

# Substance Flow Analysis of Wastes Containing Polybrominated Diphenyl Ethers - DTU Orbit (09/11/2017)

## Substance Flow Analysis of Wastes Containing Polybrominated Diphenyl Ethers: The Need for More Information and for Final Sinks

The present article examines flows and stocks of Stockholm Convention regulated pollutants, commercial penta- and octabrominated diphenyl ether (cPentaBDE, cOctaBDE), on a city level. The goals are to (1) identify sources, pathways, and sinks of these compounds in the city of Vienna, (2) determine the fractions that reach final sinks, and (3) develop recommendations for waste management to ensure their minimum recycling and maximum transfer to appropriate final sinks. By means of substance flow analysis (SFA) and scenario analysis, it was found that the key flows of cPentaBDE stem from construction materials. Therefore, end-of-life (EOL) plastic materials used for construction must be separated and properly treated, for example, in a state-of-the-art municipal solid waste (MSW) incinerator. In the case of cOctaBDE, the main flows are waste electrical and electronic equipment (WEEE) and, possibly, vehicles. Most EOL vehicles are exported from Vienna and pose a continental, rather than a local, problem. According to the modeling, approximately 73% of cOctaBDE reached the final sink MSW incinerator, and 17% returned back to consumption by recycling. Secondary plastics, made from WEEE, may thus contain significant amounts of cOctaBDE; however, uncertainties are high. According to uncertainty analysis, the major cause is the lack of reliable values regarding cOctaBDE concentrations in European WEEE categories 3 and 4, including cathode ray tube monitors for computers and televisions. We recommend establishing a new, goal-oriented data set by additional analyses of waste constituents and plastic recycling samples, as well as establishing reliable mass balances of polybrominated diphenyl ethers' flows and stocks by means of SFA.

### General information

State: Published

Organisations: Department of Environmental Engineering, Vienna University of Technology

Authors: Vyzinkarova, D. (Intern), Brunner, P. H. (Ekstern)

Number of pages: 12

Pages: 900-911

Publication date: 2013

Main Research Area: Technical/natural sciences

### Publication information

Journal: Journal of Industrial Ecology

Volume: 17

Issue number: 6

ISSN (Print): 1088-1980

Ratings:

BFI (2017): BFI-level 1

Web of Science (2017): Indexed yes

BFI (2016): BFI-level 1

Scopus rating (2016): CiteScore 3.14 SJR 1.244 SNIP 1.32

Web of Science (2016): Indexed yes

BFI (2015): BFI-level 1

Scopus rating (2015): SJR 1.44 SNIP 1.689 CiteScore 3.82

Web of Science (2015): Indexed yes

BFI (2014): BFI-level 1

Scopus rating (2014): SJR 1.628 SNIP 1.706 CiteScore 3.07

Web of Science (2014): Indexed yes

BFI (2013): BFI-level 2

Scopus rating (2013): SJR 1.171 SNIP 1.405 CiteScore 2.47

ISI indexed (2013): ISI indexed yes

Web of Science (2013): Indexed yes

BFI (2012): BFI-level 2

Scopus rating (2012): SJR 1.03 SNIP 1.529 CiteScore 2.24

ISI indexed (2012): ISI indexed yes

Web of Science (2012): Indexed yes

BFI (2011): BFI-level 2

Scopus rating (2011): SJR 1.031 SNIP 1.228 CiteScore 2.13

ISI indexed (2011): ISI indexed yes

BFI (2010): BFI-level 2

Scopus rating (2010): SJR 0.891 SNIP 1.329

Web of Science (2010): Indexed yes

BFI (2009): BFI-level 2

Scopus rating (2009): SJR 1.192 SNIP 1.411

BFI (2008): BFI-level 2

Scopus rating (2008): SJR 1.226 SNIP 1.624

Web of Science (2008): Indexed yes

Scopus rating (2007): SJR 1.165 SNIP 1.686

Scopus rating (2006): SJR 1.039 SNIP 1.531

Scopus rating (2005): SJR 0.614 SNIP 1.503

Web of Science (2005): Indexed yes

Scopus rating (2004): SJR 1.164 SNIP 1.946

Scopus rating (2003): SJR 0.61 SNIP 1.131

Scopus rating (2002): SJR 0.433 SNIP 1.147

Scopus rating (2001): SJR 0.744 SNIP 1.591

Scopus rating (2000): SJR 1.17 SNIP 1.573

Scopus rating (1999): SJR 0.609 SNIP 1.31

Original language: English

Industrial ecology, Polybrominated diphenyl ether (PBDE), Recycling, Sink, Uncertainty, Waste electrical and electronic equipment (WEEE)

DOIs:

10.1111/jiec.12054

Source: dtu

Source-ID: u:8818

Publication: Research - peer-review › Journal article – Annual report year: 2013