Burden of disease and costs of exposure to endocrine disrupting chemicals in the European Union: an updated analysis - DTU Orbit (10/12/2018)

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A previous report documented that endocrine disrupting chemicals contribute substantially to certain forms of disease and disability. In the present analysis, our main objective was to update a range of health and economic costs that can be reasonably attributed to endocrine disrupting chemical exposures in the European Union, leveraging new burden and disease cost estimates of female reproductive conditions from accompanying report. Expert panels evaluated the epidemiologic evidence, using adapted criteria from the WHO Grading of Recommendations Assessment, Development and Evaluation Working Group, and evaluated laboratory and animal evidence of endocrine disruption using definitions recently promulgated by the Danish Environmental Protection Agency. The Delphi method was used to make decisions on the strength of the data. Expert panels consensus was achieved for probable (>20%) endocrine disrupting chemical causation for IQ loss and associated intellectual disability; autism; attention deficit hyperactivity disorder; endometriosis; fibroids; childhood obesity; adult obesity; adult diabetes; cryptorchidism; male infertility, and mortality associated with reduced testosterone. Accounting for probability of causation, and using the midpoint of each range for probability of causation, Monte Carlo simulations produced a median annual cost of €163 billion (1.28% of EU Gross Domestic Product) across 1000 simulations. We conclude that endocrine disrupting chemical exposures in the EU are likely to contribute substantially to disease and dysfunction across the life course with costs in the hundreds of billions of Euros per year. These estimates represent only those endocrine disrupting chemicals with the highest probability of causation; a broader analysis would have produced greater estimates of burden of disease and costs.

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