



More research needed on endocrine disrupters

There has been an established increase in reproductive disorders and other hormonal diseases, according to a recent European Environment Agency (EEA) report. The report documents a growing body of research that indicates this increase is influenced by growing levels of chemical pollutants in the environment known as endocrine disrupting chemicals (EDCs).

Concern about chemicals interfering with the functioning of hormones has been growing amongst both the scientific and the policy communities due to the increasing amount of human and wildlife evidence. Although a causative role for EDCs has not been established, the trends in endocrine diseases have changed in a manner concurrent with the expansion of the chemical industry. As such these early warning signals should be taken seriously to stimulate further research and environmental protection. In 1996 the Weybridge meeting was the first comprehensive discussion on EDCs and since then over €150 million of EU funds were allocated to research endocrine disrupters. In 2006 there was the follow-up meeting (Weybridge +10) and the EEA commissioned this report to compile and discuss the papers presented at this meeting and update them with subsequent research findings.

The reviews of current knowledge clearly show an increase in human male reproduction problems in many countries such as testicular cancer and poor semen quality. In addition laboratory studies have shown that the reproductive systems of a broad range of vertebrates (e.g. fish) and some invertebrates (e.g. snails) are susceptible to EDCs. In some fish there is evidence linking exposure to chemicals with reproductive disorders and dysfunction and this has been associated with exposure to effluent from sewage treatment works.

The possible impact on male reproduction has spurred investigation into the possible effects of EDCs on other endocrine diseases. For example, breast cancer and endometriosis are both disorders influenced by levels of oestrogens which EDCs affect. Several studies report associations with high blood levels of organochlorine pesticides with breast cancer. In addition there are studies that show associations between decreases in thyroid hormones (that influence growth and metabolism) and exposure to polychlorinated biphenyls (PCBs), which could be linked to increases in obesity and diabetes. There are also reports of negative associations between prenatal PCB exposure and measures of childhood cognitive functioning. PCBs have a number of uses that could lead to environmental exposure, for example as flame-retardants, sealants and in flexible plastic coatings of wires.

The report highlighted numerous research gaps. There is a need for human epidemiological studies on the association between exposure to EDCs and thyroid cancer, obesity and diabetes. In general there needs to be development of appropriate epidemiological frameworks to include the possibility of multiple causality (i.e. exposure to EDCs through multiple routes, including food, inhalation and uptake through the skin) and low-dose effects (where adverse effects identified at lower exposure levels are greater than those at higher exposure levels).

More studies on wildlife are needed especially in the context of the general decline in biodiversity and on the impacts of EDCs on invertebrates. Probably the largest research gaps and priorities for research are measuring and understanding exposure to EDCs in the environment. Research also needs to consider latent effects, occurring as a result of exposure during early life, and the impact of chemical mixtures or the cocktail effect. A better understanding of the exposure to EDCs in the environment and the risk of endocrine disease is needed to inform policy to protect humans and wildlife from harm caused by these chemicals.

Source: European Environment Agency (2012) The impacts of endocrine disrupters on wildlife, people and their environments - The Weybridge +15 (1996-2011) report. *Luxembourg: Publications of the European Union*. Doi: 10.2800/41462. Downloadable from <http://www.eea.europa.eu/publications/the-impacts-of-endocrine-disrupters>.

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