

## Quantification of methane emissions from 15 Danish landfills using the mobile tracer dispersion method - DTU Orbit (08/11/2017)

### Quantification of methane emissions from 15 Danish landfills using the mobile tracer dispersion method

Whole-site methane emissions from 15 Danish landfills were assessed using a mobile tracer dispersion method with either Fourier transform infrared spectroscopy (FFIR), using nitrous oxide as a tracer gas, or cavity ring-down spectrometry (CRDS), using acetylene as a tracer gas. The landfills were chosen to represent the different stages of the lifetime of a landfill, including open, active, and closed covered landfills, as well as those with and without gas extraction for utilisation or flaring. Measurements also included landfills with biocover for oxidizing any fugitive methane. Methane emission rates ranged from 2.6 to 60.8 kg h<sup>-1</sup>, corresponding to 0.7-13.2 g m<sup>-2</sup> d<sup>-1</sup>, with the largest emission rates per area coming from landfills with malfunctioning gas extraction systems installed, and the smallest emission rates from landfills closed decades ago and landfills with an engineered biocover installed. Landfills with gas collection and recovery systems had a recovery efficiency of 41-81%. Landfills where shredder waste was deposited showed significant methane emissions, with the largest emission from newly deposited shredder waste. The average methane emission from the landfills was 154 tons y<sup>-1</sup>. This average was obtained from a few measurement campaigns conducted at each of the 15 landfills and extrapolating to annual emissions requires more measurements. Assuming that these landfills are representative of the average Danish landfill, the total emission from Danish landfills were calculated at 20,600 tons y<sup>-1</sup>, which is significantly lower than the 33,300 tons y<sup>-1</sup> estimated for the national greenhouse gas inventory for 2011. (C) 2014 Published by Elsevier Ltd.

### General information

State: Published

Organisations: Department of Environmental Engineering, Residual Resource Engineering, Chalmers University of Technology

Authors: Mønster, J. (Intern), Samuelsson, J. (Ekstern), Kjeldsen, P. (Intern), Scheutz, C. (Intern)

Number of pages: 10

Pages: 177-186

Publication date: 2015

Main Research Area: Technical/natural sciences

### Publication information

Journal: Waste Management

Volume: 35

ISSN (Print): 0956-053X

Ratings:

BFI (2017): BFI-level 2

Web of Science (2017): Indexed yes

BFI (2016): BFI-level 2

Scopus rating (2016): CiteScore 4 SJR 1.354 SNIP 2.044

Web of Science (2016): Indexed yes

BFI (2015): BFI-level 2

Scopus rating (2015): SJR 1.739 SNIP 2.256 CiteScore 4.33

Web of Science (2015): Indexed yes

BFI (2014): BFI-level 2

Scopus rating (2014): SJR 1.777 SNIP 2.482 CiteScore 3.43

Web of Science (2014): Indexed yes

BFI (2013): BFI-level 1

Scopus rating (2013): SJR 1.822 SNIP 2.435 CiteScore 3.39

ISI indexed (2013): ISI indexed yes

Web of Science (2013): Indexed yes

BFI (2012): BFI-level 1

Scopus rating (2012): SJR 1.611 SNIP 2.184 CiteScore 2.91

ISI indexed (2012): ISI indexed yes

Web of Science (2012): Indexed yes

BFI (2011): BFI-level 1

Scopus rating (2011): SJR 1.698 SNIP 2.085 CiteScore 2.99

ISI indexed (2011): ISI indexed yes

Web of Science (2011): Indexed yes

BFI (2010): BFI-level 1

Scopus rating (2010): SJR 1.555 SNIP 1.78

Web of Science (2010): Indexed yes  
BFI (2009): BFI-level 1  
Scopus rating (2009): SJR 1.502 SNIP 1.899  
Web of Science (2009): Indexed yes  
BFI (2008): BFI-level 2  
Scopus rating (2008): SJR 1.378 SNIP 2.13  
Web of Science (2008): Indexed yes  
Scopus rating (2007): SJR 1.035 SNIP 1.767  
Web of Science (2007): Indexed yes  
Scopus rating (2006): SJR 1.046 SNIP 1.749  
Web of Science (2006): Indexed yes  
Scopus rating (2005): SJR 1.059 SNIP 1.65  
Scopus rating (2004): SJR 1.289 SNIP 1.939  
Web of Science (2004): Indexed yes  
Scopus rating (2003): SJR 0.847 SNIP 1.269  
Web of Science (2003): Indexed yes  
Scopus rating (2002): SJR 0.561 SNIP 0.874  
Scopus rating (2001): SJR 0.456 SNIP 0.696  
Web of Science (2001): Indexed yes  
Scopus rating (2000): SJR 0.271 SNIP 0.451  
Scopus rating (1999): SJR 0.262 SNIP 0.479  
Original language: English  
methane emission, shredder waste, gas collection efficiency, greenhouse gas inventory  
DOIs:  
10.1016/j.wasman.2014.09.006  
Source: FindIt  
Source-ID: 273040187  
Publication: Research - peer-review › Journal article – Annual report year: 2015