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Common Environmental Chemicals That Are Obesogenic

A number of everyday environmental chemicals are now recognized as obesogens—substances that can disrupt metabolism, alter appetite regulation, or increase fat storage. These chemicals often act as endocrine disruptors, affecting hormones involved in weight regulation, insulin sensitivity, and adipocyte (fat cell) development.

Major Obesogenic Chemicals

1. Bisphenol A (BPA) & BPA Substitutes (BPS, BPF)

Where found:

- Canned food linings
- Polycarbonate plastics
- Cash register receipts
- Some food storage containers

Why obesogenic: BPA mimics estrogen and affects adipogenesis, insulin sensitivity, and appetite-regulating hormones. "BPA-free" substitutes like BPS/BPF often have similar biological effects.

2. Phthalates

Found in:

- Soft plastics (PVC)
- Fragrance-containing products (perfumes, lotions, cleaners)
- Vinyl flooring
- Food packaging

Why obesogenic: Phthalates interfere with androgen and thyroid hormones, alter lipid metabolism, and promote fat storage.

3. Per- and Polyfluoroalkyl Substances (PFAS) – "Forever Chemicals"

Found in:

- Nonstick cookware (Teflon-like coatings)
- Water-resistant clothing
- Fast-food packaging
- Stain-resistant carpets

Why obesogenic: PFAS disrupt lipid metabolism, endocrine signaling, and may reduce resting metabolic rate.

4. Organotins (e.g., Tributyltin, TBT)

Found in:

- PVC stabilizers
- Marine paints
- Some pesticides

Why obesogenic: Organotins are among the strongest known obesogens. They activate PPARγ, a key regulator that converts stem cells into fat cells.

5. Pesticides and Herbicides

Atrazine

- Common herbicide used on corn crops.
- Linked to mitochondria dysfunction and insulin resistance.

DDT & DDE (persistent pollutants)

- Though banned in many countries, residues remain in the environment and food chain.
- Alter hormones regulating weight and metabolism.

6. Polycyclic Aromatic Hydrocarbons (PAHs)

Found in:

- Air pollution
- Cigarette smoke
- Grilled or charred foods

Why obesogenic: Chronic low-level exposure alters metabolic regulation and insulin response.

7. Flame Retardants

PBDEs (Polybrominated Diphenyl Ethers)

Found in:

- Upholstery foam
- Electronics
- Carpeting
- Mattresses

Why obesogenic: Disrupt thyroid hormones and may impair glucose metabolism.

8. Parabens

Found in:

- Cosmetics
- Lotions
- Shampoos
- Preservatives in some foods

Why obesogenic: Act as weak estrogens, influencing fat storage and hormone signaling.

9. Artificial Sweeteners (controversial but accumulating evidence)

Common examples: aspartame, sucralose, saccharin

Found in:

- Diet sodas
- Sugar-free snacks
- “No calorie” sweeteners

Why obesogenic: May alter gut microbiome and glucose tolerance, paradoxically promoting weight gain in some studies.

Which Ones Have the Strongest Evidence?

The chemicals with the most robust and reproducible evidence include:

- Organotins (TBT)
- PFAS
- BPA and analogs
- Phthalates

These have been shown repeatedly to increase fat cell formation, shift metabolism, or alter hormonal pathways in humans and animals.

How to Reduce Exposure

Simple behavioral changes can significantly lower exposure:

- Avoid microwaving plastics.
- Use stainless steel or glass for food storage.
- Choose fragrance-free personal products.
- Use cast iron or stainless cookware instead of nonstick.
- Reduce fast-food consumption (packaging is often PFAS-treated).
- Use HEPA filtration for dust (captures PBDEs and microplastics).