In 1991, about two dozen scientists from half a dozen countries published a consensus document that became known as The Wingspread Statement. (See RACHEL'S #263.) It said in part,

"We are certain of the following:

A large number of man-made chemicals that have been released into the environment, as well as a few natural ones, have the potential to disrupt the endocrine [hormone] system of animals, including humans. Among these are the persistent, bioaccumulative, organohalogen compounds that include some pesticides (fungicides, herbicides, and insecticides) and industrial chemicals, other synthetic products, and some metals.

Many wildlife populations are already affected by these compounds. The impacts include thyroid dysfunction [impaired or abnormal functioning] in birds and fish; decreased fertility in birds, fish, shellfish, and mammals; decreased hatching success in birds, fish and turtles; gross birth deformities in birds, fish and turtles; metabolic abnormalities [impaired or abnormal use of energy, manufacture of tissue, or handling of resulting wastes] in birds, fish, and mammals; behavioral abnormalities in birds; demasculinization and feminization in male fish, birds, and mammals; defeminization and masculinization of female fish and birds; and compromised [impaired] immune systems in birds and mammals.

"The patterns of effects vary among species and among compounds. Four general points can nonetheless be made: (1) the chemicals of concern may have entirely different effects on the embryo, fetus, or perinatal [meaning "near the time of birth," from the 28th week of pregnancy through the first week of life, in humans] organism than on the adult; (2) the effects are most often manifested in offspring, not in the exposed parent; (3) the timing of exposure in the developing organism is crucial in determining its character and future potential; and (4) although critical exposure occurs during embryonic development [from conception through the end of the second month of pregnancy], obvious manifestations [effects] may not occur until maturity.

"Laboratory studies corroborate the abnormal sexual development observed in the field and provide biological mechanisms to explain the observations in wildlife.

"Humans have been affected by compounds of this nature, too. The effects of DES (diethylstilbesterol), a synthetic therapeutic agent, like many of the compounds mentioned are estrogenic [meaning they act like estrogen, female sex hormone]. Daughters born to mothers who took DES now suffer increased rates of clear cell adenocarcinoma [cancer], various genital tract abnormalities, abnormal pregnancies, and some changes in immune responses. Both sons and daughters exposed in utero [while in the uterus] experience congenital anomalies of their reproductive system and reduced fertility. The effects seen in utero DES-exposed humans parallel those found in contaminated wildlife and laboratory animals, suggesting that humans may be at risk to those same environmental hazards as wildlife." The Wingspread Statement continued on, but those were the key points.

The main message of the Wingspread Statement -- that industrial chemicals can interfere with hormones and thus harm animals and humans -- wasn't totally new in 1991. Researchers in 1950 had demonstrated that the pesticide DDT could dramatically shrink the testicles of roosters, obviously interfering with their normal testosterone (male sex hormone).[4] In the early 1970s, researchers discovered to their horror that "occupational exposures to pesticides could diminish or destroy the fertility of workers." [EHP Vol. 108, No. 9 (September, 2000), pgs. 803-813.] In 1980, the term "environmental estrogens" was invented to describe industrial chemicals found in the environment that behaved like the female sex hormone, estrogen.[5]
an unrecognized world-wide pattern of harm from endocrine-disrupting chemicals, mainly in wildlife, but also plausibly in humans. The following year Theo Colborn, who had convened the original Wingspread meeting, published a volume of scientific evidence supporting the Wingspread conclusions.[6] As time passed, these findings electrified the scientific community, persuading thousands of researchers to look for similar effects in wildlife, laboratory animals, and humans all over the world.

In 1995 Theo Colborn, J.P Myers and Dianne Dumanoski published OUR STOLEN FUTURE, a scientific treatise on hormones written like a mystery story to reach a wide audience. OUR STOLEN FUTURE awoke the environmental community and focused enormous media attention on this emerging problem. The web site http://www.ourstolenfuture.org is still the best single place to learn about the latest hormone-disruptor studies. Because it was scientifically solid yet easily readable by the general public, OUR STOLEN FUTURE drove the chemical industry into a frenzy of denial and retribution. They hired PR attack dogs aiming to destroy the reputations of Colborn, Myers and Dumanoski, and NY TIMES science writer Gina Kolata began barking and snarling with the best of them (see RACHEL'S #486).

Now, 11 years after the Wingspread Statement, are these ideas ridiculed, held in disrepute, or simply ignored by the scientists who publish in EHP? Has the scientific community moved beyond "endocrine disruptors" or is this problem still being taken seriously? By way of answers to these questions, here are a few general statements from EHP:

"Endocrine-disrupting chemicals are among the most complex environmental health threats known today. By mimicking natural hormones such as estrogen and testosterone, these chemicals can interact with the body’s endocrine system and exert toxic effects that may lead to reproductive and developmental abnormalities or cancer.” [EHP Vol. 109, No. 9 (September 2001), pg. A420.]

"The developing organism is exquisitely sensitive to alterations in hormone function. In the early embryonic state, the gonads of human males and females are morphologically [physically] identical. Sexual differentiation [turning a fetus into a boy or a girl] begins under hormonal influence during the fifth and sixth weeks of fetal development, and thus alteration of hormone function during this highly sensitive period can have profound, often debilitating, consequences. The balance of estrogens and androgens [male hormones] is critical for normal development, growth, and functioning of the reproductive system. Although it is especially important during development, this balance is important throughout life for preservation of normal feminine or masculine traits.

"A number of environmental chemicals have actions that mimic or alter the normal sex steroid hormones. The fetus is especially vulnerable because this is the period of time when organs develop. If the normal balance between estrogens and androgens is disrupted, the result may be feminization of males, masculinization of females, birth defects of the reproductive organs, reduced fertility, and alteration of the expression of normal feminine or masculine personality traits, probably including sexual preference.”[7]

To be continued.


