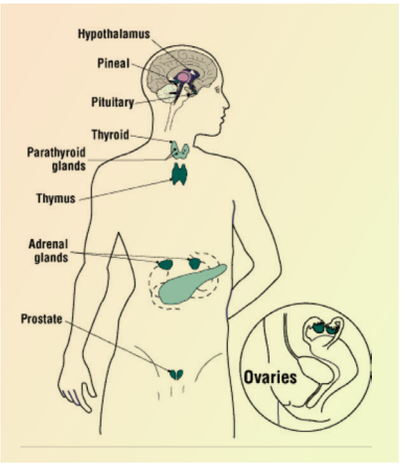
Guidance from the Western States Pediatric Environmental Health Specialty Unit

Endocrine Disrupting Chemicals

WESTERN STATES PEHSU Pediatric Environmental Health Specialty Unit



What are endocrine disrupting chemicals?

Endocrine disrupting chemicals (EDCs) are substances that disrupt the work of the endocrine system in our body. The endocrine system is a group of glands that produces hormones (like insulin and estrogen).

Hormones are chemical messengers that tell each part of your body what work to do, when to do it, and for how long. Hormones control

- growth and development,
- reproduction and fertility,
- how we use energy, and
- how we respond to stress.

Where are EDCs found?

They are commonly found in cleaning products, pesticides, plastic bottles and containers, personal care products including cosmetics, and fragranced products. They are also found in canned food and in the foam in some furniture. Humans can be exposed to EDCs though consumption of food, especially meat, because many EDCs are stored in animal fat.

Some common EDCs are:

- **Pesticides**, used in agriculture and in our homes, can disrupt the endocrine and nervous systems of both insects and humans.
- **Bisphenol compounds (like BPA and BPS)** are the most widely used EDCs. BPAs are found in plastic bottles, the lining of aluminum drink containers, canned foods, receipts and thermal paper, and plastic containers. Like phthalates, they are released when heated in a microwave, under sunlight or when in contact with foods containing acid (for example: tomatoes, oranges, lemons, etc.).
- **Phthalates** are found in plastic food and beverage packaging. They are released when heated. They are also used in cosmetics, fragrances, hair sprays, nail polishes, and in vinyl or polyvinyl chloride plastic (symbols are 3, V or PVC).
- **PFAS** are a group of over 3,000 chemicals that last so long in the environment they have been referred to as 'forever chemicals.' PFAS are used in consumer products to make them waterproof, greaseproof, stain-proof and non-stick. They are also used in manufacturing and in fire fighting foam. Almost all Americans have PFAS chemicals in their bodies.
- **Brominated flame-retardants (BFRs)**, which are added to furniture and electronics.
- **Polychlorinated biphenyls (PCBs)** were used in hundreds of industrial and commercial applications but are now prohibited in the United States. However, they still exist in our buildings and the environment.

Some EDCs stay in both the environment and in the human body for a long time. Others don't stay around for long, but we may be exposed to them daily because they are so common.

How are we exposed to EDCs?

Humans can also be exposed through contaminated water and air, absorption through the skin. They can also be transferred from mother to fetus.

What are the health effects of EDCs?

EDCs prevent hormones from doing their jobs by

- Looking like or getting in the way of hormones,
- Changing how fast hormones are made in the body,
- Changing how hormones move through the body and how they are removed.

The endocrine system is so sensitive that it responds to changes in hormone concentrations equal to one drop of water in 20 Olympic swimming pools. This is why EDCs in small amounts can be so harmful.

Endocrine Disrupting Chemicals

Disruption of the endocrine system is linked to many health problems. These include:

- gestational diabetes
- low birth weight,
- obesity,
- fertility problems,
- certain cancers,
- certain birth defects, and
- learning and behavior problems.

Effects can occur from small exposures if they occur before birth or during early life when the body, especially the brain, is rapidly developing. We may even inherit health risks from the endocrine disrupting chemicals that our parents, or grandparents were exposed to.

How can we reduce our exposure?

EDCs are impossible to avoid. However, we can reduce our exposure by following these steps:

- **Wash your hands** with soap and water, especially before eating. Do not use antibacterial soap.
- **Minimize handling** of receipts and thermal paper.
- **Food products**
  - Don't microwave food or store acidic food in plastic.
  - Don't store hot liquids in plastic. When possible, use glass, stainless steel or lead-free ceramics.
  - Some EDCs may be removed by a water filter. Use this source to find an effective, NSF certified filter: https://info.nsf.org/Certified/DWTU/
  - Eat a mostly plant-based diet, lots of fresh fruits and vegetables, organic when possible.
  - Trim fat from meat and the skin from fish. Cook using a rack to allow fat to drain.

  - Reduce consumption of canned (the linings of many cans contain EDCs) and processed foods.
  - Avoid non-stick pans.
- **Personal care products** Choose cosmetics and personal care products that are phthalate and fragrance free. For more guidance, see the Environmental Working Group's Skin Deep Database.
- **Household products**
  - Do not use containers or toys that have the symbols "3", "V" or "PVC" in the recycling symbol. Do not burn them.
  - Choose containers that say "phthalate-free." BPA free doesn't mean the product is necessarily free of EDCs. Many manufacturers replace BPA with BPS or another similar chemical.
  - Avoid fragranced diapers, garbage bags, detergents and cleaning products.
  - Do not use air fresheners. Use a damp microfiber mop or cloth to dust, and a vacuum with a HEPA filter. Household dust can contain EDCs such as lead, flame retardants, and PCBs.

Following these simple steps will help you and your children reduce your health risks from exposure to these harmful chemicals.

Resources

Available here (click prompt or scan code below).

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