

Chemicals and the Obesity Epidemic: the Link

Obesity is a major and growing problem in the United States. Shockingly, about one in three adults is obese, and today's children and teens are three times as likely today to be obese as they were 30 years ago.

Changes in diet and exercise in the last several decades are generally believed to be at the root of the problem. But what if it's not as simple as calories in, calories out? A growing body of research is finding that toxic chemicals may be affecting our metabolism and frustrating efforts to maintain a healthy weight.

Many synthetic chemicals are known to impact the hormonal system. Now, researchers are uncovering effects on metabolic function that can lead to weight gain, insulin resistance (a pre-diabetic condition), heart disease, and obesity.

Chemicals found in our food, home and work environments, and products we buy have been implicated in effects on metabolism. Presented here are four brief case studies to illustrate how increased exposure to toxic chemicals may be the other major societal shift leading to today's obesity epidemic.

Phthalates

Phthalates are plasticizers and fragrance carriers found in many products and building materials, including PVC/vinyl items such as flooring and shower curtains, as well as in cleaners and personal care products.

Phthalates impair testosterone production in animal studies, and low testosterone is strongly associated with obesity and metabolic syndrome in men.

- Analyses of phthalate levels in U.S. residents found that men with higher exposure to certain phthalates had higher body mass index, waist circumference, and insulin resistance, all measures of obesity and metabolic syndrome.
- Laboratory studies indicate that phthalates directly affect key regulators of fat metabolism.

Bisphenol A

Bisphenol A (BPA) is a building block of polycarbonate plastic and a component of food can linings. It is known to be estrogenic and to affect thyroid function, and laboratory research suggests exposure may result in weight gain.

- Some laboratory research has found that particularly in female animals, BPA exposure can lead to higher weight gain and greatly increased fat deposits. Exposed animals ate no more food, but gained more weight than unexposed animals.
- Cell culture studies show that BPA can suppress hormones that protect from insulin resistance and even trigger other types of cells to become fat cells.



- Analyses of BPA in U.S. residents have linked higher exposure to a greater likelihood of diabetes and heart disease.

Persistent, Bioaccumulative, and Toxic Chemicals

Chemicals that last a long time in the environment and build up in our bodies are known as persistent, bioaccumulative, and toxic chemicals (also called PBTs or POPs). Some of these chemicals, such as PCBs and DDT, have been banned for many years but are still commonly found in the environment, in food, and in people. Others, like some flame retardants and "Teflon chemicals," are still in use. Studies have associated persistent toxic chemicals with obesity and diabetes.

- An analysis of data collected by the CDC on more than 2000 U.S. adults found a very strong association between exposure to these chemicals and diabetes: people with the highest concentrations were 37 times more likely to have diabetes than those with the lowest concentrations.
- A study of the adult daughters of women who ate PCB- and DDT-contaminated fish from Lake Michigan found that the daughters with greater prenatal exposure to DDT breakdown product DDE were more likely to be overweight or obese.

Perfluorinated Compounds, or "Teflon Chemicals" (PFCs)

PFCs are used to make stain-resistant coatings for clothing, furniture, carpets, paper packaging, and cookware. They are extremely long lasting in people and the environment.

- PFCs have been linked to lower birth weight in some studies, and low birth weight is a risk factor for obesity and diabetes.
- A number of studies have associated PFC exposure with higher cholesterol. Most recently, researchers found that American adults with higher levels of any of three PFCs in their bodies had higher total cholesterol and non-HDL cholesterol.

What's the Solution?

Toxic chemicals that can cause obesity, cancer, reproductive problems, and learning disabilities are in the products we use every day. That's because federal law on chemicals takes a "don't ask, don't tell" approach: EPA can't require companies to test chemicals for safety, nobody's telling what chemicals are even in products, and chemicals with known hazards can be used in places we live, work, or play.

The good news is, people from all over the nation are getting organized and asking Congress to update the Toxic Substances Control Act of 1976. More than 200 state, national, and local organizations have joined together to form the Safer Chemicals, Healthy Families coalition. Together, we have successfully encouraged Congress to take action. In April 2010, both the Senate and the House of Representatives introduced legislation intended to fix our flawed chemical management system. The coalition is working closely with Congress to ensure that any new law does the following:

- requires that only the safest chemicals be used in products
- ensures that all chemicals are fully tested for safety, and
- phases chemicals with known hazards out of commerce.

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Washington Toxics Coalition: www.watoxics.org

The Safer Chemicals, Healthy Families coalition includes nurses, parents, advocates for the learning disabled, scientists, environmental health advocates, and concerned citizens from across the nation. These diverse groups are united by their common concern about toxic chemicals in our homes, places of work, and products we use every day.

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