

PSR[®]

PHYSICIANS FOR
SOCIAL RESPONSIBILITY[®]

U.S. affiliate of International Physicians for the Prevention of Nuclear War,
recipient of the 1985 Nobel Prize for Peace

www.psr.org



Obesity: Chemical Causes

The U.S. is undergoing an obesity epidemic and children are the prime victims. One out of three children is now considered overweight or obese. Obesity increases the risk of hypertension and Type 2 diabetes and is linked to stroke and heart disease, among many other medical and social ills.

What's behind the obesity epidemic?

One obvious factor is our change in lifestyle. Americans move less in our day-to-day lives than in



the past, but we often still eat the same amount of food. These excess calories are then stored away as fat.

Recent research, however, reveals a more complex causality for the obesity epidemic, with science suggesting that environmental chemicals also play a role. Certain chemicals are suspected of altering when, why and how

much the body creates fat cells or stores fat in existing cells.

Chemicals found in our food, home and work environments and in the products we buy are among the substances linked to how our body creates or stores fat.

CHEMICALS OF CONCERN: Approximately 15 chemicals and classes of chemicals have been shown to cause weight gain in animal studies. Some of these include:

- ▶ **Bisphenol A** – found in canned food linings, polycarbonate plastics and thermal paper
- ▶ **PBDEs** – brominated flame retardants used in products such as furniture and electronics
- ▶ **Perchlorinated biphenyls (PCBs)** – found in certain fish and industrial workplaces
- ▶ **Some organochlorine pesticides** – used in agriculture and found in certain foods
- ▶ **Some phthalates** – found in plastics, cosmetics and household cleaners
- ▶ **Some surfactants (PFOAs)** – found in food wrappers, stain-resistant and non-stick surfaces
- ▶ **Nicotine** – from tobacco
- ▶ **High fructose corn syrup** – in many foods in place of sugar

What do we know about obesity?

Obesity results from dysfunction of one or more of the endocrine systems that control eating behavior, fat cell development and number, and metabolism. Thus a dysfunction in the control of brain, adipose tissue, liver, skeletal muscle or gastrointestinal tract function could upset the delicate endocrine balance, resulting in susceptibility to weight gain. In addition it is now clear that susceptibility to obesity may start in utero or in childhood. A disturbance while the tissues and organs are developing could lead to increased susceptibility to weight gain.



Chemical development and use exploded over the last 70 years with little regard to safety. Over 80,000 chemicals are in use and only a handful with adequate health information.

What might be the source of that disturbance?

An endocrine disruptor is a synthetic chemical that when absorbed into the body either mimics or blocks hormones and disrupts the body's day-to-day functions. This disruption can happen through altering normal hormone levels, stopping or stimulating the production of hormones, or changing the way hormones travel through the body, thus affecting the functions that these hormones control. When these pathways are affected during development, their effects are "programmed." They remain throughout life and may even be inherited.

What can you do?

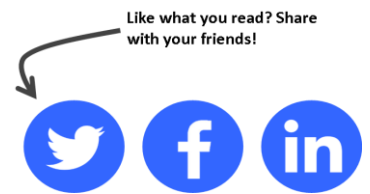
Ask Congress to overhaul the Toxic Substance Control Act (TSCA) which regulates and manages chemicals in the United States. TSCA must be reformed to protect the public's health by preventing exposure to harmful chemicals such as bisphenol A and flame retardants.

Go to <http://tinyurl.com/PSR-Toxics> to find out more about toxic chemicals and our campaign to reform U.S. laws to protect us all.



Selected References

1. Tang-Péronard JL, Andersen HR, et.al. Endocrine-disrupting chemicals and obesity development in humans: a review. *Obes Rev.* 2011 Aug;12(8):622-36. doi: 10.1111/j.1467-789X.2011.00871.x. Epub 2011 Apr 4.
2. Thayer KA, Heindel JJ, Bucher JR, Gallo MA. Role of Environmental Chemicals in Diabetes and Obesity: A National Toxicology Program Workshop Review. *Environ Health Perspect*; DOI:10.1289/ehp.1104597.
3. Blumberg B., *Obesogens, stem cells and the maternal programming of obesity* *Journal of Developmental Origins of Health and Disease.* (2011), 2(1), 3–8. & Cambridge University Press and the International Society for Developmental Origins of Health and Disease 2010 doi:10.1017/S2040174410000589.
4. Heindel, J. J. and Schug, T. T. (2013), *The Perfect Storm for Obesity.* *Obesity*, 21: 1079–1080. doi: 10.1002/oby.20222



PSR[®]

PHYSICIANS FOR SOCIAL RESPONSIBILITY[®]

U.S. affiliate of International Physicians for the Prevention of Nuclear War, recipient of the 1985 Nobel Peace Prize

1111 14th St, NW, Suite 700 • Washington, DC 20005
Telephone: (202) 667-4260 • Fax: (202) 667-4201 • Web: www.psr.org