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Publication date:
2012

Document Version
Publisher's PDF, also known as Version of record

[Link back to DTU Orbit](#)

Citation (APA):

Pazarbasi, M. B., Sørensen, S. R., & Aamand, J. (2012). 4-chloro-2-methylphenoxy-acetic acid (MCPA) concentration and nutrient amendment impact the centimetre-scale vertical variability of mineralization potential around the groundwater table. Abstract from GOODWATER ITN, München/ Neuherberg, Germany.

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**RESEARCH TRAINING FOR GOOD EUROPEAN
GROUNDWATER RESOURCES**

Grant Agreement Number: 212683
Under the Seventh Framework Programme
Support for Training and Career Development of Researchers (Marie Curie)
Networks for Initial Training (ITN)

12 – 14 March, 2012

Final Workshop

At the Helmholtz Zentrum München / Neuherberg

4-chloro-2-methylphenoxy-acetic acid (MCPA) concentration and nutrient amendment impact the centimeter-scale vertical variability of mineralization potential around the groundwater table

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The effects of 4-chloro-2-methylphenoxy-acetic acid (MCPA) concentration and nutrient amendment on the measured centimeter-scale vertical variability of mineralization potential was investigated in the aquifer sediments surrounding the groundwater table. The mineralization potentials were more variably distributed at high concentration (mg kg^{-1}) than at low concentration ($\mu\text{g kg}^{-1}$). The greater number of 20% carboxyl labeled-MCPA mineralizing samples was observed than that of ring labeled-MCPA mineralizing samples at low concentration. The cold soil extract (CSE) and BA as additional substrates decreased the time needed to achieve 20% carboxyl labeled-MCPA mineralization around the groundwater table. However, only a few samples reached 20% mineralization at high concentration with or without additional substrates. The ring labeled-MCPA mineralization was stimulated through CSE and BA for a few sediments at low concentration and even fewer at high concentration.