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Evidence Links Microplastics to Chronic Disease

Analysis by Dr. Joseph Mercola | May 27, 2026

STORY AT-A-GLANCE

- Research links microplastic exposure to chronic diseases like high blood pressure, stroke, and diabetes, ranking among the top 10 predictors of these conditions
- Communities with higher microplastic levels experienced significantly more chronic diseases, with risk steadily increasing alongside higher plastic concentrations
- A study found microplastics embedded in artery plaque, and affected patients were over four times more likely to experience heart attacks, strokes, or death
- Plastic particles trigger inflammation and immune responses when lodged in tissues, raising disease risk even in people without conventional risk factors
- Effective ways to reduce exposure include filtering your drinking water, avoiding plastic food packaging, using glass containers, choosing natural fiber clothing and considering natural progesterone supplementation to address related hormone disruption

You're absorbing plastic through the air, food and water daily. These microscopic plastic particles are being detected inside living tissue — lodged deep within organs, absorbed through your gut and circulating through your bloodstream.

Emerging research has uncovered strong connections between this plastic exposure and conditions like high blood pressure, stroke, and metabolic dysfunction. Studies now link even low-level, everyday exposure to a higher risk of cardiovascular events. This is no longer just about reducing waste. It's about protecting your heart, your brain and your long-term health.

Microplastics Rank Among Top Predictors of Chronic Disease

Research presented at the American College of Cardiology's Annual Scientific Session evaluated the concentration of microplastics in seafloor sediment across 555 U.S. coastal and lakeside census tracts between 2015 and 2019.[1] The goal was to compare plastic exposure levels with disease rates in those same communities.

Using data from the U.S. Centers for Disease Control and Prevention, researchers examined the prevalence of high blood pressure, diabetes, stroke, and cancer and used machine learning to assess how microplastic pollution stacked up against 154 other environmental and socioeconomic factors.

- **People living near high-microplastic zones had more chronic illness —** Communities exposed to higher microplastic levels experienced notably higher rates of noncommunicable diseases such as stroke, high blood pressure and diabetes. Researchers emphasized that these plastic particles were inhaled or ingested — not from unusual behaviors, but from basic day-to-day activities like drinking water, eating food, or simply **breathing air**.
- **Microplastics ranked in the top 10 predictors of chronic disease —** The study found that microplastics were among the top risk factors for chronic illness. For instance, microplastic exposure showed a strong correlation with stroke, placing it on par with other high-risk variables like racial minority status or lacking health insurance.
- **More plastic meant more disease, showing a clear dose effect —** The study revealed a dose-response pattern, meaning disease risk climbed steadily alongside higher plastic concentrations. Regions with very high microplastic levels — defined as over 40,000 particles per square meter of sediment — had the worst disease outcomes, while areas with under 200 particles had the lowest.

Plastics Create Long-Term Biological Stress

The researchers were surprised by how high microplastics ranked in the data. This finding pushed microplastics into the spotlight as a credible, under-recognized driver of modern disease — something your body could be reacting to daily.

- **Plastic particles stay in your body —** Microplastics are defined as fragments between 1 nanometer and 5 millimeters across. They come from common products: food packaging, building materials, clothing, and even cosmetics.

  Unlike biodegradable materials, these particles don't break down in your body. Instead, they can lodge in tissues or circulate in your blood, where they trigger immune responses, hormone disruption or low-grade inflammation — conditions tied to heart disease, insulin resistance and more.

- **The researchers urged immediate steps to reduce environmental plastic load and minimize personal exposure —** As lead study author Sai Rahul Ponnana, a research data scientist at Case Western Reserve School of Medicine in Ohio, put it, "Taking care of our environment means taking care of ourselves."[2]

Plastics Buried in Your Arteries Silently Raise Your Heart Risks

A related study published in the New England Journal of Medicine found microplastics lodged in human artery plaque.[3] Researchers analyzed plaque removed during surgery from patients with advanced carotid artery disease.

- **They confirmed the presence of plastic compounds —** This included varieties common in food containers, pipes and packaging. Out of 257 participants, 150 — over half — had detectable levels of these plastics embedded in their plaque.

- **Those with plastic-laden plaque had far worse health outcomes —** Patients who had plastics in their plaque were more than four times as likely to experience a heart attack, stroke, or die from any cause within the three-year follow-up period than patients with no detectable plastics.

- **The researchers found jagged, foreign plastic fragments inside immune cells —** The study also showed that these plastics had embedded deeply into tissue. Electron microscopy revealed sharp-edged particles wedged inside foam cells — immune cells that gather in artery walls during plaque formation.

  Most particles were smaller than 1 micron — smaller than the width of a red blood cell — suggesting they were nanoplastics, which are even more dangerous because of their ability to penetrate cells.

Plastics Quietly Inflame Your Arteries

Researchers also found that the presence of plastics correlated with higher levels of certain inflammatory markers that are known to worsen vascular inflammation and increase the risk of sudden plaque rupture. This is what causes many heart attacks and strokes. Plastics also coincided with greater immune cell presence, meaning the body was actively responding to the foreign material like a chronic infection.

- **Plastic particles were confirmed using chemical fingerprinting —** Some particles gave off distinct chlorine signatures, confirming the presence of polyvinyl chloride (PVC). PVC is found in everything from plumbing pipes to credit cards — and its breakdown products are known endocrine disruptors.

- **Even with no conventional risk factors, plastics still raised disease risk —** The researchers adjusted for cholesterol, age, diabetes, body mass index, and blood pressure. Even after accounting for these common risk factors, plastics still predicted who got sick. This means even if you're eating well and exercising, your exposure to plastic pollution could quietly undermine your heart health.

- **Your daily environment is the source, and the damage adds up —** The plastics detected in this study were the same types found in water bottles, food containers and many household products. The study didn't find them in just one region — they

appeared across multiple areas. This means plastic pollution is a widespread problem with personal health consequences. If it's in your air, water and food, it's likely **getting into your bloodstream** — and staying there.

How to Reduce Your Microplastic Exposure

If you're leading a healthy lifestyle but dealing with high blood pressure, blood sugar problems or early signs of cardiovascular stress, it's time to look beyond diet and exercise. Plastics are showing up in arteries, and no one really knows how to get them out. The most effective way to protect yourself is to cut your exposure at the source. You won't eliminate every particle, but you can drastically lower how much enters your body each day. Here's where to start:

1. **Upgrade your water filtration and ditch plastic bottles —** Drinking contaminated tap water or buying plastic bottled water exposes you to microplastics every single day. I recommend switching to a certified water filter designed to remove microplastics. If your water is hard, boiling it before use dramatically reduces microplastics.[4] Always choose glass bottles when buying bottled water.

2. **Make smart food packaging choices —** Heat and plastic are a dangerous combo. Stop microwaving food in plastic containers, and avoid plastic wraps touching your meals. Store leftovers in glass, stainless steel, or ceramic. When you're shopping, choose products in glass jars over **plastic packaging** whenever possible. These changes are simple but powerful — they reduce direct ingestion of plastic particles.

3. **Re-evaluate your kitchen essentials —** Plastic cutting boards shed tiny fragments every time you chop. Over time, those bits wind up in your food. Switch to wood and glass boards instead. Also swap out **plastic utensils** for stainless steel. These swaps lower your exposure while making your kitchen more durable and clean.

4. **Choose natural fibers and rethink how you wash clothes —** If you're wearing polyester, acrylic or nylon, you're wearing plastic. These synthetic fabrics shed microfibers into the water system during every wash. Choose cotton, wool, or linen

instead. For synthetic clothes you already own, wash them less often and use a microfiber-catching laundry bag or filter. This one step protects your body — and the planet.

5. **Consider natural progesterone to help offset estrogenic plastic damage —** Many plastics act like estrogen in your body. That's a major reason they interfere with your cells and hormone balance. If you're dealing with signs of estrogen dominance, like mood swings, stubborn weight, or fatigue, natural progesterone helps balance things out. It acts as a direct counter to the hormonal disruption plastics cause.

How to Use Progesterone

Before you consider using progesterone, it is important to understand that it is not a magic bullet, and that you get the most benefit by implementing a Bioenergetic diet approach that allows you to effectively burn glucose as your primary fuel without backing up electrons in your mitochondria that reduces your energy production. My book, "Your Guide to Cellular Health: Unlocking the Science of Longevity and Joy," covers this process in great detail.

Once you have dialed in your diet, an effective strategy that can help counteract estrogen excess is to take transmucosal progesterone (i.e., applied to your gums, not oral or transdermal), which is a natural estrogen antagonist. Progesterone is one of only three hormones I believe many adults can benefit from. (The other two are DHEA and pregnenolone.)

I do not recommend transdermal progesterone, as your skin expresses high levels of 5-alpha reductase enzyme, which causes a significant portion of the progesterone you're taking to be irreversibly converted primarily into allopregnanolone and cannot be converted back into progesterone.

Ideal Way to Administer Progesterone

Please note that when progesterone is used transmucosally on your gums as I advise, the FDA believes that somehow converts it into a drug and prohibits any company from advising that on its label. This is why companies promote their progesterone products as "topical."

However, please understand that it is perfectly legal for any physician to recommend an off-label indication for a drug to their patient. In this case, progesterone is a natural hormone and not a drug and is very safe even in high doses. This is unlike synthetic progesterone called progestins that are used by drug companies, but frequently, and incorrectly, referred.

Dr. Ray Peat has done the seminal work in progesterone and probably was the world's greatest expert on progesterone. He wrote his Ph.D. on estrogen in 1982 and spent most of his professional career documenting the need to counteract the dangers of excess estrogen with low-LA diets and transmucosal progesterone supplementation.

He determined that most solvents do not dissolve progesterone well and discovered that vitamin E is the best solvent to optimally provide progesterone in your tissue. Vitamin E also protects you against damage from LA. You just need to be very careful about which vitamin E you use as most supplemental vitamin E on the market is worse than worthless and will cause you harm not benefit.

It is imperative to avoid using any synthetic vitamin E (alpha tocopherol acetate — the acetate indicates that it's synthetic). Natural vitamin E will be labeled "d alpha tocopherol." This is the pure D isomer, which is what your body can use.

There are also other vitamin E isomers, and you want the complete spectrum of tocopherols and tocotrienols, specifically the beta, gamma, and delta types, in the effective D isomer. As an example of an ideal vitamin E, you can look at the label on our vitamin E in our store. You can use any brand that has a similar label.

You can purchase pharmaceutical grade bioidentical progesterone as Progesterone Powder, Bioidentical Micronized Powder, 10 grams for about $40 on many online stores like Amazon. That is nearly a year's supply, depending on the dose you choose.

However, you will need to purchase some small stainless steel measuring spoons as you will need a 1/64 tsp, which is 25 mg and a 1/32 tsp, which is 50 mg. A normal dose is typically 25 to 50 mg and is taken 30 to 60 minutes before bed, as it has an anti-cortisol function and will increase GABA levels for a good night's sleep.

If you are a menstruating woman, you should take the progesterone during the luteal phase or the last half of your cycle, which can be determined by starting 10 days after the first day of your period and stopping the progesterone when your period starts.

If you are a male or non-menstruating woman, you can take the progesterone every day for four to six months and then cycle off for one week. The best time of day to take progesterone is 30 to 60 minutes before bed as it has an anti-cortisol function and will increase GABA levels for a good night's sleep.

This is what I have been personally doing for over a year with very good results. I am a physician so do not have any problems doing this. If you aren't a physician, you should consult one before using this therapy, as transmucosal progesterone therapy requires a doctor's prescription.

FAQs About Microplastics

Q: How do microplastics affect health?

A: Microplastics are tiny fragments of plastic that enter your body through food, water, and air. Studies show they don't just pass through — they lodge in your tissues, including artery walls. Once inside, they trigger inflammation and disrupt normal cell function, increasing your risk for high blood pressure, stroke, diabetes and cardiovascular events.

Q: Where did researchers find plastic in the body?

A: In a study published in the New England Journal of Medicine, researchers discovered plastic embedded in plaque removed from human carotid arteries. These particles were detected inside immune cells and tissue debris, confirming that plastics don't just float through your system — they settle in and do damage.

Q: What diseases are linked to microplastic exposure?

A: The American College of Cardiology study found strong associations between microplastic pollution and several chronic conditions, including stroke, high blood pressure and diabetes. Higher microplastic concentrations in the environment directly correlated with higher disease rates in surrounding communities.

Q: How do plastics cause damage inside arteries?

A: Plastics act like irritants inside your body. They activate immune cells, release inflammatory chemicals and destabilize artery plaque. This raises your risk of serious events like heart attacks and strokes, even if you don't have conventional risk factors.

Q: How can I reduce my microplastic exposure?

A: You can lower your risk by filtering your water, avoiding plastic food packaging, switching to glass or stainless steel in the kitchen, wearing natural fibers and using a natural progesterone supplement if you're dealing with estrogen dominance from plastic exposure. Each step helps remove a source of plastic stress on your body.

Sources and References

- [1, 2] American College of Cardiology March 25, 2025
- [3] New England Journal of Medicine March 7, 2024; 390(10):900–910