lululemon Align High Rise Pant – 32 parts per million (ppm) total fluorine. (Lululemon Align High Rise Short with Pockets 8" was non-detect.) We've decided

to place this brand here because we detected fluorine in the first pair

LulaRoe Leggings – 284 parts per million (ppm) organic fluorine

Old Navy Athletic Pants – 17 parts per million (ppm) organic fluorine

OYA Femtech Apparel Yoga Pants – 10 parts per million (ppm) organic fluorine
[updated 3/23]

Vuori Elevation Performance Black Camo Athletic Leggings – 23 parts per million (ppm) organic fluorine

Yogalicious "Lux" High Waist Side Pocket Capri – 10 parts per million (ppm) organic fluorine

- **Better activewear: workout leggings and yoga pants** – These are the better activewear brands. Our third-party EPA-certified lab did not detect organic fluorine at or above 10 parts per million (ppm) detection level. We've linked up some brands for your convenience. These brands are safer, but they contain some materials that are not considered eco-friendly or sustainable like polyester or nylon, which is made from petrochemicals.

90 Degrees by Reflex Wonderlink Legging – Non-detect total fluorine

All In Motion (Target Brand) Legging – Non-detect total fluorine

Alo High Waist Alosoft Flow Legging – Non-detect total fluorine

Blanqi Power Sculpt Workout Legging – Non-detect total fluorine

CALIA by Carrie Underwood High Rise 7/8 Ankle Athletic Pants – Non-detect total fluorine

Fabletics High Waisted Power Hold Legging – Non-detect total fluorine

GapFit Teen Recycled Biker Shorts – Non-detect total fluorine

Girlfriend Collective Activewear Leggings – Non-detect organic

fluorine [updated 3/23]

LIVI High Rise Soft Leggings with Pockets – Non-detect total fluorine

LL Bean Boundless Performance Capri – Non-detect total fluorine

Lorna Jane Willpower Colour Block Full-Length Leggings – Non-detect total fluorine

Marika Athletic Leggings – Non-detect total fluorine

Mizuno Women's Printable 3/4 Tights – Non-detect total fluorine

Nike's Women Luxe Ribbed High Rise 7/8 Yoga Tights – Non-detect total fluorine

Nike Universa High Rise Athletic Pants – Non-detect total fluorine [updated 8/24]

No Bull Project W. Crop High Rise Matte Leggings – Non-detect total fluorine

Reebok Retight Running Carrera Tights – Non-detect total fluorine

Spanx Look at Me Now Legging Camo – Non-detect total fluorine

Sweaty Betty Power Sculpt Pocket Workout 7/8 – Non-detect total fluorine

Under Armour Women's UA HeatGear Leggings – Non-detect total fluorine

YPB sculptLUX Legging Ultra High Rise 7/8 Length Sweatwicking Functional Pocket – Non-detect total fluorine

Zella HW Live 7/8 Legging – Non-detect total fluorine

Zyia Active Black Light n Tight Hi-Rise Crop 17" 6-8 – Non-detect fluorine

- **Best activewear: workout leggings and yoga pants** – These are the best activewear brands. Not only did these activewear lines have non-detectable levels of fluorine

via our third-party EPA-certified laboratory, these brands also used fabric from sustainable farming practices.

For example, they used GOTS organic cotton or utilizing alternative fabrics with the aim to cut down fossil fuel emissions. We reached out to some brands after testing to get discounts for your purchases so you can add them to your closet.

- [Groceries Apparel Leggings](#) – Non-detect total fluorine
- [Maggie's Organic Blackout Leggings](#) – Non-detect total fluorine (DISCOUNT: Take 15% off purchase by using "MAMAVATION" at checkout!)
- [Mate The Label Organic Stretch Legging](#) – Non-detect total fluorine (DISCOUNT: Take 15% off purchases by using "MAMAVATION" at checkout! Limit 1 per customer.)
- [Pact Organic Go-To Pocket Legging](#) – Non-detect total fluorine (DISCOUNT: Take 15% off your first Pact Organic purchase by using "MAMAVATION15" at checkout! Discount for new customers only.)

Other Mamavation PFAS Testing Projects

Mamavation has been working hard to discover where to find PFAS "forever chemicals" inside the food and products we purchase and bring inside our homes. This is why we have decided to commission our own consumer studies on indications of PFAS in different consumer categories and share that information with you.

If you are here to find out what workout leggings are free from detectable PFAS, you may also be interested in our other similar studies.

[Soft contact lenses](#)

[Green beauty makeup](#)

[Dental floss](#)

[Toilet paper](#)

[Period underwear](#)

[Tampons](#)

Sanitary pads, pantliners, and incontinence pads	Powdered electrolytes	Butter wrappers
Pasta and tomato sauces	Nut butters (peanut butter, etc.)	Cooking oils (olive oil, almond oil, canola oil, etc.)
Ketchup	Activewear (yoga pants)	Sports bras
Parchment paper	Cupcake liners	Plastic-free straws
Fast food packaging	Children's probiotics	Kids' backpacks
Baby strollers		

We also have other investigations you may like.

Best yoga mats	Best organic mattresses	Best air purifiers
Best cookware	Best plant milks	Best water filters for PFAS filtration
Best collagen	Best electrolyte replacement drinks, sports drinks, and coconut water	Best infrared saunas

Stick around because later this month we will be releasing our sports bra investigation with similar testing! We've looked into all the athletic wear, including what you would wear on top!

About the Author

Leah Segedie is the President and Founder of [Mamavation.com](https://www.mamavation.com). Mamavation produces award-winning content and independent consumer studies examining the intersection of

endocrine-disrupting chemicals (EDCs) and everyday products brought into American households. She's been referred to by many as "the real FDA."

Since 2008, Mamavation has been helping everyday moms navigate the grocery store by commissioning consumer studies on food, beverages, personal care products, and other such products and thus democratizing science and testing for everyone.