

Protecting Our Health by Reducing Our Exposure to Microplastics and Chemicals

Dozens of Tips for Safer Kitchens, Food, Clothing, and Household Products

What Are Microplastics and Nanoplastics?

Plastics don't stay intact forever. Over time, they break into tiny fragments called **microplastics**, some visible to the naked eye, and even smaller **nanoplastics**, which are microscopic particles similar in size to bacteria. These particles are found everywhere, in the ocean, on mountains, in streams, and in the soil. They find their way into the air we breathe, the water we drink, and the food we enjoy.

Researchers have detected microplastics in common foods like chicken, seafood, tofu, and even beer. Bottled water, especially if stored in warm conditions, can release half a million microscopic plastic particles into each bottle. Microplastics also show up in surprising places: table salt, dryer lint, sea birds' stomachs, and even inside the human body, including the heart, lungs, kidneys, brain, placenta, and bloodstream. Nanoplastics are of particular concern because they can pass through the **placental and blood-brain barriers**, meaning they can reach fetuses and accumulate in our brains.

The Concerning Chemicals in Plastics

In addition to breaking down, plastics also carry chemicals added during manufacturing to give desired properties. Some of these chemicals, such as **BPA and other Bisphenols, phthalates, PFAS ("forever chemicals"), and perchlorate**, are known or suspected to interfere with the body's hormones and other key body systems. At certain levels of exposure, these **endocrine disruptors** and other chemicals can overstimulate hormones, block natural hormone signals, and may contribute to some cancers, fertility issues, early puberty, neurodevelopmental concerns, cardiovascular problems, Alzheimer's disease, Parkinson's disease, and possibly earlier onset of dementia.

Why This Matters for All of Us

While the science is still evolving, research is pointing in one direction: plastic particles and chemicals appear to harm our health. And with global plastic production expected to double over the next 15 years, our exposure is likely to increase unless habits and policies change.

Many seniors recognize plastic particles and chemicals as a potential risk to human health, but believe that at our advanced ages, we do not need to worry. That belief may be comforting, but potentially risky. Although causation is not yet confirmed, early studies suggest connections between microplastics and rising rates of some cancers, heart disease, and cognitive decline. Although we can't eliminate plastics from our lives entirely, **we can somewhat reduce how much we ingest, breathe, and absorb** by choosing nontoxic and plastic-free alternatives and supporting policies that eliminate plastic at the source.

WHAT TO DO? WHERE TO START?

Each individual must decide to what degree they will react to the serious human health risks of plastics, and how much expense and change they are willing to accept in their daily living practices. Even if we cannot totally eliminate our exposure to plastic particles and chemicals, the following suggestions can help us reduce our exposure.

These tips are a compilation from many scientific studies, articles in the media, experiments, and testimony of experts. See references at the end of this document. We welcome your feedback and suggestions for updates. The guidance will evolve as new information becomes available.

KITCHENS:

1. One of the most impactful changes you can make is to drink and cook with clean, plastic free water. Tap water in Fairfax County is safer than bottled water. Filtering will remove many plastic particles. Try the glass LifeStraw Home Water Pitcher. Make exceptions, however, if necessary to avoid dehydration at all costs.
2. Stainless steel water bottles and thermoses are widely available and allow you to bring you tap water, tea, coffee, and other beverages on the go.
3. Many metal soup and vegetable cans are lined with plastic, so try to opt for fresh foods. If choosing cans, look for brands with cans marked “BPA free,” or soup in glass containers. The brand **Amy** has been given high marks.
4. Buy in bulk, then place items like rice, nuts, lentils, quinoa, couscous, etc. in glass jars at home. Canning jars are perfect.
5. Buy juice and other beverages in glass bottles, not plastic bottles.
6. Store leftovers in glass or stainless-steel containers.
7. For cooking, use stainless steel, cast iron, glass, or ceramic cookware/bakeware. Use metal or wooden utensils, not plastic and especially not black plastic. **Avoid** nonstick pans with Teflon coatings that include forever chemicals.
8. Use metal or unpainted glass cutting boards, not plastic.
9. For Keurig coffee machines, use stainless steel reuseable coffee pods. One company is Good Cups. Older traditional coffee machines, such as Mr. Coffee, generally leach more plastics than newer models.
10. For serving food, instead of plastic bowls, plates and cups, use metal, ceramic, glass, or wood. Ahimsa is a US producer of metal childrens' size foodware products.
11. **AVOID HEAT** since it leaches microplastics and their chemicals. No microwaving foods in plastic containers. Take your own mug or metal container when going out because the paper cups that many coffee shops use are lined with plastics.

FOOD:

1. Most salt, especially sea salt, has high amounts of microplastics. Vers Salt Flake Spring Salt, Redmond's Real Salt, and Spicewell Pocket Sea Salt, are safer options.
2. Buy wine with real cork stoppers instead of plastic. Even drinks in glass with plastic or plastic-lined aluminum bottle caps can introduce thousands of nanoplastics into beverages.
3. Bring metal, bamboo, or glass containers to transfer restaurant leftovers to take home. Silicone is better than most plastics but is not entirely risk free.
4. Focus on eating whole, unprocessed foods. Minimize your intake of processed and packaged foods, especially those in plastic wrap.
5. Wash rice with filtered water to reduce contamination.
6. Use loose leaf tea instead of plastic tea bags.
7. Buy raw, organic wildflower honey in glass jars.
8. Use bamboo, glass, or stainless-steel straws instead of plastic.
9. At picnics and parties, avoid plastics where possible. Paper plates are one option but beware that some are coated with plastics. Use jute or bamboo for tableware.

10. Here is an extensive ChatGPT response to this query: *"Please recommend some fruits, vegetables and protein sources that have no or low plastic particles or chemicals in them."*

BEGIN ChatGPT QUOTE:

Here is a clear, practical list of fruits, vegetables, and protein sources known to have low microplastic and chemical contamination, based on current research patterns (not a web search). These options are also generally safer when washed or prepared properly.

Low-Plastic Fruits – These tend to have peels or thick skins, which protect the edible part from contamination. Why? – Thick skins reduce exposure to soil, water, and airborne microplastics.

Best choices: bananas, avocados, citrus fruits (oranges, grapefruit, tangerines, lemons), pineapple, mango, papaya, kiwi, cantaloupe and honeydew melon, watermelon.

Avoid or reduce: apples. If eaten, peel to reduce exposure.

Low-Plastic Vegetables – Vegetable that are peeled or grow above ground generally have less plastic contamination.

Best Choices: potatoes (if peeled), sweet potatoes, winter squash (butternut, acorn), broccoli, cauliflower, asparagus, zucchini (washed well), green beans, leafy greens (if washed very well in running water), peas (frozen peas are excellent with low-contamination).

Avoid or reduce carrots which tend to capture microplastics in soil

Low-Plastic Protein Sources – Proteins from land animals and legumes have far fewer microplastics than many fish.

Best choices: Animal proteins: organic eggs (very low microplastics), chicken (especially pasture-raised), turkey, grass-fed beef, pork (choose lean cuts)

Plant proteins: lentils, chickpeas (garbanzo beans), black beans, kidney beans, edamame / soybeans (organic to avoid pesticides), nuts (almonds, walnuts, pecans), seeds (pumpkin, sunflower, hemp)

Low Plastic Fish Options - Most fish have some microplastic load, but these tend to be lowest: wild Alaskan salmon, sardines (wild-caught), anchovies, rainbow trout (U.S. farmed), Arctic char, a far northern freshwater fish.

Avoid or minimize shellfish (clams, oysters, mussels, farm-raised salmon).

Highest microplastics: large predatory fish (tuna, swordfish) – more chemicals and plastics.

Tips to Reduce Plastics in Produce & Proteins - Wash produce under running water (don't soak); peel root vegetables and apples; choose food stored in paper, cardboard, glass, or bought loose – not plastic wrapped; Filter drinking water (especially to remove microplastics); use stainless steel or glass for cooking and storage.

END ChatGPT QUOTE

CLOTHING AND LAUNDRY:

1. Wear more natural materials (cotton, wool, linen, silk, etc.) not synthetic or blended fabrics made with plastics (nylon, rayon, polyester, acrylic, etc.)
2. Do not store your clothes in plastic bags.
3. Wash laundry in cold/cool water and spin on low; ideally hang dry your clothes or machine dry on lower heat to keep microfibers and microplastics from leaching from clothing into the water and ultimately into streams.
4. Use plastic-free laundry detergents such as powders sold in tins or tablets in paper. Meliora and Blueland sell safer plastic-free laundry formulas.
5. If you use your clothes dryer, use wool dryer balls which are reusable instead of synthetic dryer sheets. Zum is one brand.

CLEANING: Some research suggests that a significant proportion of the micro- and nanoplastics that enter our bodies are inhaled from the air, coming from car tires, microfibers from clothing and the breakdown of plastic products both indoors and outdoors.

1. Vacuum floors and furniture where feasible rather than sweeping which tends to scatter dust and microplastics into the air that we breathe.
2. Use vacuum machines with Hepa filters, such as Bissell.
3. Do “damp dusting” rather than “dry dusting” to reduce scattering nanoplastics in the air.
4. Install an air purifier. A highly rated Sekoda air purifier costs \$179.
5. Choose plastic-free cleaning products such as Blueland Clean Suite Kit with refill tablets, or Ette Probiotic All-Purpose Cleaner Concentrate, a powder to mix with water.
6. Make your own cleaning products: Formula a) Three tablespoons Rubbing Alcohol + 1.5 cups water + 1 tsp. Dawn Liquid, or Formula b) Four tablespoons White Vinegar + 2 cups water + 1 ½ tsp. Dawn Liquid. Mixtures of baking soda, peroxide or vinegar also work.

Personal & Bathroom:

1. Stop chewing gum as gum is no longer made with tree resin. It is made with plastic.
2. Use bar soap instead of liquid soap that comes in plastic containers. Many bar soaps come in either cardboard wrapping, like Dove, or in no wrapping at all.
3. Use plastic-free shampoo bars or if your liquid shampoo comes in plastic, consider transferring it to a metal or glass container.
4. Use toothpaste tablets packaged in glass or cardboard instead of traditional toothpaste in plastic tubes. Georganics is one brand. Another is the Humble Company which also makes bamboo toothbrushes.
5. Choose toilet tissue wrapped in paper instead of plastic, or install a bidet.
6. Find bathroom tissue products that are made from recycled bamboo or paper. “Who Gives A Crap” is a company that makes this product.
7. Bamboo reusable makeup remover wipes are safe and plastic-free.
8. Avoid microbeads and plastic particles in cosmetics, toothpastes and in exfoliating scrubs. Instead make your own scrub by using sugar and salt.

NOTE: This brochure is a joint compilation by two Greenspring groups, the Nurses Forever (Gail Kropf, RN, gail.kropf@gmail.com, and Carolyn Hoffman, FNP, 2cockapoos@gmail.com), and the Earth Keepers (Ray Martin, martinrs@aol.com, Bobbie Brown, bobbiefbrown@gmail.com, and Rekha Nadkarni, rekha.nadkarni@verizon.net) with the common goal of informing residents and helping them make changes for a fuller and healthier life. Please contact any of them if you need copies of this six-page guide in either electronic or hard copy format. Submit to them any corrections, questions, suggestions, ideas or brand name experience for any future updates. Feel free to forward this six-page guide to your friends, neighbors, children and grandchildren.

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REFERENCES, WEBSITES AND RESOURCES

1. PlasticPollutionCoalition.org
2. BeyondPlastics.org.
3. www.niehs.nih.gov.endocrine
4. **Trace: The Zero Waste Store:** 140 Church Street, NW. Vienna, VA. 22180. Phone 202-841-9136. <https://www.tracezerowaste.com/>
5. MOMS: 8298 Glass Alley, Fairfax, VA. momsorganicmarket.com/virginia/Merrifield
6. ChatGPT
7. <https://www.washingtonpost.com/wellness/2025/08/19/plastic-water-bottles-microplastics/>
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11. <https://www.plasticpollutioncoalition.org/plastic-free-goods>
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