

CURRICULUM VITAE

Dr. Christa S. McArdell (formerly Bürgisser)

Work address:

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Nationality: Swiss
Two children

AREAS OF EXPERTISE

- Input and fate of organic contaminants, e.g. pharmaceuticals, from urban settlements in the aquatic environment.
- Wastewater treatment processes and strategies for the removal of organic micropollutants: conventional and advanced treatment with ozone and activated carbon, decentralized treatment in hospitals.
- Development of analytical techniques for the determination of organic pollutants and transformation products in sewage and ambient waters.

EDUCATION

- 1994
Ph.D. SWISS FEDERAL INSTITUTE OF TECHNOLOGY (ETH) ZURICH, INSTITUTE OF TERRESTRIAL ECOLOGY.
PhD thesis: Transport of nonlinearly sorbing chemicals in chromatographic columns; adsorption on cristobalite.
Advisors: Prof. H. Sticher, Prof. M. Borkovec, Dr. P. Behra
- 1992 Diploma
Höheres Lehramt ETH ZURICH, DEPT. OF SOCIAL SCIENCES AND HUMANITIES AND DEPT. OF CHEMISTRY. (high school teaching certificate in Chemistry)
Course work: mechanics and psychology of teaching, training of teaching chemistry.
- 1990
Chemistry Diploma ETH ZURICH, INSTITUTE OF TECHNICAL CHEMISTRY.
Thesis: Synthesis of a β -sulfatoethylsulfon reactive dye and FTIR spectroscopy studies of the binding to cellulose.
Advisors: Prof. P. Rys and Dr. U. Meyer.
Specialized course work: organic chemistry, polymer chemistry, dye chemistry, environmental chemistry.

RESEARCH AND PROFESSIONAL EXPERIENCE

- 1996-today EAWAG (SWISS FEDERAL INSTITUTE OF AQUATIC SCIENCE AND TECHNOLOGY), DEPARTMENT OF ENVIRONMENTAL CHEMISTRY, DÜBENDORF.
Senior Scientist and Group Leader
- 2001-2005 EAWAG, DUEBENDORF AND SWISS NATIONAL SCIENCE FOUNDATION (SNF), BERN.
Associate with Prof. R. Schwarzenbach and Prof. B. Wehrli (research counselors): evaluation of SNF-proposals in the field of natural sciences.
- 1994-1996 THE JOHNS HOPKINS UNIVERSITY, DEPARTMENT OF GEOGRAPHY AND ENVIRONMENTAL ENGINEERING, BALTIMORE, USA.
Postdoctoral Research Associate (with Prof. A. T. Stone): researched the speciation of organic chelating agents in soils and aquifer sediments and their effect on toxic metal migration.
- 1990-1994 ETH ZURICH, INSTITUTE OF TERRESTRIAL ECOLOGY.
Graduate Research Assistant: studied adsorption and transport phenomena of contaminants in soil.
- 1989-1990 ETH ZURICH, INSTITUTE OF TECHNICAL CHEMISTRY.
Research Assistant: synthesized a reactive dye and investigated the binding of the dye to cellulose with FTIR spectroscopy.

TEACHING EXPERIENCE

- 2000-2001 ETH ZURICH, DEPARTMENT OF CIVIL, ENVIRONMENTAL AND GEOMATIC ENGINEERING.
Lecturer: developed and coordinated a new laboratory course "laboratory for environmental engineers".
- 1997-2000 ETH ZURICH, DEPARTMENT OF ENVIRONMENTAL SCIENCES.
Lecturer: taught analytical environmental chemistry.
Laboratory Course Coordinator: organized laboratory course in environmental chemistry.
- 1990-1994 ETH ZURICH, DEPARTMENT OF ENVIRONMENTAL SCIENCES.
Laboratory Assistant: taught laboratory courses in chemistry and soil science.
- 1989-1992 MINERVA, ZURICH, AND KANTONSSCHULE RYCHENBERG, WINTERTHUR.
Lecturer: taught high school level organic and inorganic chemistry.

PROJECTS UND COLLABORATION*Collaboration in interdisciplinary projects:*

- 2017-2020 FOEN project "Characterization of wastewater treatment with suspect und non-target screening for the evaluation of ozonation and activated carbon treatment".
- 2017-2019 Eawag DF and Wasserversorgung Zürich (WVZ) project "Formation and fate of transformation products in water treatment with ozone and biological post-treatment (TRANSFO3RM)".
- 2016-2020 AVG project "Pilot scale advanced treatment of wastewater with granular activated carbon (GAC) and combined with ozonation (O3/GAC) at WWTP Glarnerland".
- 2015-2016 Eawag DF project RESIST-Flow "Understanding resistance gene flow during passage of wastewater treatment".
- 2015-2016 Eawag DF project VUNA 2.0 "Post-treatment of urine with GAC".
- 2014-2017 VSA/FOEN project "Wastewater treatment with GAC and ozone/GAC at WWTP Furt-Bülach".
- 2013-2014 Sciex fellowship project MICROZO "Fate of organic micropollutants in advanced treatment of wastewater with ozone". Collaboration Ewa Felis and Korneliusz Miksch, Gliwice, Poland.
- 2014-2015 Swiss FOEN-UTF-project ReTREAT at WWTP Neugut "Biological post-treatment after ozonation".
- 2012-2015 EU Project DEMEAU "Demonstration of promising technologies to address emerging pollutants in water and wastewater". <http://demeau-fp7.eu/>
- 2010-2014 Bill & Melinda Gates Foundation project VUNA "Nutrient harvesting in South Africa".
www.eawag.ch/vuna/
- 2007-2012 InterReg IVB project PILLS "Pharmaceutical Input and Elimination from Local Sources". www.pills-project.eu/
- 2007-2010 National project "Input and Elimination of Pharmaceuticals and Disinfectants from Hospital Wastewater". Funded by Swiss State Secretariat for Education and Research (SER)/COST, FOEN, cantons.
- 2006-2009 EU project NEPTUNE "Concepts and Processes for Optimization and Upgrading Municipal Wastewater and Sludge Treatment". www.eu-neptune.org/
- 2006-2010 Swiss FOEN-project Mikropoll II "Strategies to reduce micropollutants in the environment".
- 2005-2008 EU project RECLAIM WATER "Water reclamation technologies for safe artificial groundwater recharge".
- 2001-2006 SNF NFP-49 project HUMABRA "Occurrence of Human-use Antibiotics and Antibiotic Resistance in the Aquatic Environment".
- 2000-2006 Eawag project NOVAQUATIS "Combining Urban Water Management, Nutrient Recycling and Modern Farming".
- 2000-2004 EU project POSEIDON "Assessment of Technologies for the Removal of Pharmaceuticals and Personal Care Products in Sewage and Drinking Water Facilities to Improve the Indirect Water Reuse".

Activities in committees:

- 2015-7.-10. Sept. 2015 Board Member of IWA Specialized Group "Assessment and Control of Hazardous Substances in water". Member of Organizing Committee for SETAC GLB conference, Zurich, Switzerland.
- 2014-2018 Member of Management Committee in COST Action ES1403 "Emerging challenges and opportunities in wastewater reuse (NEREUS)".
- 2012-2015 stakeholder and expert consultant for BMBF project sauber+ "Innovative Konzepte und Technologien für die separate Behandlung von Abwasser aus Einrichtungen des Gesundheitswesens".
- 2011-2015 Member of Advisory Board for InterReg IVB Project noPILLS "no pills in waters".
- 2006-2013 Member of working group "Micropollutants" in CIPEL "Commission Internationale pour la protection des eaux du Léman".
- 16-20 June 2013 Member of Organizing Committee for IWA conference MicroPol&Ecohazard, Zurich, Switzerland.
- 25-27 June 2012 Member of Organizing Committee for American Water Resources Association Specialty Conference: Contaminants of Emerging Concern in Water Resources, Denver, USA.
- 2009-2012 Member of Management Committee in COST Action TD0803 "Detecting evolutionary hot spots of antibiotic resistances in Europe (DARE)".
- 11-15 Sept. 2011 Member of Scientific Committee and Session chair for 13th EuCheMS International Conference on Chemistry and the Environment, Zürich, Switzerland.
- 2006 -2010 Leader of Swiss working group "Hospital wastewater treatment".
- 2006-2009 Member of working group "Identification, sources and fluxes" in COST Action 636 "Xenobiotics in the Urban Cycle".
- 2004-2005 Member of Swiss working group "Organic trace contaminants in the groundwater of the Limmat River valley", AWEL, Switzerland.
- 28.-30. March 2004 Member of Canadian working group "Technical Workshop for Pharmaceuticals and Personal Care Products in the Environment". Health Canada. Niagara-on-the-Lake, Ontario, Canada.
- 1999-2003 Member of Swiss working group "Veterinary pharmaceuticals in the environment".

Supervision:

- 16 Research Assistants: *Simon Mangold, Isabelle Köpping, Ewa Borowska, Rebekka Teichler, Annette Remmele, Birge Oezel, Slavica Ibric, Andrea Schnellmann, Anita Wittmer, Stepham Köpke, Karin Treyer, Mirjam Koller, David Weissbrodt, Thomas Hinterbuchner, Holger Lutze, Angela Thomsen*
- 6 PostDocs: *Rebekka Gulde, Jennifer Schollée, Marc Bourgin, Keisuke Kuroda, Lubomira Kovalova, Holger Kuch*
- 3 PhD students: *Sung Eun Lim, Ewa Borowska, Anke Göbel (Thesis awarded with the Otto-Jaag-Gewässerschutzpreis, 2005).*
- 3 external PhD students, committee member: *Angela Doreen Rodayan (McGill University, Montreal, Canada), Sylvain Coutu (EPFL, Lausanne), Do Manh Cuong (GIST, Gwangju, Korea)*
- 15 Master, Bachelor or Diploma students: *Rebekka Schwaninger, Birge Oezel, Annika Wössner, Tatiana Shchipkova, Guillaume Tissot, Inge van Driezum, René Itten, Laura Blanc, Anita Wittmer, Martina Hagenbuch, Carolin Frank, Judith Schenzel, Thomas Hinterbuchner, Hong Zhao, Michel Haller*
- 4 Trainees: *Halua Pinto de Magalhães, Marco Kipf, Johanna Reiner, Nina Schittli*
- 4 Technical collaborators: *Andreas Maccagnan, Josef Asmin, Elvira Keller, Eva Molnar*
- 1 Research Associate: *Norriel S. Nipales, Dr. chem. University Manila.*

AWARDS

- 2014 / 2015 / 2016 *Thomson Reuters:* nomination as a highly cited researcher, ranking among the top 1% for most cited documents in the field of environment/ecology (among 137 scientific researchers).
<http://thomsonreuters.com/press-releases/062014/Scientific-Minds-2014>
<http://hcr.stateofinnovation.thomsonreuters.com>
- 1996-1999 *Swiss Federal Fellowship for the Promotion of Young Researchers:* three year scientific research position at the Swiss Federal Institute of Technology, located at EAWAG in Dübendorf.
- 1994-1995 *Swiss National Science Foundation Fellowship:* one year postdoctoral research support at The Johns Hopkins University in Baltimore, USA.

PUBLICATIONS peer-reviewed

- Bourgin M., Borowska E., Helbing J., Hollender J., Kaiser H.-P., Kienle C., McArdell C.S., Simon E., von Gunten U. (2017) Effect of operational and water quality parameters on conventional ozonation and the advanced oxidation process O₃/H₂O₂: Kinetics of micropollutant abatement, transformation product and bromate formation in a surface water. *Wat. Res.* revised.
- Kuroda K., Itten R., Kovalova L., Ort C., Weissbrodt D., McArdell C.S. (2016) Hospital-use pharmaceuticals in Swiss waters modeled at high spatial resolution. *Env. Sci. Technol.*, 50, 4742–4751, DOI: 10.1021/acs.est.6b00653.
- Singer H.P., Wössner A.E., McArdell C.S., Fenner K. (2016) Rapid screening for exposure to “non-target” pharmaceuticals from wastewater effluents by combining HRMS-based suspect screening and exposure modeling. *Env. Sci. Technol.* 50, 6698–6707, DOI: 10.1021/acs.est.5b03332.
- Borowska E., Bourgin M., Hollender J., Kienle C., McArdell C.S., von Gunten, U. (2016) Oxidation of cetirizine, fexofenadine and hydrochlorothiazide during ozonation: Kinetics and transformation products. *Wat. Res.*, 94, 350–362, dx.doi.org/10.1016/j.watres.2016.02.020.
- Bischel H.N., Özel Duygan B.D., Strande L., McArdell C.S., Udert K.M., Kohn T. (2015) Pathogens and pharmaceuticals in source-separated urine in eThekweni, South Africa. *Wat. Res.* **85**, 57–65, dx.doi.org/10.1016/j.watres.2015.08.022
- Wittmer A., Heisele A., McArdell C.S., Böhler M., Longree P., Siegrist H. (2015) Decreased UV absorbance as an indicator of micropollutant removal efficiency in wastewater treated with ozone. *Wat. Sci. Technol.* **71.7**, 980–985, doi:10.2166/wst.2015.053.
- Udert K.M., Buckley C.A., Wächter M., McArdell C.S., Kohn T., Strande L., Zöllig H., Fumasoli A., Oberson A., Etter B. (2015). Technologies for the treatment of source-separated urine in the eThekweni Municipality. *Water South Africa* **41**(2), 212–221, dx.doi.org/10.4314/wsa.v41i2.06
- Hollender J., Bourgin M., Fenner K.B., Longrée P., McArdell C.S., Moschet C., Ruff M., Schymanski E.L., Singer H.P. (2014) Exploring the Behaviour of Emerging Contaminants in the Water Cycle using the Capabilities of High Resolution Mass Spectrometry. *Chimia* **68**(11), 1–6, doi:10.2533/chimia.2014.1.
- Lee Y., Kovalova L., McArdell C.S., von Gunten U. (2014) Prediction of micropollutant elimination during ozonation of a hospital wastewater effluent. *Wat. Res.* **64**, 134–148, dx.doi.org/10.1016/j.watres.2014.06.027.
- Helwig K., Hunter C., MacLachlan J., McNaughtan M., Roberts J., Cornelissen A., Dagot C., Evenblij H., Klepizewski K., Lyko S., Nafu I., McArdell C.S., Venditti S., Pahl O. (2013) Micropollutant Point Sources in the Built Environment: Identification and Monitoring of Priority Pharmaceutical Substances in Hospital Effluents. *J. Environ. Anal. Toxicol.* **3**(4), 177. doi:10.4172/2161 - 0525.1000177.
- Kovalova L., Siegrist H., von Gunten U., Eugster J., Hagenbuch M., Wittmer A., Moser R., McArdell C.S. (2013) Elimination of Micropollutants during Post-Treatment of Hospital Wastewater with Powdered Activated Carbon, Ozone, and UV. *Environ. Sci. Technol.* **47**, 7899–7908, dx.doi.org/10.1021/es400708w.
- Michael I., Rizzo L., McArdell C.S., Manaia C.M., Merlin C., Schwartz T., Dagot C., Fatta-Kassinos D. (2013) Urban wastewater treatment plants as hotspots for the release of antibiotics in the environment: A review. *Wat. Res.* **47**, 957–995, dx.doi.org/10.1016/j.watres.2012.11.027.
- Huntscha S., Singer H.P., McArdell C.S., Frank C.E., Hollender J. (2012) Multiresidue analysis of 88 polar organic micropollutants in ground, surface and wastewater using online mixed-bed multilayer solid-phase extraction coupled to high performance liquid chromatography–tandem mass spectrometry. *J. Chromatogr. A* **1268**, 74–83, dx.doi.org/10.1016/j.chroma.2012.10.032
- Kovalova L., Siegrist H., Singer H., Wittmer A., McArdell C.S. (2012) Hospital Wastewater Treatment by Membrane Bioreactor: Performance and Efficiency for Organic Micropollutant Elimination. *Environ. Sci. Technol.* **46**, 1536–1545, dx.doi.org/10.1021/es203495d.
- Joss A., Baenninger C., Foa P., Koepke S., Krauss M., McArdell C.S., Rottermann K., Wei Y., Zapata A., Siegrist H. (2011) Water reuse: >90% water yield in MBR/RO through concentrate recycling and CO₂ addition as scaling control. *Wat. Res.* **45**, 6141–6151.
- Lienert J., M. Koller, J. Konrad, C.S. McArdell, N. Schuwirth (2011) Multiple-criteria decision analysis reveals high stakeholder preference to remove pharmaceuticals from hospital wastewater. *Environ. Sci. Technol.* **45**(9): 3848–3857.

- Escher B.I., Baumgartner R., Koller M., Treyer K., Lienert J., McArdell C.S. (2011) Environmental toxicology and risk assessment of pharmaceuticals from hospital wastewater, *Water Research* **45**, 75-92.
- Hollender J., Zimmermann S.G., Koepke S., Krauss M., McArdell C.S., Ort C., Singer H., Von Gunten U., Siegrist H. (2009) Elimination of organic micropollutants in a municipal wastewater treatment plant upgraded with a full-scale post-ozonation followed by sand filtration, *Environ. Sci. Technol.* **43**, 7862-7869.
- Weissbrodt D., Kovalova L., Ort C., Pazhepurackel V., Moser R., Hollender J., Siegrist H., McArdell C.S. (2009) Mass flows of X-ray contrast media and cytostatics in hospital wastewater. *Environ. Sci. Technol.* **43**, 4810-4817.
- Abegglen C., Joss A., McArdell C.S., Fink G., Schlüsener M.P., Ternes T.A., Siegrist H. (2009) The fate of selected micropollutants in a single-house MBR. *Water Research* **43**, 2036-2046.
- Kovalova L., McArdell C.S., Hollender J. (2009) Challenge of high polarity and low concentrations in analysis of cytostatics and metabolites in wastewater by hydrophilic interaction chromatography/tandem mass spectrometry. *J. Chromatography A* **1216**, 1100-1108.
- Bester K., Scholes L., Wahlberg C., McArdell C.S. (2008) Sources and Mass flows of Xenobiotics in Urban Water Cycles - an Overview on Current Knowledge and Data Gaps. *Water Air Soil Pollut: Focus* **8**, 407-423.
- Stamm C., Alder A.C., Fenner, K., Hollender J., Krauss M., McArdell C.S., Ort C., Schneider M.K. (2008) Spatial and Temporal Patterns of Pharmaceuticals in the Aquatic Environment: A Review. *Geography Compass* **2/3**, 920-955.
- Göbel A., McArdell C.S., Joss A., Siegrist H., Giger W. (2007) Fate of Sulfonamides, Macrolides and Trimethoprim in Different Wastewater Treatment Technologies. *Sci. Total Environ.* **372**, 361-371.
- Joss A., Zabczynski S., Göbel A., Hoffmann B., Löffler D., McArdell C.S., Ternes T.A., Thomsen A., Siegrist H. (2006) Biological degradation of pharmaceuticals in municipal wastewater treatment: Proposing a classification scheme. *Water Research* **40**, 1686-1696.
- Göbel A., Thomsen A., McArdell C.S., Alder A.C., Giger W., Theiß N., Löffler D. Ternes T.A. (2005) Extraction and Determination of Sulfonamides, Macrolides, and Trimethoprim in Sewage Sludge. *J. Chromatogr. A* **1085**, 179-189.
- Joss A., Keller E., Alder A.C., Göbel A., McArdell C.S., Ternes T.A., Siegrist H. (2005) Removal of pharmaceuticals and fragrances in biological wastewater treatment. *Water Research* **39**, 3139-3152.
- Huber M.M., Göbel A., Joss A., Hermann N., Löffler D., McArdell C.S., Ried A., Siegrist H, Ternes T.A., von Gunten U. (2005) Oxidation of Pharmaceuticals during Ozonation of Municipal Wastewater Effluents: A Pilot Study. *Environ. Sci. Technol.* **39(11)**, 4290-4299.
- Göbel A., Thomsen A., McArdell C.S., Joss A., Giger W. (2005) Occurrence and Sorption Behavior of Sulfonamides, Macrolides, and Trimethoprim in Activated Sludge Treatment. *Environ. Sci. Technol.* **39(10)**, 3981-3989.
- Göbel A., McArdell C.S., Suter M.J.-F., Giger W. (2004) Trace Determination of Macrolide and Sulfonamide Antimicrobials, a Human Sulfonamide Metabolite, and Trimethoprim in Wastewater using Liquid Chromatography coupled to Electrospray Tandem Mass Spectrometry. *Anal. Chem.* **76(16)**, 4756-4764.
- McArdell C.S., Molnar E., Suter M.J.-F., Giger W. (2003) Occurrence and Fate of Macrolide Antibiotics in Wastewater Treatment Plants and in the Glatt Valley Watershed, Switzerland. *Environ. Sci. Technol.* **37(24)**, 5479-5486.
- Giger W., Alder A.C., Golet E.M., Kohler H.-P.E., McArdell C.S., Molnar E., Siegrist H., Suter M.J.-F. (2003). Occurrence and Fate of Antibiotics as Trace Contaminants in Wastewaters, Sewage Sludges, and Surface Waters. *Chimia* **57(9)**, 485-491.
- Haller M. Y., Müller S. R., McArdell C. S., Alder A. C., Suter M. J.-F. (2002) Quantification of Veterinary Antibiotics (Sulfonamides and Trimethoprim) in Animal Manure by Liquid Chromatography - Mass Spectrometry. *J. Chromatogr. A* **952**, 111-120.
- McArdell C.S., Stone A.T., Tian J. (1998) Reaction of EDTA and Related Aminocarboxylate Chelating Agents with $\text{Co}^{\text{III}}\text{OOH}$ (Heterogenite) and $\text{Mn}^{\text{III}}\text{OOH}$ (Manganite). *Environ. Sci. Technol.* **32(19)**, 2923-2930.
- Suter M.J.-F., Alder A.C., Berg M., McArdell C.S., Riediker S., Giger W. (1997) Determination of Hydrophilic and Amphiphilic Organic Pollutants in the Aquatic Environment. *Chimia* **51(12)**, 871-877.
- Bürgisser C.S., Stone A.T. (1997) Determination of EDTA, NTA and Other Amino Carboxylic Acids and Their Co(II) and Co(III) Complexes by Capillary Electrophoresis. *Environ. Sci. Technol.* **31(9)**, 2656-2664.
- Borkovec M., Bürgisser C.S., Cernik M., Glättli U., Sticher H. (1996) Quantitative Description of Multi-Component Reactive Transport in Porous Media: An Empirical Approach. *Trans. Porous Media* **25(2)**, 193-204.

- Bürgisser C.S., Scheidegger A.M., Borkovec M., Sticher H. (1994) Chromatographic Charge Density Determination of Materials with Low Surface Area. *Langmuir* **10(3)**, 855-860.
- Scheidegger A.M., Bürgisser C.S., Borkovec M., Sticher H., Meeussen H., Van Riemsdijk W. (1994) Convective Transport of Acids and Bases in Porous Media. *Water Resour. Res.* **30(11)**, 2937-2944.
- Bürgisser C.S., Cernik M., Borkovec M., Sticher H. (1993) Determination of Nonlinear Adsorption Isotherms from Column Experiments: an Alternative to Batch Studies. *Environ. Sci. Technol.* **27(5)**, 943-948.

BOOK CHAPTERS and REPORTS

- Böhler, M., Fleiner, J., McArdell, C.S., Kienle, C., Schachtler, M., Siegrist, H. (2016) Biologische Nachbehandlung von kommunalem Abwasser nach Ozonung – ReTREAT. Gewässerschutz-Wasser-Abwasser 239, 49. Essener Tagung für Wasser- und Abfallwirtschaft. Ed. J. Pinnekamp, Aachen, ISBN 978-3-938996-45-4.
- McArdell, C.S., Bourgin, M., von Gunten, U., Hollender, J., Kienle, Hofman-Caris R. (2015) Decision basis for implementation of oxidation technologies. Deliverable D32.3, FP7 EU project DEMEAU, Grant Agreement no. 308339, www.demeau-fp7.eu.
- Fleiner J., Wittmer A., Böhler M., McArdell, C.S., Teichler R, Bourgin M., Schachtler M., Siegrist H.(2015): „Ozonung ARA Neugut, Dübendorf - Grosstechnische Optimierung der Ozondosierung“, Schlussbericht BAFU, 2015. www.micropoll.ch/dokumente/berichte.
- Lyko S., Nafo I., Evenblij H., Cornelissen A., Igos E., Klepizewski K., Venditti S., Kovalova L., McArdell C., Helwig K., Pahl O., Barraud O., Casellas M., Dagot C., Maftah C., Ploy M.-C., Stalder T. (2012) Pharmaceutical Input and Elimination from Local Sources. Final Report of the European cooperation project PILLS (<http://www.pills-project.eu/>).
- Ernst M., Hein A., Asmin J., Krauss M., Fink G., Hollender J., Ternes T., Jørgensen C, Jekel M., McArdell C.S. (2012) Water quality analysis: Detection, fate, and behaviour, of selected trace organic pollutants at managed aquifer recharge sites. Chapter 12 in *Advances in water reclamation technologies for safe managed aquifer recharge*, C. Kazner, T. Wintgens and P. Dillon (Eds.), IWA, p. 197-226. ISBN 9781843393443.
- McArdell C.S., Kovalova L., Siegrist H. Kienle C., Moser R., Schwartz T. (2011) Input and Elimination of Pharmaceuticals and Disinfectants from Hospital Wastewater. Final project report, Eawag, Dübendorf, Switzerland, accessible at <http://tinyurl.com/eawag-spitalabwasser>.
- Bester K., McArdell C.S., Wahlberg C., Bucheli T.D. (2010) Quantitative Mass Flows of Selected Xenobiotics in Urban Waters and Waste Water Treatment Plants, Chapter 1 in D. Fatta-Kassinos et al. (eds.), *Xenobiotics in the Urban Water Cycle: Mass Flows, Environmental Processes, Mitigation and Treatment Strategies*. Environmental Pollution, Vol. 16, DOI 10.1007/978-90-481-3509-7_1, © Springer Science + Business Media B.V.
- Hollender, J., Singer, H., McArdell, C.S. (2008) Polar organic micropollutants in the aquatic water cycle. In: *Dangerous Pollutants (Xenobiotics) in Urban Water Cycle*, Petr Hlavinec, Ognjen Bonacci, Jiri Marsalek and Ivana Mahrikova (Eds.), Springer-Verlag, 103-116.
- Hollender J., McArdell C.S., Singer H. (2007) Polar Organic Micropollutants in the Water Cycle. In *Dangerous Pollutants (Xenobiotics) in Urban Water Cycle* edited by Hlavinec P., Bonacci, O., Marsalek J., Mahrikova I. Proceedings of the NATO Advanced Research Workshop, Lednice, Czech Republic, May 2007.
- McArdell C.S., Alder A.C., Göbel A., Löffler D., Suter M.J.-F., Ternes T.A. (2006) Analytical Methods. In *Human Pharmaceuticals, Hormones and Fragrances: The challenge of micropollutants in urban water management* edited by Thomas A. Ternes and Adriano Joss. ISBN: 1843390930. IWA Publishing, London, UK.
- Alder A.C., Bruchet A., Carballa M., Clara M., Joss A., Löffler D., McArdell C.S., Miksch K., Omil F., Tuhkanen T., Ternes T.A. (2006) Consumption and Occurrence. In *Human Pharmaceuticals, Hormones and Fragrances: The challenge of micropollutants in urban water management* edited by Thomas A. Ternes and Adriano Joss. ISBN: 1843390930. IWA Publishing, London, UK.
- Blüm W., McArdell C.S., Höhn E., Schaubhut R., Labhart W., Bertschi S. (2005) Organische Spurenstoffe im Grundwasser des Limmattales: Ergebnisse der Untersuchungskampagne 2004. Baudirektion Kanton Zürich, AWEL (Amt für Abfall, Wasser, Energie und Luft), Zürich. www.bd.zh.ch > Medienforum, Dossier "Mikroverunreinigungen".
- Alder A.C., McArdell C.S., Golet E.M., Kohler H.-P.E., Molnar E., Anh Pham Thi N., Siegrist H., Suter M.J.-F., Giger W. (2004) Environmental Exposure of Antibiotics in Wastewaters, Sewage Sludges, and Surface Waters in

Switzerland. In *Pharmaceuticals in the Environment*, Kümmerer, K. (Hrsg.). Springer, Berlin Heidelberg, Deutschland, p. 55-66.

Giger W., Alder A.C., Golet E.M., Kohler H.-P.E., McArdell C.S., Molnar E., Pham Thi N.A., Siegrist H. (2003) Antibiotikaspuren auf dem Weg von Spital- und Gemeindeabwasser in die Fließgewässer: Umweltanalytische Untersuchungen über Einträge und Verhalten. In *Spurenstoffe in Gewässern*, Track, T. & Kreysa, G. (Hrsg.). Wiley-VCH & Dechema, Weinheim, Deutschland, p. 21-33.

Alder A.C., McArdell C.S., Golet E.M., Ibrić S., Molnar E., Nipales N.S., Giger W. (2001) Occurrence and Fate of Fluoroquinolone, Macrolide, and Sulfonamide Antibiotics during Wastewater Treatment and in Ambient Waters in Switzerland. In: C.G. Daughton and T. Jones-Lepp (Editors), *Pharmaceuticals and Personal Care Products in the Environment: An Emerging Concern*. Washington, USA, ACS Symposium Series 791, p. 56-69.

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