

Xenoestrogens

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Sperm counts down? Still not pregnant? Breast cancer on the rise? Chemical pollutants in our water and food may be the culprits.

It's not a sci-fi scenario, nor a far-off reality. Manmade estrogen- mimicking chemicals in our environment, known as xenoestrogens, are reaching the forefront of scientific research. Their effects on health are not just a concern--they're downright scary. Topics under investigation include infertility in both sexes, poor sexual development and testicular cancer in men, and endometriosis and breast cancer in women.

Hundreds of chemicals--found in pesticides, fuels, drugs and polycarbonate plastic baby bottles and food containers--either cause hormonal activity similar to estrogen, the human sex hormone, or alter the hormone's effects. In fact, the vast majority of the 70,000 chemicals currently in use have never been tested for health risks. Yet they are in our soils as pesticides, herbicides, fungicides and fertilizers. They are in our water because of rain erosion runoff from landfills and agricultural lands. They are in our food supply--in animals, fish and grains. On the upside, many researchers are investigating prevention-oriented strategies to limit exposure to these chemicals. There are also many ways that individuals can avoid the health hazards associated with xenoestrogens (see sidebars).

Declining Sperm Counts

Contrary to popular belief, natural estrogen plays important roles in both men and women. In males, estrogen imbalances influence the reproductive systems in myriad ways. Many scientists believe that estrogenic pollutants underlie some disturbing trends such as decreasing sperm count and function, decreasing testosterone production and testicular malformations. Since 1938, sperm counts of men in 21 countries have plunged by an average of 50 per cent, reported Danish endocrinologist Niels Skakkebaek in 1991. He also found that testicular cancer had tripled. A coincidence? Possibly, but Skakkebaek suspects that the culprit in both cases is from men's exposure (as fetuses and newborns) to estrogen-like chemicals found in their mother's blood and breastmilk.

Female Hormone Havoc

Evidence is accumulating that, even at very low concentrations and exposures, xenoestrogens can cause "hormone havoc" in women. And that's beginning to worry toxicologists (who study the effects of poisonous

substances on living organisms) and epidemiologists (specialists in epidemic diseases) because factors that increase women's lifetime exposure to estrogen can cause health problems such as infertility, breast cancer and endometriosis (a condition in which the tissue of the uterine lining grows outside the uterus on ovaries, ligaments and pelvic organs).

Dr. Devra Lee Davis, a toxicologist, and researchers from five medical centres have reviewed studies and concluded that estrogenic pollutants in our environment are inducing or promoting mammary cancers in lab animals. Both endocrinologists (specialists in disorders of endocrine glands such as ovaries and testes) and reproductive biologists have suggested that long-term exposure to xenoestrogens might underlie the apparent breast cancer epidemic in women.

A study in 1993 showed that rhesus monkeys developed endometriosis after being fed food that contained dioxin, a xenoestrogen, over a four-year period. A fact worth noting is that 70 years ago, when the environment was free of estrogenic pollutants, there were only 21 reported cases of endometriosis versus the current 5.5 million in North America alone.

The Good News

Just as there is good cholesterol and bad cholesterol, there is good estrogen and bad estrogen. As Dr. Davis puts it, "All estrogen is not equal." Diet is a key step in regulating the good and bad estrogen ratio. Eating organically raised food and drinking purified spring water instead of tap water are steps to cut out xenoestrogen exposure. Many edible plant foods, such as soy beans and flax seeds, contain phytoestrogens, plant-based substances that are well documented to promote good estrogen in the body. Phytoestrogens are also known to combat cancer.

Over the past decade, endocrinologist Leon Bradlow of Cornell University in New York has worked to identify the two enzyme systems in the body that break down estrogen. One enzyme makes a bad estrogen, known as 16-hydroxyestrone, and the other makes a good estrogen, known as 2-hydroxyestrone. Bradlow has found that manipulation of these enzyme systems is possible. For instance, vigorous exercise increases good estrogen production and decreases bad estrogen production. He also has conclusive evidence that compounds in brassica foods (broccoli, cauliflower, brussels sprouts) called indole-3 carbinols stimulate the production of the good estrogens for cancer protection.

Research shows that undergoing detoxification protocols is another way of eliminating these toxins from the body. Naturopathic physicians are

experts in detoxification and can guide you through an effective, health-enhancing program. While research is still being conducted and scientists are working at high speed to understand the effects of the estrogen-mimicking chemicals, it is up to the individual to take protective steps. Use these simple strategies and consider education your key to prevention.

Protective Supplements

- Vitamin C - 500 milligrams to 5 grams daily (If diarrhea occurs, cut back dosage.)
- Lipoic acid - 100 to 500 mg daily
- N-acetyl cysteine - 1,500 mg daily
- Herbs such as milk thistle, turmeric, dandelion, chelidonium and juniperus, which support the liver and kidneys

Worldwide Sperm Woes

In 2000, new research confirmed the results of the groundbreaking 1992 study that reported a large global decline in sperm count between 1938 and 1990 based on 61 reports from different countries around the world.

Sperm densities in the United States have decreased by an average of 1.5 million sperm per millilitre of collected sample, or 1.5 per cent per year. In European countries, the decline was at about twice the rate, at 3.1 per cent per year.

A 2000 study of 708 healthy Danish men aged 18 to 20 revealed extraordinarily low sperm counts. More than 40 per cent had sperm concentrations below 40 million sperm per millilitre. The median sperm concentration was 41 million per ml. Sperm count of normal, healthy young men is often above 100 million per ml. Recent data suggest that reproductive impairment appears when sperm counts drop beneath 40 million per ml.

In 1997 a Finnish team found the percentage of men with normal, healthy sperm production dropped from 56 per cent in 1981 to 27 per cent in 1991. This change was accompanied by an 11 per cent decrease in the average weight of the men's testes.

A 1996 study of 577 Scottish men reported significant declines in sperm counts over a 20-year period. Men born in the 1970s produced 24 per cent fewer motile sperm than men born in the 1950s.

Combating Xenoestrogens

- Avoid plastic packaging. Food can absorb chemicals from plastic containers. Buy in bulk, and bring your own cloth bags. Use glass containers whenever possible.
- Avoid hormone-containing meat, dairy and poultry by purchasing organic, vegetarian or free-range options from your natural food store.
- Eat organic foods whenever possible. "Certified organic" is your best bet for contaminant-free eating.
- Drink natural spring water. See **alive** #238 for information on home water treatment options.
- Increase phytoestrogen foods such as soy, flax seeds, green vegetables, fruits and nuts.
- Increase your intake of indole-3 carbinols by munching on broccoli, cauliflower and brussels sprouts.
- Detoxify your body

Detoxification Protocols

- Follow a two-day liquid fast followed by a five-day diet of only fruit, vegetables, rice and rice protein powder. An excellent referral book is *The 7-Day Detox Miracle* (Prima Publishing, 2001) by Peter Bennett, ND.
- Improve circulation and sweating via hydrotherapy, sauna and exercise.
- Avoid constipation by increasing water and fibre intake. Fresh fruits and vegetables provide the fibre and living enzymes needed for good digestion and elimination.
- Maximize liver function with specific foods such as celery, carrot, beets and parsley.
- Drink plenty of water to support the elimination of toxins through the kidneys. Reduce coffee, tea and cola drinks to help avoid dehydration.

Policing the Politics

Governments are slow to make changes in policing industries that continue to manufacture xenoestrogen chemicals. Why? Because they believe that many of the studies are still preliminary; as well, many of these chemicals have not been shown to be directly estrogenic.

To date, there are no government regulations set up to evaluate new or existing chemicals' abilities to mimic or affect reproductive hormones. What's more, the industries involved protect themselves. Funding by the chemical industry supports litigators, medical journals and researchers to protect the interests of these industries. This was evident, for instance, when the New England Journal of Medicine published a study refuting the link between organochlorines (chemical pollutants containing chlorine) and breast cancer. The study was found to be heavily funded by the Institute of Toxicology and Chemical Manufacturers Association, and the journal was subsequently criticized for violation of its own conflict of interest guidelines.

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