

## EDCs: regulation still lagging behind evidence

Endocrine-disrupting chemicals (EDCs; also known as endocrine disruptors) are chemicals that alter endocrine function by mimicking, blocking, or interfering with the production, metabolism, or action of hormones in the body. Found in foods, packaging materials, cosmetics, drinking water, and consumer products such as clothing, furnishings, and toys, EDCs are ubiquitous in our environment and have been linked to serious health conditions such as obesity, diabetes, hormone-dependent cancers, reproductive disorders, neurodevelopmental disease, and intellectual impairment. Human exposure to EDCs can occur via ingestion (food, dust, and water), inhalation (gases and particles), absorption through the skin, and by transfer from pregnant women to the fetus or child via the placenta or breast milk. Moreover, the effects of EDC exposures are not limited to the generation exposed because of intergenerational and transgenerational epigenetic inheritance. With EDCs estimated to cost the USA \$340 billion annually (2.33% of GDP) and the European Union (EU) €163 billion (1.28%) due to health-care costs and lost productivity, the serious threat posed by EDCs to health and society, of both current and future generations, cannot be underestimated.

In March, 2019, a new report on EDCs entitled “Endocrine disruptors: from scientific evidence to human health protection”, commissioned by the European Parliament’s Committee on Petitions, was published. Aptly beginning with the quote “To repair is twenty times more difficult than to prevent” (Henri-Frédéric Amiel; 1821–1881), the report, written by Barbara Demeneix (Muséum National d’Histoire Naturelle, Paris, France) and Rémy Slama (Institut National de la Santé et de la Recherche Médicale, Grenoble, France), provides a blueprint for stronger regulation of EDCs within the EU to minimise human exposure and protect citizen health. The report includes a review of the scientific literature linking EDC exposures with adverse outcomes (cell, animal, and epidemiological studies), the extent of the exposure, associated health consequences, and costs. Existing EU regulations on EDCs are also discussed, along with recommendations to strengthen them. Although the EU has been at the forefront of EDC policy and legislation, recognising EDCs as a health and environmental hazard, scientists and public interest groups have long argued

that regulatory action has been too little, too late, and have advocated for stricter regulation of EDCs within the EU. Among the recommendations made in this new report is a call for harmonised, cross-sector (ie, food, additives, food-packaging materials, cosmetics, consumer products, plant protection products, biocides) regulations to minimise human and environmental exposure to EDCs; a definition of EDCs that is valid across all sectors; acceleration of EDC test development and validation; consistent management of EDCs across all sectors; surveillance of production, use, and exposure to EDCs; and identification of research priorities to plug current knowledge gaps. Crucially, the authors argue that the evidence base now justifies EDCs being considered as a special class of hazard, with a level of concern equivalent to that of carcinogenic, mutagenic, and reprotoxic substances. If implemented, the recommendations would lead to greater understanding of the hazards and safety of many substances, ultimately improving health and better protecting the environment.

Individuals can limit their exposure to EDCs by taking steps such as avoiding personal care products containing named or suspected EDCs and opting for glass instead of plastic. However, the pervasiveness of EDCs in daily life and the fact that EDCs do not exist in isolation—often rather as complex mixtures with unknown and cumulative effects—coupled with the fact that exposure does not have to have occurred in one’s own lifetime, means that the totality of the lifetime exposure burden (ie, exposome) is difficult both to quantify and to manage on an individual level. As such, EDCs represent not just a public health problem or indeed a global health problem, but a planetary health problem. Calls to better regulate EDCs and minimise human exposure must be heard and acted on by governments and policymakers. The role of EDCs as potential drivers of the burgeoning epidemic of non-communicable diseases (NCDs) must also be recognised and taken into account in NCD prevention strategies. Health and environment are not isolated entities: they go hand in hand. Although the opening quote to the EU report alludes to the challenge ahead in repairing the damage already done by EDCs, it is perhaps heartening to also remember the proverb “better late than never” (Geoffrey Chaucer; circa 1386).

■ [The Lancet Diabetes & Endocrinology](#)



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For more on **endocrine-disrupting chemicals** see <https://www.endocrine.org/topics/edc>

For more on the **cost of endocrine-disrupting chemicals** see **Articles** *Lancet Diabetes Endocrinol* 2016; 4: 996–1003

For more on the **EU Parliament report on endocrine disruptors** see [http://www.europarl.europa.eu/RegData/etudes/STUD/2019/608866/IPOL\\_STU\(2019\)608866\\_EN.pdf](http://www.europarl.europa.eu/RegData/etudes/STUD/2019/608866/IPOL_STU(2019)608866_EN.pdf)