

LIST OF READINGS



June 2008

BACKGROUND READING

If you not have followed courses covering topics like contaminated sites, contaminant hydrogeology, transport and fate processes in soil, groundwater and surface water, ecotoxicology and exposure you should prepare yourself on this subject. This could be done by reading parts of the background literature listed below. Journal papers, notes and reports included in the background literature are available online via the course webpage (www.racs.er.dtu.dk), while the books should be available at your local university library.

CONTAMINATED SITES, HYDROGEOLOGY, TRANSPORT, SORPTION, MULTIPHASE FLOW

⇒ Fetter, C.W. (1999): **Contaminant Hydrogeology**. Prentice Hall. Upper Saddle River, nj07458.

or

⇒ Bedient, P.B.; Rifai, H.S.; Newell, C.J. (1999): **Ground Water Contamination – Transport and Remediation**. 2. Edition. Prentice Hall PTR, Upper Saddle River, USA (ISBN 0-13-013840-1).

BIODEGRADATION, CONTAMINANT TRANSPORT MODELS

⇒ Alvarez, A.J.J.; Illman, A.W. (2006): **Biodegradation Principles, Bioremediation and Natural Attenuation**. John Wiley & sons, New Jersey.

REDOX CHARACTERIZATION

⇒ Christensen, T.H.; Bjerg, P.L.; Banwart, S; Jakobsen, R.; Heron, G.; Albrechtsen, H.J. (2000): **Characterization of Redox Conditions in Groundwater Contaminant Plumes**. *Journal of Contaminant Hydrology*, Vol. 45, pp. 165-241. Available online at www.racs.er.dtu.dk.

ECOTOXICOLOGY AND EXPOSURE

Ecotoxicology will be covered in the course, but basic understanding corresponding to the following could be useful:

⇒ Baun, A.; Nyholm, N.; Kusk, K.O. (2008): **Environmental Risk Assessment of Chemicals**. DTU course material. Department of Environmental Engineering, Technical University of Denmark. Available online at www.racs.er.dtu.dk.

- ⇒ Trapp, S. & McFarlane, J.C. (eds.) (1995): **Plant Contamination. Modeling and Simulation of Organic Chemical Processes**. Boca Raton, Florida, Lewis Publishers.
- ⇒ Swartjes, F.A. (2007): **Human Health Risks Due to the Consumption of Vegetables from Contaminated Sites**. RIVM report 711701040. Available online at www.racs.er.dtu.dk.

COURSE NOTES

Literature for Course Modules 1-3 + 5-9 is available for download at the course webpage (www.racs.er.dtu.dk). No literature is required for Modules 0, 4 and 10. During Module 0 at the course all lecture presentations, exercises, student abstracts, etc. will be handed out. Please note that most of the literature stated below is primary literature for the course, but some is secondary. Distinction: primary literature = should be read; secondary literature = can be read if time and interest permits.

Module 0

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Module 1

- Note 1A - **Primary** Cushman, D.J.; Driver, K.S.; Ball, S.D. (2001): **Risk Assessment for Environmental Contamination: an Overview of the Fundamentals and Application of Risk Assessment at Contaminated Sites**. *Canadian Journal of Civil Engineering*, Vol. 28 (Suppl. 1), pp. 155–162.
- Note 1B - **Primary** Bjerg, P.L. (2008): **Dispersion in aquifers**. Lecture Note. Department of Environmental Engineering, Technical University of Denmark.

Module 2

- Note 2A - **Primary** Mendoza, C.A.; Johnson, R.L.; Gilham, R.W. (1996): **Vapor Migration in the Vadose Zone**. Chapter 6 (pp. 179-201) in *Dense Chlorinated Solvents*, eds. Pankow, J.F.; Cherry, J.A., Waterloo Press.
- Note 2B - **Secondary** Grathwohl, P. & Halm, D. (eds.) (1999): **Guideline for Groundwater Risk Assessment at Contaminated Sites (GRACOS)**. European Commission (EVK1-CT-1999-00029).

Module 3

- Note 3A - **Primary** Reichenberg, F. & Mayer, P. (2006): **Two Complementary Sides of Bioavailability: Accessibility and Chemical Activity of Organic Contaminants in Sediments and Soils**. *Environmental Toxicology and Chemistry*, Vol. 25, No. 5, pp. 1239–1245.
- Note 3B - **Primary** Christensen, J.B. & Christensen, T.H. (1999): **Complexation of Cd, Ni, and Zn by DOC in Polluted Groundwater: A Comparison of Approaches Using Resin Exchange, Aquifer Material Sorption, and Computer Speciation Models**

(WHAM and MINTEQA2). *Environmental Science & Technology*, Vol. 33, pp. 3857-3863.

Note 3C - Schofield, R.K. (1955): **Can a Precise Meaning Be Given to “Available” Soil Phosphorus?** *Soils and Fertilizers*, Vol. 18, No. 5, pp. 373-375.
Primary

Module 4

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Module 5

Note 5A - Trapp, S. (2006): **Exposure and Health Risk Assessment for Uptake of Neutral Organic Chemicals into Plants.** Lecture Note. Department of Environmental Engineering, Technical University of Denmark.
Primary

Note 5B - Trapp, S. & Karlson, U. (2001): **Aspects of Phytoremediation of Organic Pollutants.** *Journal of Soils and Sediments*, Vol. 1, pp. 1-7.
Secondary

Note 5C - JSS-Quiz (2004): **Six Mental Exercises to Check your Fitness in Soil Chemistry.** *Journal of Soils and Sediments*, Vol. 4, No. 1, p. 1.
Secondary

Module 6

Note 6A - Bjerg, P.L.; Rügge, K.; Pedersen, J.K.; Christensen, T.H. (1995): **Distribution of redox sensitive groundwater quality parameters downgradient of a landfill (Grindsted, Denmark).** *Environmental Science & Technology*, Vol. 29, pp. 1387-1394.
Primary

Note 6B - Broholm, M.M.; Hunkeler, D.; Abe, Y.; Jeannotat, S.; Aravena, R.; Westergaard, C.; Jacobsen, C.S.; Just, N.; Rokkjær, A.; Bjerg, P.L. (2007): **Integrated Plume Characterisation Including Isotopic Fractionation and Molecular Biological Tools Documents Degradation of DCE and VC under Iron Reducing Conditions in a Deep Aquifer.** In *Proceedings of GQ07: Securing Groundwater Quality in Urban and Industrial Environments, 6th International Groundwater Quality Conference* held in Fremantle, Western Australia, 2-7 December 2007.
Primary

Note 6C - Troldborg, M.; Lemming, G.; Binning, P.J.; Tuxen, N.; Bjerg, P.L. (2008): **Risk Assessment and Prioritisation of Contaminated Sites on the Catchment Scale.** Submitted to *Journal of Contaminant Hydrology*.
Primary

*Also Note 1B is relevant for this module.

Module 7

Note 7A - Baun, A.; Ledin, A.; Reitzel, L.A.; Bjerg, P.L.; Christensen, T.H. (2004): **Xenobiotic Organic Compounds in Leachates from Ten Danish MSW Landfills – Chemical Analysis and Toxicity Tests.** *Water Research*, Vol. 38, pp. 3845–3858.
Primary

Note 7B - Fürhacker, M. (2008): **The Water Framework Directive – Can We Reach the Target?** *Water Science & Technology*, Vol. 57.1, pp. 9-16.
Primary

Module 8

Note 8 - **Primary** **Summary of the Soil and Groundwater Contamination and Remediation Strategy at Kærgård Klit Plantage, Denmark.** Lecture Note. Department of Environmental Engineering, Technical University of Denmark.

Module 9

Note 9A - **Primary** Einarson, M.D. & Mackay, D.M. (2001): **Predicting Impacts of Groundwater Contamination.** *Environmental Science & Technology*, Vol. 35, No. 3, pp. 66-73.

Note 9B - **Secondary** Chapman, S.W.; Parker, B.L.; Cherry, J.A.; Aravena, R.; Hunkeler, D. (2007): **Groundwater–surface water interaction and its role on TCE groundwater plume attenuation.** *Journal of Contaminant Hydrology*, Vol. 91, pp. 203–232.

Note 9C - **Secondary** Hunt, R.J.; Coplen, T.B.; Haas, N.L.; Saad, D.A.; Borchardt, M.A. (2005): **Investigating surface water–well interaction using stable isotope ratios of water.** *Journal of Hydrology*, Vol. 302, pp. 154–172.

Note 9D - **Secondary** Berkhoff, K. (2008): **Spatially Explicit Groundwater Vulnerability Assessment to Support the Implementation of the Water Framework Directive – a Practical Approach with Stakeholders.** *Hydrology and Earth System Sciences*, Vol. 12, pp. 111–122.

* Also Note 6C is relevant for this module.

Module 10

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