

US guidelines on way, but agreement on health impact of endocrine disrupters still lacking

Barbara Sibbald

In brief

NATIONAL AND INTERNATIONAL AGENCIES are looking at regulating certain chemicals that may have a detrimental effect on the endocrine system. But is there enough research to support such a move?

En bref

DES ORGANISMES NATIONAUX ET INTERNATIONAUX songent à régir certains produits chimiques ayant peut-être des effets délétères sur le système endocrinien. Existe-t-il toutefois suffisamment de recherches pour justifier une telle mesure?

After years of debate among environmentalists, scientists and the chemical industry, the US is finally taking action on controversial endocrine-modulating chemicals. But the debate is unlikely to end next March, when the Environmental Protection Agency (EPA) will release guidelines for screening and testing of these chemicals (screening will determine which chemicals are tested for their impact on the endocrine system).

Endocrine-modulating chemicals include some 50 compounds — pesticides, heavy metals, organochlorines, plasticizers and surfactants — that mimic or interfere with hormones, leading to reproductive disorders and other health problems. Although it is still unknown whether small quantities of these chemicals have an effect on humans, predators such as the peregrine falcon, certain fish downstream from Ontario pulp and paper mills, and alligators in a pesticide-ridden Florida lake have all experienced reproductive impairment and other defects because of endocrine-modulating chemicals.

Today, these endocrine disrupters are a hot topic. In addition to the US guidelines, the current review of the Canadian Environmental Protection Act will cover them. They were also a focus during preliminary negotiations surrounding June's global treaty on persistent organic pollutants in Montreal. A special report on endocrine disruption will also be debated in the European Parliament.

Regardless of where the debate is taking place, it centres on whether there's enough research to support regulating or banning certain chemicals. Opposing forces faced off during a recent media conference in Ottawa, where representatives from the World Wildlife Fund Canada (WWFC), the Canadian Chemical Producers' Association (CCPA) and scientists from Health Canada all agreed that more research is needed.

However, the WWFC says there's already enough preliminary evidence to support precautionary action. The CCPA, on the other hand, advocates waiting for "definitive scientific evidence." Eric Alexander, the CCPA's director of public affairs, says the industry is waiting for the guidelines from the EPA's Endocrine Disrupter Screening and Testing Advisory Committee, which includes representatives from both the World Wide Fund for Nature, the WWFC's parent body, and the chemical industry. "The eyes of the world are on the outcome of that process."

Julia Langer, director of the Wildlife Toxicology Program at the WWFC, says the guidelines could have "huge implications for industry," since up to 80 000 chemicals and combinations of chemicals could be screened. She is cautiously optimistic,



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At risk? The World Wildlife Fund Canada says children under age 2 can be harmed by chemicals released when they chew plastic



but notes that the EPA advisory committee will act only when there is consensus, and that may be difficult given its membership. "We wonder what the EPA will do in the event the committee [members] can't agree," says Langer.

Even when the guidelines are published, the debate will continue to focus on the quantity and quality of research. The WWFC maintains there is enough research to indicate that even low concentrations of endocrine-modulating chemicals may affect humans in utero or under age 2. It says even a single exposure to some of these compounds can trigger hyperactivity or a variety of human reproductive disorders, such as a decline in sperm count, as well as breast, testicular or prostate cancer.

And in practical terms . . .

The jury's still out on the effect of endocrine-modulating chemicals, but some physicians may wish to err on the side of caution when they advise patients. "It's better to anticipate problems than to be painted into a corner," argues Dr. Tee Guidotti, an Edmonton internist who founded the Canadian Association of Physicians for the Environment.

A World Wildlife Fund of Canada (WWFC) pamphlet, *Reducing Your Risk: a Guide to Avoiding Hormone-Disrupting Chemicals*, contains 22 pages of information and tips (contact the WWFC at 1-800-26-PANDA). The WWFC's Julia Langer says physicians have a key role to play. "Part of the doctor's responsibility," she says, "is to get people out of their paralysis [by encouraging them to take action]."

She says that attempts should be made to reduce the use of plastics, which contain phthalates and bisphenol A. Rats exposed to these chemicals in the womb have smaller testicles and reduced sperm production. The WWFC's other advice:

- Don't microwave food in plastic containers or plastic wrap; use heat-resistant glass or ceramic containers instead.
- Don't microwave breast milk or formula in plastic bottles.
- Avoid plastic cling wrap and minimize its direct contact with food.
- Discourage children from chewing on plastic.
- Wash your hands after playing golf or handling equipment, since pesticides are often heavily used on golf courses.
- Don't eat fish more than 3 times a week, since it may contain toxic chemicals.
- Eat smaller fish (because they contain fewer contaminants).
- Avoid eating fatty animal products.

Canaries in the coal mine

Langer says that various types of wildlife have served as "canaries in the coal mine" with respect to endocrine-modulating chemicals. The documented effects on these animals have proved that these compounds do affect reproductive and other endocrine-based functions. She says thousands of chemicals have been introduced this century — polychlorinated biphenyls (PCBs) arrived on the scene in 1929, and DDT was first produced in 1938 — and none has been explicitly tested for intergenerational endocrine effects. "Chemicals have been assumed innocent until proven guilty," says Langer. "We are only now starting to see the effects of in-utero exposure. The weight of evidence [indicates that we should] take precautionary action. It would be irresponsible not to act — the blood crisis is a perfect example of what can happen when you fail to act."

Dr. Terry Fenge, director of research for the Inuit Circumpolar Conference, agrees with that assessment. "A significant amount of the science is in and it tells us there are problems that must be addressed," he said during the media conference. Drawing from 6 years of research funded by the federal government's Northern Contaminants Program, Fenge said endocrine disrupters are no longer solely an environmental issue — they are also a public health problem. He cited a 1997 study of Inuit women in the Northwest Territories, which revealed that about 60% had PCB levels 5 times above what the government calls "levels of concern."

But Dr. Warren Foster, head of the Reproductive Toxicology Section at Health Canada's Environmental Health Centre, points to conflicting evidence and frustration with studies that were not reproducible. For instance, participants in a study on declining sperm counts were all patients at a fertility clinic, and thus did not represent the general population. Foster is preparing a state-of-the-knowledge report and inventory of all international research concerning contaminants and health outcomes. "A lot of basic research remains to be done," he says.

Dr. Tee Guidotti, an Edmonton internist who founded and serves as treasurer of the Canadian Association of Physicians for the Environment, says physicians don't need to wait for more research. "It's fairly clear [that endocrine-modulating chemicals] do have an effect at high levels, and in rather exceptional circumstances they create problems at low levels — one example is the Beluga whale. We know the potential is there. We know it could be happening, we're just not sure it is. And it is not premature to do things that are simple." (See sidebar.)

But, he adds quickly, taking this sort of precaution is a "far cry from saying it's a public emergency." ?