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functional medicine

Endocrine Disrupting Chemicals

Endocrine disrupting chemicals or 'EDCs' are everywhere. They have become almost impossible to avoid. Literally – they are in your food, personal care products, cosmetics, and anything made with plastic.

EDC's:

- Block hormones
- Pretend to be hormones
- Mess up hormone signaling
- Interfere with normal hormone production

Quite literally, they are making us sick, fat, depressed, and infertile.

The United States allows more endocrine disrupting cancer causing chemicals to be used in our environment than any other country on the planet. It's nothing short of a miracle that any of us live past 20. You can do your best to 'live clean', but your neighbor is still spraying his dandelions with Round Up - mine is.

That legal poison is then picked up by the wind and carried into the air we breathe, leached into the soil our food grows in, and contaminates the water supply we drink from. For the most part, environmental toxins go unnoticed. Your nose can detect the volatile organic compounds (VOCs) in a freshly painted bedroom, but many endocrine disrupting chemicals have no taste, smell, or color to alert us to their presence.

What Is the Endocrine System?

It's a nightmare to study, let alone predict, that's for sure. The endocrine system has its fingers in the regulation of almost everything – sleep, mood, growth, metabolism, your stress response, reproduction, and cognitive function. The endocrine system is gland based – each gland interacts closely with the others, but each plays its own role in regulating complex physiology - a seemingly impossible juggling act. This system orchestrates everything from your ovulation and sperm production to your complexion.

- Hypothalamus
- Pituitary
- Adrenal
- Ovary
- Testes
- Thyroid
- Pineal
- Thymus

These are the major endocrine players. It might not seem like a large team, but when even one of these systems loses balance, they all come 'a tumbling down.

"The further away we get from nature, the more we f— it up."
-- Me.

Environmental toxins can be found in:

- The car you drive and its "*lifesaving"* airbag.
- The personal care products you use for "*good hygiene*".
- The packaging many "*organic*" foods are stored in.
- The pots and pans you use to prepare *"healthy"* meals for your family.
- The *"fresh"* water you drink or swim in.
- The detergent you use to *"clean"* your clothing.
- The *"fresh"* air you breathe when you take that walk in nature.

- The *"nutritious"* food you grow in your garden.

OK – so we know it's damn near impossible to escape these endocrine disrupting chemicals, so just how toxic are they and how much health risk do they really pose?

Your endocrine system is a complicated one to say the least. It is comprised of multiple different glands whose job it is to regulate all the hormone production, signaling, and feedback adjustments that your body needs to function. Endocrine disrupting chemicals (EDCs) are similar enough in structure to your own natural hormones to bind to and activate hormone receptors. When EDCs enter the system, they behave like a Trojan horse – turning things on that should be off, getting in the way of natural hormone signaling, and tricking the body into thinking it's getting the real story on endocrine function when in fact, the EDCs provide a painfully dysfunctional parallel side show.

This affects childhood development and reproduction, your metabolism, neurological function, and immune system activity. This can result in a wide array of cellular imbalances ranging from just annoying to complete system breakdown. Unfortunately, we are loaded with these things - they can be detected in your blood, urine, and even in the breastmilk of nursing mothers. With more than 800 suspected hormone disruptors in our environment why isn't this a health crisis getting headline news coverage every day?

An obviously rhetorical question – you all know why.

Are Environmental Toxins All Man-Made?

No. There are naturally occurring noxious substances all over the place - poisonous algae toxins (cyanotoxins, domoic acid), fish toxins ('ciguatera' - don't eat that Barracuda you caught in the Bahamas), plant toxins (cyanogenic glycosides in cassava, sorghum, stone fruits, almonds), lectins in grains and nightshade vegetables, mycotoxins naturally produced by certain types of mold, poisonous mushrooms, etc., etc.

Arsenic is a naturally occurring element which is highly toxic to humans and can be found in the earth's crust. Arsenic can also be found in pesticides, feed additives, wood preservatives, and in materials used to make car batteries and semiconductors. Arsenic can also be found in many food sources including meat, fish, poultry, rice, and other rice products such as cereals. These account for as much as 80% of dietary arsenic intake. Despite its natural occurrence, large amounts of arsenic are toxic and a known carcinogen posing risk of damage to skin, lungs, bladder, kidneys, and the liver. Arsenic can also lead to death with enough exposure.

Poison has a dose.

An Awesome Story of Hubris

Cassava is a woody shrub native to South America. For people living in drought-prone tropical regions, it is a godsend: delicious, calorie-dense, and highly productive. The indigenous peoples of the Americas who first cultivated cassava is reliant on it and have developed an arduous, days-long process of preparation that involves scraping, grating, washing, and boiling the plant before it is eaten. At the beginning of the 17th century, the Portuguese introduced cassava to the Old World. But they did not import the ancient methods of processing, assuming that indigenous people were wasting their time. Progress swats away benevolent traditions because the usefulness of traditions can be subtle and hard to understand.

We do not always know why we do the things we do. This applies as much to indigenous peoples as to modern Westerners. The first cultivators of cassava could not explain why the scraping, grating, washing, and boiling process was necessary, because they did not know – could not know – that every step of the process is essential to reduce the cyanide content in the plant. If even one step is skipped, chronic cyanide poisoning is the result. And the really devilish thing about cassava poisoning is that the buildup of cyanide in the body is so gradual that it is almost impossible to identify cassava as the culprit.
That's the problem with what we all think of as progress: it swats away benevolent traditions because the usefulness of traditions can be subtle and hard to understand. Technology brings many blessings: better medical treatment, better nutrition, and better comfort for all the world's population, even in the poorest regions. But rapid

technological development liquifies well-established traditions and sometimes we don't realize what we've lost until it's too late.

https://www.spectator.co.uk/article/modernity-is-making-you-sterile/

Top Endocrine Disrupting Chemicals:

Bisphenol-A (BPA)

BPA is an industrial chemical produced in MEGA quantities used to make plastic. Plastic water bottles, plastic wrapping on your raw chicken, plastic plates, plastic forks, plastic glasses, the lining of many canned food products (sneaky), and my personal favorite – the back side of grocery store receipt paper. Those weird textured receipts we receive from grocery stores, gas stations, restaurants, Target, etc. are printed on a specific kind of heat sensitive paper, appropriately known as 'thermal paper'. This special paper isn't evil only because it is impossible to write on with a ball point pen, but it's also coated with either Bisphenol-A (BPA) or its equally estrogenic cousin, Bisphenol-S (BPS).

"BPA-free" is a popular product tag for "we used a different bisphenol which has the same endocrine disrupting, cancer causing properties as the original. Brilliant plan.

Dioxins *(Persistent Organic Pollutants, or POPs)*

Dioxins are chemical nightmares produced as byproducts in certain industrial processes like paper bleaching and tire burning parties. Don't eat those hot dogs for sure. These chemicals accumulate in animals and tissues and live there for ever and ever. Dioxins are chemical zombies: they refuse to die. To call something 'organic' and a 'pollutant' at the same time is a head scratcher for me. How can...? Anyway, dioxins are highly, ***highly*** toxic chemicals – arguably first place winner of the absolute worst. No argument from industry here – we all agree, stay clear of these:

- Chlorinated Dibenzo-p-Dioxins (CDDs)
- Polychlorinated Dibenzofurans (PCDFs)
- Polychlorinated Piphenyls (PCBs) -*some*

PCBs were made illegal in 1979 in the Toxic Substances Control Act (TSCA), yet there are plenty still measurable in local fishing rivers and streams, elementary school buildings, and community parks today. *Cancer, cancer, cancer.*

Atrazine

Atrazine is one of the most widely used herbicides in the United States. This is a special kind of endocrine disrupter. When male frogs are exposed to atrazine, they become chemically castrated – their testicles shrivel up and fall off. As an exciting bonus step, they then become females, grow a uterus, and produce viable frog eggs that real male frogs can fertilize. Atrazine was banned by the European Union a million years ago, in 2004. Lucky for you Americans, the 'safety of atrazine remains controversial' here in the US. You seriously can't make this sh*t up. Buy organic.

Phthalates

More plastic poison here. I still can't spell this ridiculous word correctly so I will soon petition Meriam-Webster to simply remove it from their dictionary. PHTHALATES are EDCs that make plastic '*more plasticky'*. Yep. So, in some instances, they make plastics harder to break, in others they make plastics more "*loosey goosey".* Either way they are bad bad bad. Like bisphenols, they're everywhere – nail polish, shampoo, deodorant, perfume, hairspray... They are literally referred to as "the everywhere chemical". Anything that smells pretty or has a fragrance, likely contains a phthalate.

Parabens

Parabens are poisonous preservatives and antimicrobials which look almost identical to estrogen. Here again, BANNED by every other country on the planet, but 'ok' to use here in the US. Parabens saturate the cosmetic industry. They are used for their antimicrobial properties to extend the shelf life of your make-up. Seriously, when was the last time you purchased foundation? Concealer? 1987? Looks, the same, doesn't it? Parabens easily penetrate skin, bind to estrogen receptors, and wreak all sorts of hormonal havoc. Or cause cancer. Look – poison has a dose. A little poison is one thing but putting poison directly onto your skin day after day, year after year...well,

it's just begging for problems. Paraben content isn't particularly covert. If it sounds like or contains the word 'paraben', don't use it.

- Methylparaben
- Ethylparaben
- Propylparaben
- Butylparaben
- Heptylparaben
- Isobutylparaben
- Isopropylparaben
- Benzylparaben

The cosmetic industry is a mess. If eating and drinking plastics doesn't kill you, your make-up is going to try. Check out the link below for info on clean or at least '*cleaner'* cosmetic products.

Perchlorate *(Fireworks, Rocket Fuel, Explosives)*
The most important message here? Don't drink rocket fuel – and while you're at it, don't bathe in explosives either. But seriously, why is this on the list? Perchlorate isn't just in fireworks and explosives. It's used in the manufacturing of regular batteries, road safety flares, airbags, and matches. It gets leached into the drinking water, soil, crops, and food packaging. This chemical specifically messes with iodine uptake and your thyroid function. It can cause kidney damage, low blood count.... nothing good. Drink filtered water only.

Phytoestrogens *(Flax, Soy, Lavender)*
Are phytoestrogens good or bad for you? A bit of both. Phytoestrogens are natural plant compounds called lignans which are found in many foods like soy. Soy and soy products are rich in the Western diet thanks to processed foods and additives. Phytoestrogens are both the protagonist and antagonist: they act like estrogen but can also act like antiestrogens. These can help fight or inhibit breast cancer growth or promote it and tumor growth. Confusing, right?
Phytoestrogens can help reduce or prevent *certain* types of cancer such as hormone-related cancers as well as breast and ovarian cancers. However, they may also stimulate breast cancer growth in low concentrations of certain phytoestrogens causing some cancers to grow faster while reducing the effects of the drugs used to treat them. They can help hormonal imbalances during menopause but reduce fertility in women. Phytoestrogens help increase libido in men and help improve premature ejaculation but can also decrease sperm levels.

Ok - lots and lots of probably overwhelming information. But remember, ***poison has a dose***. Our bodies do an amazing job of detoxing and trying to keep us alive. It's how we made it this far! We can't live on this planet and live perfectly clean - but we can educate ourselves about where the poisons are and do our best to protect ourselves - and our kids - from as many as possible.