Lateral gas transport in soil adjacent to an old landfill: factors governing emissions and methane oxidation

Field investigations of lateral gas transport and subsequent emissions in soil adjacent to an old landfill in Denmark have been conducted during a one-year period. A significant seasonal variation in the emissions with high carbon dioxide and low methane fluxes in the summer (May to October) was observed. This was attributed to methane oxidation. Diurnal measurements during a drop in barometric pressure showed that the fluxes of landfill gas changed dramatically within a very short time. The concentrations and the soil moisture content in the upper part of the soil profile had significant influence on the fluxes, as did the distance from the landfill border, temperature, barometric pressure and the pressure gradient. Statistical analyses proved that soil moisture described the largest part of the variation. No methane at all emitted during the summer. Calculations and isotope analyses showed that very high fractions of the laterally migrating methane were oxidised.

General information
State: Published
Organisations: Department of Environmental Engineering, Department of Informatics and Mathematical Modeling
Authors: Christophersen, M. (Intern), Kjeldsen, P. (Intern), Holst, H. (Intern), Chanton, J. (Ekstern)
Pages: 595-612
Publication date: 2001
Main Research Area: Technical/natural sciences

Publication information
Journal: Waste Management and Research
Volume: 19
Issue number: 6
ISSN (Print): 0734-242X
Ratings:
BFI (2018): BFI-level 1
Web of Science (2018): Indexed yes
BFI (2017): BFI-level 1
Scopus rating (2017): SNIP 0.92 SJR 0.519
Web of Science (2017): Indexed Yes
BFI (2016): BFI-level 1
Scopus rating (2016): CiteScore 1.76 SJR 0.673 SNIP 1.091
BFI (2015): BFI-level 1
Scopus rating (2015): SJR 0.623 SNIP 0.893 CiteScore 1.53
Web of Science (2015): Indexed yes
BFI (2014): BFI-level 1
Scopus rating (2014): SJR 0.733 SNIP 1.097 CiteScore 1.28
Web of Science (2014): Indexed yes
BFI (2013): BFI-level 1
Scopus rating (2013): SJR 0.58 SNIP 0.925 CiteScore 1.17
ISI indexed (2013): ISI indexed yes
Web of Science (2013): Indexed yes
BFI (2012): BFI-level 1
Scopus rating (2012): SJR 0.874 SNIP 1.053 CiteScore 1.4
ISI indexed (2012): ISI indexed yes
Web of Science (2012): Indexed yes
BFI (2011): BFI-level 1
Scopus rating (2011): SJR 1.028 SNIP 0.858 CiteScore 1.33
ISI indexed (2011): ISI indexed yes
Web of Science (2011): Indexed yes
BFI (2010): BFI-level 1
Scopus rating (2010): SJR 0.662 SNIP 0.957
Web of Science (2010): Indexed yes
BFI (2009): BFI-level 1
Scopus rating (2009): SJR 0.869 SNIP 1.251
Web of Science (2009): Indexed yes
BFI (2008): BFI-level 1
Scopus rating (2008): SJR 0.537 SNIP 0.967
Web of Science (2008): Indexed yes
Scopus rating (2007): SJR 0.359 SNIP 0.697
Web of Science (2007): Indexed yes
Scopus rating (2006): SJR 0.317 SNIP 0.759
Web of Science (2006): Indexed yes
Scopus rating (2005): SJR 0.501 SNIP 0.72
Web of Science (2005): Indexed yes
Scopus rating (2004): SJR 0.478 SNIP 0.828
Web of Science (2004): Indexed yes
Scopus rating (2003): SJR 0.613 SNIP 0.822
Web of Science (2003): Indexed yes
Scopus rating (2002): SJR 0.44 SNIP 0.675
Web of Science (2002): Indexed yes
Scopus rating (2001): SJR 0.678 SNIP 1.163
Web of Science (2001): Indexed yes
Scopus rating (2000): SJR 0.517 SNIP 0.897
Web of Science (2000): Indexed yes
Scopus rating (1999): SJR 0.56 SNIP 0.817
Original language: English
barometric pressure, methane emission, lateral migration, seasonal variation, carbon dioxide emission, methane oxidation, Denmark, field investigation, Landfill gas
Links:
Source: orbit
Source-ID: 43442
Publication: Research - peer-review › Journal article – Annual report year: 2001