



Environmental Corner: in collaboration with the Earthrose Institute www.earthrose.org

Environmental Exposures and the Global Obesity Epidemic

The numbers of obese people worldwide have been steadily escalating revealing a complex picture among cultures and their populations. About two-thirds of adults in the United States are overweight, and almost one-third are obese, according to data from the National Health and Nutrition Examination Survey (NHANES) 2001 to 2004. Obese people are prone to chronic diseases including type-2 diabetes, high blood pressure, heart disease, stroke, and cancers.

For adults, overweight and obesity classifications are determined by using weight and height to calculate a number called the "body mass index" (BMI). BMI is used because, for most people, it correlates with the amount of their body fat. According to the CDC, an adult who has a BMI between 25 and 29.9 is considered overweight. An adult who has a BMI of 30 or higher is considered obese. These numbers vary for teens and children.

The commonly held beliefs about obesity include overeating and inactivity but this does not explain the current obesity epidemic. There is growing evidence that indicates that for many individuals, the body's natural weight-control mechanisms are not functioning properly. Because the obesity epidemic has occurred relatively quickly, current research indicates that environmental causes instead of genetic factors may be largely responsible.

What had been overlooked in the study of obesity until recently is that the earth's environment has changed significantly during the last few decades. Production and usage of synthetic chemicals has become exponential with



over 100,000 chemicals being used in diverse industries today. Many of these chemicals have powerful weight-promoting actions that diminish our metabolic mechanisms, confuse cell signaling and disrupt our appetite-regulating systems. These chemicals are being classified as obesogens.

For example, livestock, including cows, pigs, and poultry headed for market are frequently injected with estrogen compounds to fatten them while being fed hormonal disrupting pesticide-laden grains. When we ingest the meat from these animals, it similarly affects our metabolism and "fattens us up" as well. Human exposure to these chemicals may damage many of the body's natural weight-control mechanisms. Furthermore, the synergistic effects of multiple environmental toxins, combined with foods that are highly processed and nutrient poor, appear to play a significant role in the worldwide obesity epidemic.



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Environmental Exposures on Metabolism

Environmental toxins interfere with metabolism and the signals for how we store and burn fat. Increases in sugar and refined carbohydrate consumption leads to increases in insulin production and ultimately insulin resistance. Eventually, this leads to the transformation of sugars into fats and accumulation of fat in the liver. When the liver is burdened with excess sugars there is an increase in oxidative stress. Oxidative stress impairs the function of the mitochondria, the powerhouse within every cell that is responsible for energy production and cell integrity. Damaged mitochondria cannot effectively burn fat or calories leading to a slower metabolism and more weight gain.

Chemicals and our Endocrine System

Cortisol, a hormone produced by the adrenal glands, is part of our daily hormonal cycle and plays a key role in the body's response to stress. Impaired glucose metabolism and cortisol activation can disrupt sleep cycles and increasing blood sugar levels contributing to weight gain.

The thyroid gland is responsible for metabolism and how quickly the body burns energy is also impacted by environmental exposures. For example, heavy metals including mercury, affect thyroid function as well as the halogen chemicals known as chlorides, bromides and fluorides. These exposures can interfere with thyroid function, hypothyroidism, a sluggish metabolism and consequently weight gain.

Fat cells produce the powerful hormone leptin, a primary force instructing metabolism, weight

loss, and hormone balance. Leptin communicates directly to the brain, telling the brain how much fat is in storage. Leptin is another control mechanism of appetite, energy, and metabolic rate. Leptin problems are the primary reason for food cravings, overeating, faulty metabolism, and obsessions with food. As chemicals induce inflammation in the body, they also induce leptin resistance.

While research linking environmental toxins and impaired detoxification to obesity grows, billions of dollars are pouring into obesity drug research to find the magic molecule that will burn fat or reduce appetite. It is now clear that environmental chemicals can cause weight gain and play a major role in obesity.

Most researchers have largely ignored the effects of environmental chemicals on metabolism while some researchers have started connecting the dots linking toxins with the global obesity epidemic.

While research linking environmental toxins and impaired detoxification to obesity remains in its infancy, these factors can no longer be overlooked. Along with other lifestyle factors including stress reduction and exercise, avoiding toxic exposures, limiting sugar and refined carbohydrate intake, and enhancing detoxification pathways are all part of a long-term effective health and weight management strategy.