

**Breast Cancer UK comments on the European Commission's public consultation on pharmaceuticals in the environment**

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*The EU public consultation on pharmaceuticals in the environment is part of a study aimed at supporting the development of a strategic approach to pharmaceuticals in the environment, to help the EU achieve the United Nations Sustainable Development Goals, in particular that of clean Water and Sanitation, as well as objectives in EU legislation such as the "good status" objective in the Water Framework Directive. Pharmaceuticals can enter the environment during their production, use and disposal. The need for a strategic approach has been prompted by concern about risks to the environment itself, and possibly to human health via the environment. Any actions to address those risks must also ensure that humans and animals can continue to benefit from the appropriate use of pharmaceuticals and that the competitiveness of EU healthcare systems is maintained. This consultation aims to collect feedback and further information from stakeholders on their perception of the problem, the need for action, and on some of the actions that could be prioritised.*

Breast Cancer UK is an independent charity working to prevent breast cancer by tackling the environmental and chemical causes of the disease. Oestrogen is linked to breast cancer risk. We are concerned that oestrogenic active pharmaceutical ingredients (oestrogenic APIs) in the environment can increase breast cancer risk, especially via drinking water, posing a risk to public health.

Breast Cancer UK is concerned about increased breast cancer risk due to the contamination of drinking water and food by the synthetic oestrogen, ethinyl oestradiol (EE2), which is used in the contraceptive pill, in hormone replacement therapy (HRT), as well as in livestock production and aquaculture (Aris et al. 2014). It is highly resistant to degradation in wastewater sludge and in the environment, and accumulates in sediments and concentrates up the food chain. A recent review summarises evidence which points to a causal relationship between oestrogens in the environment and breast cancer incidence (Adeel et al. 2017). Other pharmaceuticals (or pharmaceutical metabolites) may also act as EDCs and increase breast cancer risk or lead to other detrimental health effects, including those that impair development or reproduction. For example, ibuprofen affects thyroid and gonadal endocrine systems which may affect male reproduction (Archer et al. 2017; Kristensen et al 2018) and metformin causes intersex in fish, and is thought to act as an EDC in mammals (Niemuth et al. 2018). Breast Cancer UK believes that the most important action area is waste water treatment and reuse, to reduce public exposure via drinking water, and to protect the environment. We would prioritise promoting more effective treatment of waste water, manure and sludge, and support the development of greener pharmaceuticals which are broken down more readily in treatment plants.

Breast Cancer UK would welcome the inclusion of pharmaceutical and veterinary products under REACH. We suggest a centralised database documenting the environmental impacts of human and veterinary APIs, with the inclusion of the most relevant APIs in a priority substances list, and powers to restrict the use and control the fate of APIs already known to pose a risk to human health and the environment. We recommend the revision of the Waste Framework Directive (2008/98/EC), to include pharmaceuticals in Annex III, and that the Sewage Sludge Directive, and the Soil Framework Directive, are amended to require monitoring and establish protective limit values for relevant pharmaceutical substances such as EE2.

