

Scientific evidence justifies the inclusion of endocrine disruptors, mixture effects and nanomaterials in EU legislation – we need action now

By Lone Mikkelsen and Eline Aggerholm Kristensen, Policy officers -chemicals, Danish Ecological Council

Keywords: Chemicals legislation, hazardous chemicals, health effects

Six years after its adoption, the European Commission is reviewing the REACH regulation. This replaces a real revision in 2012 and 2013. If appropriate, the Commission will propose amendments to the regulation based on the review outcomes.

The Danish Ecological Council urges, that EU chemicals legislations are strengthened upon three areas; endocrine disrupting chemicals (EDCs), mixture effects, and nanomaterials.

EDCs are currently not covered by any procedure of authorization and mixture effects are not sufficiently accounted for since relevant legislations mainly consider toxicity of single chemicals. Before June 2013 the EU must decide whether there is a threshold below which EDCs are not harmful. If not, EDCs must be included in the full authorization procedure of REACH – like for instance CMRs. Many studies indicate that such a threshold does not exist for many EDCs¹. Additionally, it has been found that current legislations have a number of limitations when it comes to nanomaterials, including unclear terminology and inadequate registration and risk assessment, due to the small size.

It is crucial that these issues are included in all relevant EU chemicals legislation (e.g. REACH, RoHS and the Water Framework Directive) as the body of evidence showing that these groups of chemicals may contribute to health and environmental problems is growing. EDCs and mixture effects are interfering with the hormone system, which control many biological functions, including reproduction and metabolism. In addition, EDCs have been increasingly linked to a range of health problems including altered brain development giving rise to behavioral or attention deficit disorders^{2,3}, cancers (particularly breast, prostate and testicular cancer)^{4,5}, diabetes⁶, reproductive disorders⁷, and impaired fertility⁸. Furthermore, scientific studies indicate that certain

¹ Vandenberg LN et al.; Hormones and Endocrine-Disrupting Chemicals: Low-Dose Effects and Nonmonotonic Dose Responses. *Endocrine Reviews* 33: 378–455, 2012

² Ishido et al., 2007, Mesencephalic neurodegeneration in the orally administered bisphenol A-caused hyperactive rats. *Toxicol Lett.*, 173:66–72

³ Jurewicz and Hanke, 2011, Exposure to phthalates: Reproductive outcome and children health. A review of epidemiological studies. *International Journal of Occupational Medicine and Environmental Health*, 24:115–141

⁴ Soto and Sonnenschein, 2010, Environmental causes of cancer: endocrine disruptors as carcinogens. *Endocrinology*, 6:363–370

⁵ Jenkins et al., 2007, Prenatal TCDD exposure predisposes for mammary cancer in rats. *Reprod. Toxicol.*, 23:391–396

⁶ Lim et al., 2008, Association of Brominated Flame Retardants with Diabetes and Metabolic Syndrome in the U.S. Population, 2003–2004. *Diabetes Care*, 31:1802–1807

⁷ Markey et al., 2005, Long-term effects of fetal exposure to low doses of the xenoestrogen bisphenol-A in the female mouse genital tract. *Biol Reprod.* 72:1344–1351

nanomaterials increase the risk of e.g. cardiovascular disease where the cardiovascular effect of the nanomaterial is dependent of size, surface area, and chemical composition.

Unless action is taken, exposure to EDCs and nanomaterials will continue to increase, with human exposure arising through a wide range of everyday consumer products.

In three “Call for Action” Policy papers The Danish Ecological Council calls on the EU to act on 22 specific points concerning endocrine disrupting chemicals, mixture effects and nanomaterials.

⁸ Cohn et al., 2003, DDT and DDE exposure in mothers and time to pregnancy in daughters. Lancet, 361:2205-2206