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Op-Ed Columnist

It's Time to Learn From Frogs

By NICHOLAS D. KRISTOF

Some of the first eerie signs of a potential health catastrophe came as bizarre deformities in water animals, often in their sexual organs.

Frogs, salamanders and other amphibians began to sprout extra legs. In [heavily polluted Lake Apopka](#), one of the largest lakes in Florida, male alligators developed stunted genitals.

In the Potomac watershed near Washington, male smallmouth bass have rapidly transformed into “intersex fish” that display female characteristics. This was discovered only in 2003, but [the latest survey found](#) that more than 80 percent of the male smallmouth bass in the Potomac are producing eggs.

Now scientists are connecting the dots with evidence of increasing abnormalities among humans, particularly large increases in numbers of genital deformities among newborn boys. For example, up to 7 percent of boys are now born with undescended testicles, although this often self-corrects over time. And up to 1 percent of boys in the United States are now born with hypospadias, in which the urethra exits the penis improperly, such as at the base rather than the tip.

Apprehension is growing among many scientists that the cause of all this may be a class of chemicals [called endocrine disruptors](#). They are very widely used in agriculture, industry and consumer products. Some also enter the water supply when estrogens in human urine — compounded when a woman is on the pill — pass through sewage systems and then through water treatment plants.

These endocrine disruptors have complex effects on the human body, particularly during fetal development of males.

“A lot of these compounds act as weak estrogen, so that’s why developing males — whether smallmouth bass or humans — tend to be more sensitive,” said Robert Lawrence, a professor of environmental health sciences at the Johns Hopkins Bloomberg School of Public Health. “It’s scary, very scary.”

The scientific case is still far from proven, as chemical companies emphasize, and the uncertainties for humans are vast. But there is accumulating evidence that male sperm

count is dropping and that genital abnormalities in newborn boys are increasing. Some studies show correlations between these abnormalities and mothers who have greater exposure to these chemicals during pregnancy, through everything from hair spray to the water they drink.

Endocrine disruptors also affect females. It is now well established [that DES](#), a synthetic estrogen given to many pregnant women from the 1930s to the 1970s to prevent miscarriages, caused abnormalities in the children. They seemed fine at birth, but girls born to those women have been more likely to develop misshaped sexual organs and cancer.

There is also some evidence from both humans and monkeys that endometriosis, a gynecological disorder, is linked to exposure to endocrine disruptors. Researchers also suspect that the disruptors can cause early puberty in girls.

A rush of new research has also tied endocrine disruptors to obesity, insulin resistance and diabetes, in both animals and humans. For example, mice exposed in utero even to low doses of endocrine disruptors appear normal at first but develop excess abdominal body fat as adults.

Among some scientists, there is real apprehension at the new findings — nothing is more terrifying than reading *The Journal of Pediatric Urology* — but there hasn't been much public notice or government action.

This month, the Endocrine Society, an organization of scientists specializing in this field, issued a landmark 50-page statement. It should be a wake-up call.

“We present the evidence that endocrine disruptors have effects on male and female reproduction, breast development and cancer, prostate cancer, neuroendocrinology, thyroid, metabolism and obesity, and cardiovascular endocrinology,” [the society declared](#).

“The rise in the incidence in obesity,” it added, “matches the rise in the use and distribution of industrial chemicals that may be playing a role in generation of obesity.”

The Environmental Protection Agency [is moving toward screening](#) endocrine disrupting chemicals, but at a glacial pace. For now, these chemicals continue to be widely used in agricultural pesticides and industrial compounds. Everybody is exposed.

“We should be concerned,” said Dr. Ted Schettler of [the Science and Environmental Health Network](#). “This can influence brain development, sperm counts or susceptibility to cancer, even where the animal at birth seems perfectly normal.”

The most notorious example of water pollution occurred in 1969, when [the Cuyahoga River](#) in Ohio caught fire and helped shock America into adopting the Clean Water Act. Since then, complacency has taken hold.

Those deformed frogs and intersex fish — not to mention the growing number of deformities in newborn boys — should jolt us once again.

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