

## Phytoscreening and phytoextraction of heavy metals at Danish polluted sites using willow and poplar trees - DTU Orbit (09/11/2017)

### Phytoscreening and phytoextraction of heavy metals at Danish polluted sites using willow and poplar trees

The main purpose of this study was to determine typical concentrations of heavy metals (HM) in wood from willows and poplars, in order to test the feasibility of phytoscreening and phytoextraction of HM. Samples were taken from one strongly, one moderately, and one slightly polluted site and from three reference sites. Wood from both tree species had similar background concentrations at 0.5 mg kg<sup>-1</sup> for cadmium (Cd), 1.6 mg kg<sup>-1</sup> for copper (Cu), 0.3 mg kg<sup>-1</sup> for nickel (Ni), and 25 mg kg<sup>-1</sup> for zinc (Zn). Concentrations of chromium (Cr) and lead (Pb) were below or close to detection limit. Concentrations in wood from the highly polluted site were significantly elevated, compared to references, in particular for willow. The conclusion from these results is that tree coring could be used successfully to identify strongly heavy metal-polluted soil for Cd, Cu, Ni, Zn, and that willow trees were superior to poplars, except when screening for Ni.

Phytoextraction of HMs was quantified from measured concentration in wood at the most polluted site. Extraction efficiencies were best for willows and Cd, but below 0.5 % over 10 years, and below 1% in 10 years for all other HMs.

### General information

State: Published

Organisations: Department of Environmental Engineering, Environmental Chemistry

Authors: Nielsen, M. A. (Intern), Trapp, S. (Intern), Rein, A. (Intern)

Number of pages: 10

Pages: 8992-9001

Publication date: 2014

Main Research Area: Technical/natural sciences

### Publication information

Journal: Environmental Science and Pollution Research

Volume: 21

Issue number: 15

ISSN (Print): 0944-1344

Ratings:

BFI (2017): BFI-level 1

Web of Science (2017): Indexed yes

BFI (2016): BFI-level 1

Scopus rating (2016): CiteScore 2.66 SJR 0.813 SNIP 1.048

Web of Science (2016): Indexed yes

BFI (2015): BFI-level 1

Scopus rating (2015): SJR 0.879 SNIP 1.02 CiteScore 2.5

Web of Science (2015): Indexed yes

BFI (2014): BFI-level 1

Scopus rating (2014): SJR 0.949 SNIP 1.178 CiteScore 2.57

Web of Science (2014): Indexed yes

BFI (2013): BFI-level 1

Scopus rating (2013): SJR 0.879 SNIP 1.163 CiteScore 2.34

ISI indexed (2013): ISI indexed yes

Web of Science (2013): Indexed yes

BFI (2012): BFI-level 1

Scopus rating (2012): SJR 1.017 SNIP 1.232 CiteScore 2.29

ISI indexed (2012): ISI indexed yes

Web of Science (2012): Indexed yes

BFI (2011): BFI-level 1

Scopus rating (2011): SJR 1.13 SNIP 1.1 CiteScore 2.3

ISI indexed (2011): ISI indexed yes

Web of Science (2011): Indexed yes

BFI (2010): BFI-level 1

Scopus rating (2010): SJR 1.084 SNIP 1.045

Web of Science (2010): Indexed yes

BFI (2009): BFI-level 1

Scopus rating (2009): SJR 1.022 SNIP 1.014

Web of Science (2009): Indexed yes

BFI (2008): BFI-level 1

Scopus rating (2008): SJR 0.925 SNIP 1.019

Web of Science (2008): Indexed yes

Scopus rating (2007): SJR 0.809 SNIP 0.993

Web of Science (2007): Indexed yes

Scopus rating (2006): SJR 0.446 SNIP 0.598

Scopus rating (2005): SJR 0.576 SNIP 0.952

Web of Science (2005): Indexed yes

Scopus rating (2004): SJR 0.781 SNIP 1.001

Web of Science (2004): Indexed yes

Scopus rating (2003): SJR 0.556 SNIP 0.75

Web of Science (2003): Indexed yes

Scopus rating (2002): SJR 0.606 SNIP 0.936

Scopus rating (2001): SJR 0.56 SNIP 0.633

Web of Science (2001): Indexed yes

Scopus rating (2000): SJR 0.692 SNIP 0.855

Scopus rating (1999): SJR 0.849 SNIP 0.953

Original language: English

Extraction efficiencies, Phytoremediation, Phytotechnologies, Plant uptake, Soil contamination, Toxic elements, Tree core sampling, Wood

Electronic versions:

Endelig udgave.pdf

DOIs:

10.1007/s11356-013-2085-z

Links:

<http://link.springer.com/article/10.1007%2Fs11356-013-2085-z>

#### **Bibliographical note**

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Source: dtu

Source-ID: u::8789

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