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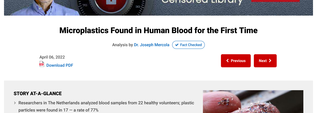

Microplastics Found in Human Blood for the First Time

Analysis by Dr. Joseph Mercola ✓ Fact Checked

April 06, 2022

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STORY AT-A-GLANCE

- Researchers in The Netherlands analyzed blood samples from 22 healthy volunteers; plastic particles were found in 17 — a rate of 77%
- The mean concentration of plastic particles in the blood was 1.6 µg/ml, showing a first measurement of the concentration of the polymeric component of plastic in human blood
- Polyethylene terephthalate (PET) plastic, which is used to make plastic water and soda bottles, was detected most often, some of the blood samples contained up to three different types of plastic
- It's "scientifically plausible" that the plastic particles are being transported by the bloodstream to organs and could even be carried by immune cells, possibly raising the predisposition to diseases with an immunological base

There's a good chance that tiny pieces of plastic are not only in your body but floating in your bloodstream. The news came from researchers in The Netherlands, who analyzed blood samples from 22 healthy volunteers. It's the first time microplastics have been detected in human blood, and according to study author professor Dick Vethaak, an ecotoxicologist at Vrije Universiteit Amsterdam in The Netherlands, "It is certainly reasonable to be concerned."[1]

The fact is, plastic is a ubiquitous part of the modern-day world, integrately intertwined with our daily lives, from plastic food packaging and bottles to microbeads found in personal care products. It's estimated that 11 million metric tons of plastic waste enter the world's oceans annually — an amount that could nearly triple by 2040.[2]

Microplastics, which have no standard definition but are often defined as being less than 5 millimeters in length, are especially pernicious since they're so small; exposure occurs via both inhalation and ingestion, and once in your body, they're free to travel throughout and may even lodge in your organs.[3]

Your Blood May Be Polluted by Plastic

When the researchers analyzed the 22 blood samples, plastic particles were found in 17 — a rate of 77%. They used the term "plastic particles" to describe particles ≥700 nanometers in dimension, a size that can be absorbed across membranes.[4] The mean concentration of plastic particles in the blood was 1.6 µg/ml, "showing a first measurement of the mass concentration of the polymeric component of plastic in human blood."[5]

Some of the blood samples contained up to three different types of plastic; steel syringe needles and glass tubes were used so no plastic would be introduced to the samples.[6] Accurate measurements of plastics in human blood will be important for correlating future health risk assessment, or HRA, for plastic particle pollution, in order to determine the health consequences of plastics accumulating in the human body.

Previous studies have detected microscopic plastic particles in human feces, providing evidence that such particles travel through the gastrointestinal tract. Plastic particles have also been found in colectomy specimens from humans as well as in human placental tissue.[7]

However, Vethaak told The Guardian, "Our study is the first indication that we have polymer particles in our blood — it's a breakthrough result. But we have to extend the research and increase the sample size, the number of polymers assessed, etc."[8] Out of the 17 samples in which plastic particles were detected:[9]

- Half contained polyethylene terephthalate (PET) plastic, which is used to make plastic water and soda bottles
- One-third contained polystyrene, widely used in food packaging
- One-quarter contained polyethylene, which is used to make plastic bags

What Happens to Plastic in Your Body?

It's clear that many human bodies are carrying an unknown quantity of plastic particles. In a study by University of Newcastle, Australia, researchers quantified what microplastic exposure may mean for humans, revealing a shocking finding that the average person could be eating about 5 grams of plastic per week — about the amount found in one credit card.[10]

Such plastics have been found to damage human cells in the laboratory, but as the featured study researchers explained:[11]

> *"The fate of plastic particles in the bloodstream needs further study to answer questions regarding the potential accumulation in the general population and occupationally exposed workers, the environmental factors contributing to the internal exposure and toxicological and human health effects that may result from different exposure scenarios."*

They stated that it's "scientifically plausible" that the plastic particles are being transported by the bloodstream to organs, based, for instance, on data showing that 50, 80 and 240 nm polystyrene beads and microsized polypropylene can permeate the human placenta.[12] Animal studies also show a disturbing trend of plastic particles moving throughout the body.

In one study, pregnant rats were exposed, via the lungs, to 20 nm nanopolystyrene beads. Twenty-four hours later the particles were found in the mother's lung, heart and spleen, while the plastics had also migrated to the placenta and fetal liver, lungs, heart, kidney and brain.[13] Reduced fetal and placental weight were also observed, and it's possible that the exposures could "initiate developmental onset of disease" within the fetus.[14]

> *"In laboratory studies, young and adult offspring have been reported to exhibit coronary dysfunction, vascular perturbations, negative reproductive health outcomes, and neurological outcomes after maternal inhalation of engineered nanomaterials during pregnancy."*

In another example, mice were exposed, orally, to polystyrene microplastic for five weeks. Weights of the body, liver and lipids declined, while secretion of mucin in the gut was also reduced, suggesting the plastics led to gut microbiota dysbiosis. The plastic exposure also induced hepatic lipid metabolism disorder in the mice, and the particles were detected in the liver, kidney and gut.[15]

Cardiovascular toxicity has also been demonstrated in rats, where polystyrene microplastics could lead to cardiac fibrosis and dysfunction, possibly by inducing oxidative stress and apoptosis of myocardium, the muscular layer of the heart.[16]

The cumulative exposure to microplastics alongside other environmental pollutants must also be considered. When mice were exposed to both microplastics and organophosphorus flame retardants — another ubiquitous toxin — greater oxidative stress and neurotoxicity were found. The co-exposure also enhanced the disruption of amino acid metabolism and energy metabolism in the mice.[17]

You're Exposed to Plastics in Food, Water and Air

The plastic particles found in the bloodstream represent that from all potential exposure routes, researchers explained in Environment International. This includes:[18]

Air
Water
Food
Personal care products, such as PET in lip gloss and polythene in toothpaste
Dental polymers
Fragments of polymeric implants
Polymeric drug delivery nanoparticles
Tattoo ink residues

It's believed that most plastic particles enter the human bloodstream after being ingested or inhaled, rather than via absorption through the skin:[19]

> *"Airborne particles between 1 nm and 20 µm are considered respirable. Ultrafine (<0.1 µm) inhaled particles may become absorbed and accumulate in the lung, while most larger particles are expected to be coughed up and eventually swallowed, and have a second chance of absorption via the gut epithelium."*

Microplastics are particularly well known to accumulate in seafood intended for human consumption. In a study of fish markets in California and Indonesia, one-quarter of the fish were found to have plastics in their guts.[20] Plastics and other man-made debris were also found in 33% of shellfish sampled.[21]

In a study of freshwater environments, 83% of the fish also had plastic debris in their gut, mostly microplastics, including microfibers.[22] Beer, tap water and sea salt are other known offenders, with measurable quantities of microplastics detected.

"Based on consumer guidelines, our results indicate the average person ingests over 5,800 particles of synthetic debris from these three sources annually, with the largest contribution coming from tap water (88 percent)," according to researchers in PLOS One.[23]

To get an idea of the scale of the problem, it's estimated that 11 billion tons of plastic will accumulate in the environment by 2025.[24] As they slowly break down, tiny fragmented pieces are swept up by wind and rain, where they're transported across the world.

According to Utah State University researchers and colleagues, more than 1,000 tons of microplastic particles fall from wind and rain into protected areas — such as national parks — in the southern and central western U.S. each year.[25] This breaks down to average deposition rates of 132 plastics per square meter per day.[26]

Could Plastics Affect the Immune System?

The health effects of microplastics are only beginning to be understood. In addition to their direct risks are those posed by the environmental chemicals they carry. Plastics are known to absorb endocrine-disrupting chemicals and carcinogens from ocean water, for instance. In fact, plastics may concentrate toxins, such that they're found at levels up to 1 million times those found in the surrounding seawater.[27]

Such chemicals, which accumulate over decades, have been linked to health problems including altered growth, reduced fertility and developmental and reproductive harm.

"We're not supposed to breathe in this material," Steve Allen, a microplastics researcher with the University of Strathclyde in Scotland, told Scientific American.[28] "[Plastics in the environment] carry all sorts of pesticides, heavy metals and all the other chemicals that we've made over time. They're going to carry them directly into our lungs."

In addition to wind and rain, drinking from plastic water bottles is another route of exposure. Testing of common bottled water brands revealed an average of 10.4 microplastic particles >100 um in size per liter of bottled water. In some cases, over 10,000 microplastic particles per liter were detected.[29]

As Frederick vom Saal, a distinguished professor emeritus of biological sciences at the University of Missouri, told Time:[30]

> *"In animal models and in epidemiological studies in humans, we have a correlation between plastic exposures and known health hazards ... They're implicated in the obesity epidemic and in other metabolic diseases such as diabetes and heart disease, as well as cancer and reproductive problems and neural problems like attention deficit disorder.*
>
> *It's not the trendiness of non-communicable diseases around the world. We have yet to see this is a correlation between exposure to these [plastic] pollutants."*

There's also concern that plastics could be interacting with the human immune system in unknown ways. The Environment International researchers explained:[31]

> *"[A]t least some of the plastic particles humans come in contact with can be bioavailable and ... the rate of elimination via e.g. the biliary tract, kidney or transfer to and deposition in organs is slower than the rate of absorption into the blood.*
>
> *... It remains to be determined whether plastic particles are present in the plasma or are carried by specific cell types (and to which extent such cells may be involved in translocating plastic particles across mucosa to the bloodstream).*
>
> *If plastic particles present in the bloodstream are indeed being carried by immune cells, the question also arises, can such exposures potentially affect immune regulation or the predisposition to diseases with an immunological base?"*

Reducing Your Exposure to Plastic Pollution

Ultimately, plastic pollution needs to be curbed at its source, but you can help reduce your exposure by becoming conscious of the plastic you're using daily — and cut back where you can. Some steps are easy, like swapping plastic bags, bottles, straws, utensils and food containers for more durable, reusable options.

Other steps may take more thought, like reconsidering what types of clothes to buy. In a comparison of acrylic, polyester and a polyester-cotton blend, acrylic was the worst, shedding microfibers up to four times faster than the polyester-cotton blend.[32] Also pay attention when you're at the supermarket, choosing food items that are free of plastic packaging as much as possible.

Eating a whole food diet tends itself to minimal plastic packaging, but be careful to avoid plastic-wrapped produce as well. Following are some additional straightforward steps you can take to cut down on plastics usage in your life. Share them with a friend or two and the positive impacts will only continue to be magnified:

Use reusable shopping bags for groceries
Take your own leftovers container to restaurants
Bring your own mug for coffee, and bring drinking water from home in glass water bottles instead of buying bottled water
Request no plastic wrap on your newspaper and dry cleaning
Store foods in glass containers or Mason jars rather than plastic containers and plastic freezer bags
Avoid disposable utensils and straws and buy foods in bulk when you can, putting the food in a reusable bag to take home
Opt for nondisposable razors, cloth diapers and infant toys made of wood rather than plastic
Avoid processed foods (which are stored in plastic bags with chemicals). Buy fresh produce instead, and forgo the plastic bags

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M.H.Deal
Joined On 11/23/2017 8:29:27 AM
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If this is so, does the Red Cross screen blood donations for plastic particles? Or, if you receive a blood transfusion, are you receiving someone's plastic particles along with whatever most spike proteins that blood contains?

Reply · Mark as Spam · Posted On : 4/6/2022 8:27:19 AM
Like · Dislike

Jen.Jen.J
Joined On 6/29/2021 7:55:55 AM
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Sheesh, I'd not thought of that one. We're sheep killing ourselves with every toxic thing we can invent. When will it end?

Mark as Spam · Posted On : 4/6/2022 8:30:02 AM
Like · Dislike

Kaythong
Joined On 3/2/2021 12:07:23 PM
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The oil-made plastic boom, which really got going in the 1970's, was obviously a huge mistake! It is not easy to avoid plastic exposure, because so much stuff uses plastics to reduce costs, they can make inferior products which fail sooner, which also happens to boost profits of products, not selling bought as consumables. All disposable plastics needs to be replaced by use of safer materials, like cellulose, paper, glass and metal. Part of personal protection should include use of a decent water filter, to remove any plastic from tap water, for drinking and cooking use.

Reply · Mark as Spam · Posted On : 4/6/2022 4:34:38 AM
Like · Dislike

OttoGiedacht
Joined On 6/11/2020 8:35:09 AM
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The quality of the plastics used in food packaging, and it's half-life, has not yet crossed our mental horizons. Plastics break down when the plasticizing component gasifies out- they become brittle and crumble, obvious at a macro level. The plasticizers are volatile and, because of that, seem suspicious as health hazards. Those in business who specify exactly what plastic to use for a particular purpose can pretty easily inform themselves of the durability of possible choices of materials their company will use. The cheapest styrofoam cups are likely among the worst as far as resistance to UV, for instance.

These are all known 'properties of materials' which are part of the specs for materials used in product manufacture. In my own business experience, the hort trade, I've got hundreds of very durable #1 gallon size black plastic nursery containers which are over 25 yrs old, recycled/repurposed from their original use. Kept in part time shade, they're still in great shape. On the other hand, there are plastic location marking flags, 2"x2" on wire stems, for marking out plant or sprinkler locations on jobs, which are crumbling to small sized trash from UV exposure; they probably do that in the dark as well, but slower.

There are lots of plastic food containers that, pretty quickly, degrade from UV exposure. There are others which are much longer lived in that way. Packagers have choices of price/quality of containers and do have the possibility of making choices but in today's world it's mostly all about cost. The people who specify which one to buy for their businesses' packaging needs are a point where interested consumers may be able to make a difference, through education. Cheap plastic turns to crap faster than quality plastic.

Mark as Spam | Posted On 4/6/2022 10:46:09 AM

Like | Dislike

junieb
Joined On 9/22/2009 9:22:04 PM
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You can buy milk, OJ, etc etc etc, in cardboard containers rather than plastic bottles. Just be open to the options.

Mark as Spam | Posted On 4/6/2022 11:36:22 PM

Like | Dislike

NurseKaren45
Joined On 6/10/2017 6:15:20 PM
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Yay. Cellulose based packaging for our food so I can get some GMO corn and soy particles in my 'organic' food because now we use corn and soy to make our plastic. Will this nightmare ever end? Oh wait, it's just begun. I now can't even safely breathe enclosed air because of all the nano particles/spiked air from all the vaxed, can't enjoy the rain on my face without wondering how much glyphosate I'm being poisoned with, and now I can't enjoy a windy day without thinking about the pesticide carrying micro plastics blowing my way. Lovely world. Well, as I read on Epoch yesterday in a comment: JESUS IS COMING BACK. NORMAL IS NOT. If anyone else feels this way, what I have found that helps is to literally throw yourself into work that you love if you can (for me it is hospice nursing), grow as many colorful flowers as you can in pots or the ground (actually read somewhere that red flowers do something good to your brain and mood - I find this to be true about red, yellow, and pink for me), do the Master Cleanse (aka lemonade cleanse) as often as you can for its detoxing abilities and how great one can feel on it (energy galore and clarity of mind) - get the book Master Cleanse by Tom Woloshyn, and don't feel too bad when you need coffee or sweet red wine to take the edge off.

Mark as Spam | Posted On 4/7/2022 4:43:53 AM

Like | Dislike

Stephjask
Joined On 10/23/2015 8:00:54 AM
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The Big Pharma and Big Food conglomerates seem to be poisoning us in every way imaginable. Is it stupidity, incompetence or simply part of a plan to cull the human race?

Reply | Mark as Spam | Posted On 4/6/2022 3:51:51 AM

Like | Dislike

junieb
Joined On 9/22/2009 9:22:04 PM
Add as Friend | Send Message

Plastics was a big industry in the 60s 70s 80s and on. It's convenient packaging. That's probably one of the main reasons.

Mark as Spam | Posted On 4/6/2022 11:38:02 PM

Like | Dislike

Healthbuf
Joined On 11/28/2018 1:55:15 AM
Add as Friend | Send Message

I rarely drink bottled water. In emergencies, I take a swig and am absolutely overwhelmed and disgusted by the extremely toxic smell of plastic. I'm totally blown away when I look around and it doesn't seem to bother anyone at all.

Reply | Mark as Spam | Posted On 4/6/2022 11:59:42 PM

Like | Dislike

fundamentalassumptions
Joined On 4/1/2009 12:17:58 PM
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Been using glass & stainless steel for years now since this is just apparently confirming what's been common knowledge with anyone following the science for a long time. I knew people back in the late '80's, into the '90's who were trying to solve the problem, to come up with biodegradable plastics that still served the purposes plastics were being used for. Glass & paper are renewable, recyclable, the the manufacturing processes of both leave some ecological nightmares of their own, formaldehyde & such. In fact, if they made it more permeable & degradable, that could actually have contributed to this, if the 'study' is legit. 22 'healthy' people leaves a lot of leeway & a lot of people out of the survey, & we've seen a world of conveniently timed & skewed 'studies' the last few years.

I have to say that the convenience & timing of this study with the global corporatista shifting their power & investment base, restructuring currency, merchandising living things, people & genetics.....is as questionable to me as the set up, convenience & timing of their latest phony war & dialectic 'sides'. Only the blood & suffering of the 'little ones' is real in that mess. Praying the Lord either mercifully speeds up the judgment of the deceiving & being deceived, or exposes & hinders it in truth. We'll know if only one 'side' has guilty culprits fingered just how fake & phony it really is on the part of scheming, crafting, men & women.

Reply | Mark as Spam | Posted On 4/6/2022 3:47:08 PM

Like | Dislike

dividingcricker
Joined On 2/25/2012 10:40:20 AM
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The new mercury .....I think plastic are used in many pharmaceutical drugs ...foods .....it we knew just a tiny bit .....Read about latundry detergent , shampoo , cream rinse..... Hygene products .... many things are GSAS by the FDA ....are not

Reply | Mark as Spam | Posted On 4/6/2022 8:28:38 AM

Like | Dislike

thenaturalgirl
Joined On 4/30/2014 7:02:06 AM
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Ummm. Wondering if the individuals sampled were vaccinated? Wondering if they will use the plastics as a cover for the jabs. I would like to see if unvaxed have the same particles in their blood. Not trusting too many..

Reply | Mark as Spam | Posted On 4/6/2022 8:56:00 AM

Like | Dislike

san5129
Joined On 5/16/2021 4:10:10 PM
Add as Friend | Send Message

Thenaturalgirl, my question too....

Mark as Spam | Posted On 4/6/2022 2:42:39 PM

Like | Dislike

junieb
Joined On 9/22/2009 9:22:04 PM
Add as Friend | Send Message

Only 13 comments on this so far? This is important stuff and should be shared. One thing I'm starting to do is get my orange juice in the cardboard containers, and not the plastic ones. Everyone should post an idea.

Reply | Mark as Spam | Posted On 4/6/2022 11:30:09 PM

Like | Dislike

ChefBambu
Joined On 8/30/2021 9:55:21 AM
Add as Friend | Send Message

So 17 out of 22 makes a valid study? Hmmm.....to come up with the study's conclusion it must have come from someone who studied under Dr Fauci.

Reply | Mark as Spam | Posted On 4/6/2022 4:43:32 AM

Like | Dislike

JenJenJ
Joined On 6/25/2021 7:55:55 AM
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While I'm fully convinced it would be nearly impossible for us to not be littered in microplastics and other plasticized material in this day and age, I still wondered about that. Was it a misprint, or???

Mark as Spam | Posted On 4/6/2022 8:28:08 AM

Like | Dislike

Bitcopper
Joined On 12/16/2021 1:21:12 PM
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I don't believe in 'may cause cancer' so much any more. The real question is why does the body give up on fighting particular cancers? These studies that DO NOT SHOW anything about the mechanism of biological damage are basically statements saying "We don't know what the hell is going on, but here is a bunch of 'things that went up' and 'things that went down' while we focused solely on one variable out of a million. If plastics contain harmful toxins, then maybe we should ingest some 'pure plastics' to chelate the evil metals that we're all chock full of.

How many modern ailments are the offshoot of 30 year old vaccines, which may permanently infect you with something? Suffice to say, we were not designed to live forever in these flesh and blood bodies. So get on with living, and don't waste your time looking for the fountain of youth under every rock. These 'fear porn' articles come off sounding like a broken record. This false notion of attaining some sort of 'ultimate purity' utopia is just another offshoot of the Covid panic mentality.

Reply | Mark as Spam | Posted On 4/6/2022 4:28:12 AM

Like | Dislike

JenJenJ
Joined On 6/25/2021 7:55:55 AM
Add as Friend | Send Message

um. so we're all going to die, may as well, lay drunk and stoned till then, huh? Good idea.

Mark as Spam | Posted On 4/6/2022 8:29:08 AM

Like | Dislike

junieb
Joined On 9/22/2009 9:22:04 PM
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Seriously why are you even reading his posts?? His information is EXCELLENT and highly informative. JGO if you're triggered by the info. Dr. Mercola has been posting this information for YEARS. Things being caused by "30 year old vaccines" IS NOT THE TOPIC HERE.

Mark as Spam | Posted On 4/6/2022 11:34:43 PM

Like | Dislike

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