

Technical University of Denmark



## **”Recycled paper for food packaging: burden of disease methodology to link sustainability and safety“**

**Boriani, Elena; Pieke, Eelco Nicolaas; Hald, Tine; Pires, Sara Monteiro; Boberg, Julie; Jakobsen, Lea Sletting**

*Published in:*

Book of Abstracts, Sustain 2017

*Publication date:*

2017

*Document Version*

Publisher's PDF, also known as Version of record

[Link back to DTU Orbit](#)

*Citation (APA):*

Boriani, E., Pieke, E. N., Hald, T., Pires, S. M., Boberg, J., & Jakobsen, L. S. (2017). ”Recycled paper for food packaging: burden of disease methodology to link sustainability and safety“. In Book of Abstracts, Sustain 2017 [U-5] Technical University of Denmark (DTU).

## **DTU Library**

Technical Information Center of Denmark

---

### **General rights**

Copyright and moral rights for the publications made accessible in the public portal are retained by the authors and/or other copyright owners and it is a condition of accessing publications that users recognise and abide by the legal requirements associated with these rights.

- Users may download and print one copy of any publication from the public portal for the purpose of private study or research.
- You may not further distribute the material or use it for any profit-making activity or commercial gain
- You may freely distribute the URL identifying the publication in the public portal

If you believe that this document breaches copyright please contact us providing details, and we will remove access to the work immediately and investigate your claim.

## “Recycled paper for food packaging: burden of disease methodology to link sustainability and safety“

Elena Boriani\*<sup>1,2</sup>, Eelco Pieke<sup>1</sup>, Tine Hald<sup>1</sup>, Sara Pires<sup>1</sup>, Julie Boberg<sup>1</sup>, Lea Sletting Jakobsen<sup>1</sup>

<sup>1</sup> National Food Institute, Technical University of Denmark, Kgs. Lyngby, Denmark

<sup>2</sup> Global Decision Support Initiative, Technical University of Denmark, Kgs. Lyngby, Denmark

Corresponding author: Elena Boriani, email : ebor@food.dtu.dk

**Background:** Semi-quantitative analytical experimental studies<sup>1</sup> applied to recycled paper used as food contact materials have shown presence of endocrine –disrupting chemicals in pizza boxes made from recycled paper, and provided evidence that some of these chemicals will likely migrate from the packaging into the food. Therefore, the sustainability of recycling should be associated to safety because of the probable source of exposure to endocrine –disrupting chemicals from recycled food contact material which could lead to adverse health effects.

**Purpose:** The aim of this study is to estimate the burden of disease due to exposure to endocrine-disrupting chemicals present in food packaging and discuss the possible link between this study and a life cycle assessment of pizza boxes made from recycled paper. We consider, as example of endocrine-disrupting chemical, the high molecular weight phthalate DEHP (1,2-bis(2-ethylhexyl) benzene-1,2-dicarboxylate) from the consumption of commercially prepared (take-away) pizza in Denmark and estimate disease burden in terms of disability adjusted life years, DALYs<sup>1,2</sup>.

**Methodology:** We applied a burden of disease model consisting of three submodules (Fig1).



Fig 1: The three modules of the burden of disease model

**Expected outcomes:** Our estimates will:

- Develop an approach to estimate the disease burden of endocrine-disrupting chemicals, filling in a knowledge gap at national and international levels.
- Allow for the integration of health impact assessment of a food contact material with the environmental impact and sustainability approach.
- Facilitate the evaluation and comparisons of different packaging alternatives by taking into account both human health and environmental impact of the material.

<sup>1</sup>Pieke EN, Granby K, Trier X, Smedsgaard J. A framework to estimate concentrations of potentially unknown substances by semi-quantification in liquid chromatography electrospray ionization mass spectrometry, In *Analytica Chimica Acta*, Volume 975, 2017, Pages 30-41, ISSN 0003-2670,

<sup>2</sup>Poenaru D, Pemberton J, Frankfurter C et al (2013) Establishing disability weights for congenital paediatric surgical disease: a cross-sectional, multi-modal study. *Lancet* 381:S115, <sup>3</sup>Salomon JA, Murray CJL. Estimating health state valuations using a multiple method protocol. In: *Summary Measures of Population Health Concepts, Ethics, Measurement and Applications*. Geneva: World Health Organization; 2002. p. 487–99.