

CHRISTOPH AEPPLI

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Research Expertise

I am an **environmental chemist** and study the fate of organic chemicals in aquatic environments. Particularly, I have expertise on the **fate and effects of oil residues** that occur after oil spills, as well as of halogenated contaminants. I investigate microbial and abiotic processes that determine the fate of compounds, and study their impacts on aquatic organisms. To answer my research questions, I use and develop **advanced analytical techniques**, I employ **toxicity** assay, and estimate physico-chemical properties and toxicity using quantum chemical **computational tools**.

Education

04/2004 – 05/2008	Ph.D. (Dr.Sc. ETH Zurich); Environmental Chemistry . Swiss Federal Institute of Technology Zurich/Switzerland (ETH). Thesis: <i>Assessing the natural attenuation of chlorinated ethenes in groundwater using compound-specific stable isotope analysis</i> (advisor: Prof. Dr. René P. Schwarzenbach).	ETH Zurich, Switzerland
10/1998 – 12/2002	M.S. (Diploma) in Chemistry . Diploma thesis: <i>Novel methods for radical oxygenative cyclization</i> (advisor: Prof. Dr. Philippe Renaud).	Univ. Berne, Switzerland

Professional Appointments

11/2013 – present	Bigelow Laboratory for Ocean Sciences , Senior Research Scientist	East Boothbay/ME
11/2013 – present	Colby College , Research Scientist	Waterville/ME
02/2022 – 08/2022	Eawag Switzerland . Guest scientist (on sabbatical leave).	Duebendorf, CH
05/2011 – 10/2013	Woods Hole Oceanographic Institution (WHOI) , Dept. of Marine Chemistry and Geochemistry. Postdoctoral Fellow and Investigator in the research group of Christopher M. Reddy	Woods Hole/MA
01/2009 – 04/2011	Stockholm University, Dept. for Applied Environmental Science (ITM) . Postdoctoral fellow in the research group of Örjan Gustafsson	Stockholm, Sweden

Research Projects and Grants

02/2022 – present	Composition and Transport of Forever Chemicals (PFAS) in Maine's Estuaries (NOAA Sea Grant; PI; \$123k).
08/2018 – 02/2022	Assessing Photochemical Degradation of Chlorinated Paraffins (NSF ECS; PI; \$400k)
01/2018 – 04/2022	Assessing Toxicity of Oil Weathered on the Sea Surface : The Importance of Oil Photo-Products (GRP Research-Practice; PI; \$221k)
11/2018 – 12/2021	Mitigation of Toxic Oil Weathering Products by Microbes (GRP Collaboration Grant; PI; \$42k)
11/2019 – 11/2021	Cascading Effects of Rising Coastal Risks for Petrochemical Facilities on Socio-Economic-Ecological Vulnerability and Risk Perceptions (Gulf Research Program GRP Collaboration Grant; Co-PI; \$42k)
05/2019 – 6/2021	Mitigating the Damage to Arctic Copepods from Surface Oil Spills : When to Apply Dispersants (Arctic Domain Awareness Center / DHS; PI; \$265k)
11/2018 – 7/2021	Is Gulf of Mexico Marine Benthic Ecosystem Resilience Geochemically Coupled to Riverine-Derived Mineral Delivery? (GRP Collaboration Grant; co-PI; \$30k)
07/2016 – 08/2019	Chemistry and toxicity of polar compounds in petroleum (NOAA ORR; PI; \$114k)
01/2016 – 12/2018	The State-of-the-Art Unraveling of the biotic and abiotic chemical evolution of Macondo oil : 2010-2018 (GoMRI RFP-V; Co-PI; \$600k)
04/2015 – 09/2016	Effects of Arctic oil spills and oil spill response technologies on microbial communities (Internat. Oil and Gas Producer IOGP Project; subaward from Akvaplan-Niva \$190k)
10/2013 – 09/2016	Collaborative Research: Oxygenation of hydrocarbons in the ocean (NSF-OCE 1333148; subaward from WHOI \$145k)

- 05/2011 – 10/2013 Characterization of **petroleum weathering** after oil spills (Swiss NSF Postdoctoral Fellowship \$84k; and Gulf of Mexico Research Initiative *Deep-C* consortium).
- 01/2009 – 04/2011 Compound-specific isotope analyses as sharp environmental-forensics tools for **site characterization, monitoring and source apportionment of pollutants** in soil (Swiss NSF Postdoctoral Fellowship \$40k; and European Union FP7 project *isoSoil*).
- 04/2004 – 12/2008 Using compound-specific stable isotopic analysis for **biodegradation assessment of organic pollutants in aquifers** (PhD project funded by Swiss Federal Office for the Environment).

Teaching & Mentoring Activities and Qualification

- 11/2013 – present **Bigelow Laboratory for Ocean Sciences**. Supervision of two postdoctoral researcher, 13 summer or fall undergraduate students, co-advising one Honors Thesis and one MS student.
- Fall Semester 2015 **Colby College Semester CH385: Ocean Biogeochemistry on a Changing Planet**. Lectures and laboratory (co-teaching, 4 credits).
- 05/2011 – 10/2013 **WHOI**. Co-supervising projects of three visiting PhD students, and four summer interns.
- 01/2009 – 04/2011 **ITM Stockholm**. Co-supervising projects of one PhD student and one visiting master student.
- 04/2006 – 11/2006 **Certificate in didactics and adult learning**. 114 contact hours resulting in Swiss Federation for Adult Learning (SWEB) certificate Level 1, a general qualification for adult learning.
- 04/2004 – 12/2007 **ETH Zurich**. Teaching assistant of three BS and two MS lab courses in environmental chemistry and organic analysis. Co-supervision of one master student thesis.
- 04/2001 – 12/2001 **Gymnasium Neufeld and Seminar Hofwil, Switzerland**. Teaching high school organic chemistry (40 hours).

Synergistic Activities

- Member** of the *American Chemical Society* (ACS), the *American Geophysical Union* (AGU), and the *Society for Environmental Chemistry and Toxicology* (SETAC)
- Reviewer** for *Environmental Science & Technology*, *Marine Pollution Bulletin*, *Chemosphere*, *J. Contam. Hydrol. Rapid Comm.*, *Mass Spectrom.* and other journals.
- Session (co-)chair** *Ocean Sciences Meeting 2016; Gulf of Mexico Oil Spill & Ecosystem Conferences 2017 & 2018*.
- Educating the public:** Presentations at Café Scientifique (2014 and 2016) and Public Library (2016) lecture series; participated in panel discussions at public events associated with the Arctic Council meetings in Maine (2016).
- Knowledge transfer:** Educating governmental officials, oil spill responders, and fellow scientists at a GoMRI webinar (2014), NOAA staff webinar (2015), and a SeaGrant oil spill seminar (2016), dispersant seminars (2018/2019).

Awards

- Gulf Research Program Early Career Fellowship** from the National Academies of Sciences, Engineering, and Medicine. 2017
- ACS Certificate of Merit** for outstanding first platform presentation at the ACS National Meeting, Denver, CO, Aug 28-Sept 1 2011. 2011
- ACS Publications Certificate of Appreciation** for valuable contributions and dedicated services in the peer review of manuscripts. 2011
- Postdoctoral Fellowship** for advanced researchers from the Swiss National Science Foundation SNSF (postdoc at Woods Hole Oceanographic Institution, May 2011 to Apr. 2013). 2010
- Postdoctoral Fellowship** for prospective researchers from the Swiss National Science Foundation SNSF (postdoc at Stockholm University, Jan. to Dec. 2009). 2008

Skills

- Analytical techniques: Quantification of organic analytes in environmental samples using GC-MS, GC-FID, GC×GC-TOF-MS, GC×GC-FID, HPLC-UV, NMR, FT-IR, TLC-FID, LC-MS.
- Isotope analysis: Compound-specific analysis: GC-C-IRMS ($\delta^{13}\text{C}$ and $\delta^2\text{H}$), GC-MS ($\delta^{37}\text{Cl}$ and $\delta^{81}\text{Br}$). Bulk analysis: Thermal ionization MS ($\delta^{37}\text{Cl}$)
- Process studies: Transformation of organic compounds in model laboratory and mesocosm systems (microbial, enzymatic, abiotic, photooxidation). Toxicity assays (Microtox, *A. tonsa*, fish cell lines)
- Field sampling: Sampling of petroleum from spills, seeps and mesocosms on-shore, off-shore, and on-ice; groundwater sampling including well drilling; soil sampling.

Publications

Peer-reviewed publications [* Scopus metrics 03/28/22: 1,571 citations, h-index 23; # students and mentees]

41. DiMento BP,[#] Tusei CL,[#] **Aeppli C.** *Photochemical degradation of short-chain chlorinated paraffins in aqueous solution by hydrated electrons and hydroxyl radicals.* Chemosphere, in press, doi: 10.1016/j.chemosphere.2022.134732 In press
40. **Aeppli C.**, Mitchell DA, Keyes P, Beirne EC, McFarlin KM, Roman-Hubers AT, Rusyn I, Prince RC, Zhao L, Parkerton TF, Nedwed T. *Oil irradiation experiments document changes in oil properties, molecular composition and dispersant effectiveness associated with oil photooxidation.* Environ Sci Technol. In press. doi: 10.1021/acs.est.1c06149. [cited by 0*] In press
39. Katz SD,[#] Chen H,[#] Fields DM, Beirne EC, Keyes P,[#] Drozd GT, **Aeppli C.** *Changes in chemical composition and copepod toxicity during photo-oxidization of oil.* Environ Sci Technol. 56:5552–5562, doi: 10.1021/acs.est.2c00251 [cited by 0*] 2022
38. **Aeppli C.**, *Recent Advance in Understanding Photooxidation of Hydrocarbons after Oil Spills.* Current Opinion in Chemical Engineering 36, 100763. doi:10.1016/j.coche.2021.100763 [cited by 0*] 2022
37. Sanchez-Garcia L, Carrizo D., Lezcano, M.A., Moreno-Pay M., **Aeppli C.**, Garcia-Villadangos, M., Prieto-Ballesteros O., Demergasso C., Chong-Diaz G. Parro, V. *Time-integrative multi-biomarker detection in Triassic-Jurassic rocks from the Atacama Desert: relevance for searching basic life beyond the Earth.* Astrobiology 21(11), 1421–1437. doi: 10.1089/ast.2020.2339 [cited by 0*] 2021
36. Gosselin KM, Nelson RK, Spivak AC, Sylva SP, Van Mooy BAS, **Aeppli C.**, Sharpless CM, O'Neil GW, Reddy CM, Valentine DL *Production of Two Highly Abundant 2-Methyl-Branched Fatty Acids by Blooms of the Globally Significant Marine Cyanobacteria Trichodesmium erythraeum.* ACS Omega 6:22803–22810. doi:10.1021/acsomega.1c03196. [cited by 0*] 2021
35. White HK, Marx CT, Valentine DL, Sharpless C, **Aeppli C.**, Gosselin KM, Kivenson V, Liu RM, Nelson RK, Sylva SP, Reddy CM. *Examining Inputs of Biogenic and Oil-Derived Hydrocarbons in Surface Waters Following the Deepwater Horizon Oil Spill.* ACS Earth Space Chem. 3 (7) 1329-1337. doi:10.1021/acsearthspacechem.9b0009 [cited by 8*] 2019
34. Ward CP, Sharpless CM, Valentine DL, **Aeppli C.**, Sutherland KM, Wankel SD, Reddy CM. *Oxygen isotopes ($\delta^{18}O$) trace photochemical hydrocarbon oxidation at the sea surface.* Geophys Res Lett. doi: 10.1029/2019GL082867 [cited by 10*] 2019
33. Lemkau K.L., Reddy C.M., Carmichael C.A., **Aeppli C.**, Swarthout R.F., White H.K. *Hurricane Isaac brings more than oil ashore: Characteristics of beach deposits following the Deepwater Horizon spill.* PLoS One 14:e0213464 [cited by 1*] 2019
32. **Aeppli C.**, Katz S., Chen H., Beirne E. *Formation, Detection, and Fate of Oil Photo-products Formed after Marine Oil Spills.* Proceedings - 42nd AMOP Technical Seminar on Environmental Contamination and Response, pp. 825-833 2019
31. Green H.S., Fuller S.L., Meyer A.W., Joyce P.S., **Aeppli C.**, Nelson R.K., Swarthout R.F., Valentine D.L., White H.K., Reddy CM. *Tar balls collected in the North Atlantic Ocean and Caribbean Sea from 1988 to 2016 originate from natural and anthropogenic sources.* Mar. Pollut. Bullet. [cited by 2*] 2018
30. Boccadoro C., Krolicka A., Receveur J., **Aeppli C.**, Le Floch S. *Migration of petroleum compounds from sea-ice into seawater and associated microbial community response during an in situ oil spill experiment in Svalbard,* Marine Env. Res. doi:10.1016/j.marenvres.2018.09.007 [cited by 13*] 2018
29. Sanchez-Garcia L., **Aeppli C.**, Parro V., Fernández-Remolar D., García-Villadangos M., Chong G., Blanco Y., Carrizo D. *Molecular biomarkers in the subsurface of the Salar Grande (Atacama, Chile) evaporitic deposits.* Biogeochemistry (140) 31-52 [cited by 15*] 2018
28. **Aeppli C.**, Swarthout R.F., O'Neil G.W., Katz S.D.,[#] Nabi D.,[#] Ward C.P., Nelson R.K., Charles M Sharpless C.M., Reddy C.M. *How persistent and bioavailable are oxygenated Deepwater Horizon oil transformation products?* Environ Sci Technol (52) 7250-7258 [cited by 35*] 2018
27. Ward C.P., Sharpless C.M., Valentine D.L., French McCay D.P., **Aeppli C.**, White H.K., Rodgers R.P., Gosselin K.M., Nelson R.K., Reddy C.M. *Partial Photochemical Oxidation Was a Dominant Fate of Deepwater Horizon Surface Oil.* Environ Sci Technol 52(4), 1797–1805. [cited by 61*] 2018

26. Bostic J.T., **Aeppli C.**, Swarthout R.F., Reddy C.M., Ziolkowski L.A. *Ongoing biodegradation of Deepwater Horizon oil in beach sands: Insights from tracing fossil carbon into microbial biomass.* Mar. Pollut. Bull. (126) 130-136 [cited by 10*] 2018
25. Bagby S.C., Reddy C.M., **Aeppli C.**, Fisher G.B., Valentine D.L., *Persistence and biodegradation of oil at the ocean floor following Deepwater Horizon*, PNAS 114 (1), E9-E18 [cited by 66*] 2017
24. Nabi D.,[#] Katz S.,[#] **Aeppli C.**, *Are oxygenated hydrocarbons important oil degradation products after oil spills?* International Oil Spill Conference Proceedings 2017. 571-588; doi:10.7901/2169-3358-2017.1.571 [cited by 0*] 2017
23. St-Gelais A.T., **Aeppli C.**, Burnell C., Costa-Pierce B.A., *Non-dioxin like polychlorinated biphenyl indicator congeners in Northwest Atlantic spiny dogfish (Squalus acanthias)*, Mar. Pollut. Bull., 120 (1–2), 414-421 [cited by 3*] 2017
22. White H.K., Wang C.H., Williams P.L., Findley D.M., Thurston A.M., Simister R.L., **Aeppli C.**, Nelson R.K., Reddy C.M., *Long-term weathering and continued oxidation of oil residues from the Deepwater Horizon spill*, Mar. Pollut. Bull. 113 (1-2), 380-386 [cited by 33*] 2016
21. Drozd G.T., Worton D.R., **Aeppli C.**, Reddy C.M., Zhang H., Evan Variano E., Goldstein A.H., *Modeling comprehensive chemical composition of weathered oil following a marine spill to predict ozone and potential secondary aerosol formation and constrain transport pathways*, J. Geophys. Res. Oceans (120) 7300–7315. [cited by 24*] 2015
20. Koohlen H.H.F., Swarthout R.F., Nelson R.K., Chen H., Krajewski L.C., **Aeppli C.**, McKenna A.M., Ryan P. Rodgers R.P. Reddy C.M, *Unprecedented insights into the chemical complexity of coal tar from comprehensive two-dimensional gas chromatography mass spectroscopy and Fourier transform ion cyclotron resonance mass spectrometry.* Energy Fuels (29) 641-648 [cited by 27*] 2015
19. Ruddy B.M., Huettel M., Kostka J.E., Lobodin V.V., Bythell B.J., McKenna A.M., **Aeppli C.**, Reddy C.M., Nelson R.K., Marshall A.G., Rodgers R.P., *Targeted petroleomics: Analytical investigation of oxidation products of Macondo Well oil from Pensacola Beach.* Energy and Fuels (28) 4043-4050 [cited by 100*] 2014
18. **Aeppli C.**, Nelson R.K., Radovic J.R., Carmichael C.A., Valentine D.L., Reddy C.M. *Recalcitrance and degradation of petroleum biomarkers upon abiotic and biotic natural weathering of Deepwater Horizon oil.* Environ. Sci. Technol. (48) 6726-6734 [cited by 116*] 2014
17. McKenna A.M., Williams J.T., Putman J.C., **Aeppli C.**, Reddy C.M., Valentine D.L., Lemkau K.L., Kellermann M.Y. Savory J.J., Kaiser N.K., Marshall A.G., Rodgers R.P., *Unprecedented ultrahigh resolution FT-ICR mass spectrometry and parts-per-billion mass accuracy enable direct characterization of nickel and vanadyl porphyrins in petroleum from natural seeps.* Energy and Fuels (28) 2454-2464 [cited by 73*] 2014
16. Radovic J.R. **Aeppli C.**, Nelson R.K., Jimenez N., Reddy C.M., Bayona J.M., Albaigés J.; *Assessment of photochemical processes in marine oil spill fingerprinting.* Mar. Pollut. Bull., 79, 268–277 [cited by 104*] 2014
15. Gros J., Reddy C.M., **Aeppli C.**, Nelson R.K., Carmichael C.A., Arey J.S., *A new biodegradation index for weathered oils based on saturated hydrocarbons: Insights from the Deepwater Horizon disaster.* Environ. Sci. Technol., 48 (3) 1628-1637 [cited by 79*] 2014
14. Hall G.J., Frysinger G.S., **Aeppli C.**, Carmichael C.A., Gros J., Lemkau K.L, Nelson R.K., Reddy C.M., *Oxygenated weathering products of Deepwater Horizon oil come from surprising precursors.* Mar. Pollut. Bull. (75) 140-149 [cited by 59*] 2013
13. **Aeppli C.**, Nelson R.K., Carmichael C.A., Valentine D.L., Reddy C.M. *Biotic and abiotic oil degradation after the Deepwater Horizon disaster leads to formation of recalcitrant oxygenated hydrocarbons: New insights using GC×GC.* International Oil Spill Conference Proceedings 2014, 1087-1098, doi:10.7901/2169-3358-2014.1.1087 2014
12. **Aeppli C.**, Reddy C.M., Nelson R.K., Kellermann Y.M., Valentine D.L., *Recurrent oil sheens at the Deepwater Horizon disaster site fingerprinted with synthetic hydrocarbon drilling fluids.* Environ. Sci. Technol. (47) 8211–8219 [cited by 27*] 2013
11. **Aeppli C.**, Bastviken D., Andersson P., Gustafsson Ö., *Chlorine isotope effects and composition of naturally produced organochlorines from chloroperoxidases, flavin-dependent halogenases, and in forest soil.* Environ. Sci. Technol. (47) 6864-6871 [cited by 37*] 2013

10. Wiegert C., Mandalakis M., Knowles T., Polymenakou P.N., **Aeppli C.**, Machackova J., Holmstrand H., Evershed R.P., Richard D. Pancost R.D. Gustafsson O. *Carbon and chlorine isotope fractionation during microbial degradation of tetra- and trichloroethene*. Environ. Sci. Technol. (47) 6449–6456 [cited by 52*] 2013
 9. **Aeppli C.**, Tysklind M., Holmstrand H., and Gustafsson Ö. *Use of Cl and C isotopic fractionation to identify degradation and sources of polychlorinated phenols: Mechanistic study and field application*. Environ. Sci. Technol. (47) 790-797 [cited by 30*] 2013
 8. Wiegert C., **Aeppli C.**, Knowles T., Holmstrand H., Evershed R., Pancost R.D., Macháčková J., Gustafsson Ö. *Dual carbon-chlorine stable isotope investigation of sources and fate of chlorinated ethenes in contaminated groundwater*. Environ. Sci. Technol. (46) 10918–10925 [cited by 52*] 2012
 7. **Aeppli C.**, Carmichael C.A., Nelson R.K., Lemkau K.L., Graham W.M., Redmond M.C., Valentine D.L., Reddy C.M. *Oil weathering after the Deepwater Horizon disaster led to the formation of oxygenated residues*. Environ. Sci. Technol. (46) 8799-8807 [cited by 223*] 2012
 6. **Aeppli C.**, Wiegert C., Holmstrand H., Gustafsson Ö. Chlorine isotope fractionation of organic contaminants: added value for in-situ assessment of natural attenuation processes. In: *Groundwater quality management in a rapidly changing world*, Schirmer M., Höhn M., Vogt T. (Eds.); IAHS Red Book Series (342), ISBN 978-1-907161-16-2, p. 335-338 2011
 5. Amaral H.I.F., **Aeppli C.**, Berg, M., Schwarzenbach R.P., Kipfer R. *Assessing the fate of polychlorinated ethenes in aquifers with limited biodegradation potential: Added values of compound specific carbon isotope analysis and groundwater dating*. Chemosphere (85) 774–781 [cited by 13*] 2011
 4. **Aeppli C.**, Hofstetter T.B., Amaral H.I.F., Kipfer R., Schwarzenbach R.P., Berg M. *Quantifying in situ transformation rates of chlorinated ethenes by combining compound-specific stable isotope analysis, groundwater dating, and carbon isotope mass balances*. Environ. Sci. Technol. (44) 3705-3711 [cited by 60*] 2010
 3. **Aeppli C.**, Holmstrand H., Andersson P., Gustafsson Ö. *Direct compound-specific stable chlorine isotope analysis of organic compounds with quadrupole GC/MS using standard isotope bracketing*. Anal. Chem. (82) 420–426 [cited by 88*] 2010
 2. **Aeppli C.**, Berg M., Cirpka O.A., Holliger C., Schwarzenbach R.P., Hofstetter T.B. *Influence of mass-transfer limitations on carbon isotope fractionation during microbial dechlorination of trichloroethene*. Environ. Sci. Technol. (43) 8813–8820 [cited by 57*] 2009
 1. **Aeppli C.**, Berg M., Hofstetter T.B., Kipfer R., Schwarzenbach R.P. *Simultaneous quantification of polar and non-polar volatile organic compounds in water samples by Direct Aqueous Injection – Gas Chromatography/Mass Spectrometry*. J. Chromatogr., A (1181) 116-124 [cited by 36*] 2008
- Book Chapter and Reports*
4. **Aeppli C.**, Photooxidation of Crude Oil: Formation, Characterization, and Fate of Oil Photoproducts in the Environment. In: *Chemistry of Crude Oil and Petroleum Products*; Fingas M. (Ed), Chapter 11, Walter de Gruyter GmbH. In press
 3. Nelson R.K., **Aeppli C.**, Arey J.S., Chen H., de Oliveira A., Eiserbeck C., Frysinger G.S., Gaines R.B., Grice K., Gros J., Hall G.J., Koolen H.H.F., Lemkau K.L., McKenna A., Reddy C.M., Rodgers R.P., Swarthout R.F., Valentine D.L., White H.K., Applications of comprehensive two-dimensional gas chromatography (GC×GC) in studying the source, transport, and fate of petroleum hydrocarbons in the environment. In *Standard Handbook of Oil Spill Environmental Forensics*, Stout, S. A. and Z. Wang (Eds), Chapter 8, pp. 339-448, Elsevier. [cited by 27*] 2016
 2. Irvine G.V., Mann D.H., Carls M.G., Holland L.G., Reddy C.M., Nelson R.K., **Aeppli C.**, *Lingering Oil on Boulder-Armored Beaches in the Gulf of Alaska 23 Years after the “Exxon Valdez” Oil Spill*, “Exxon Valdez” Oil Spill Restoration Project Final Report (Restoration Project 11100112), U.S. Geological Survey, Alaska Science Center. Anchorage, Alaska 2014
 1. **Aeppli C.**, *Assessing the natural attenuation of chlorinated ethenes in groundwater using compound-specific stable isotope analysis*. PhD Thesis, Diss ETH Nr. 17829; ETH Zurich, Switzerland; doi:10.3929/ethz-a-005760936 2008

Publications in German

3. **Aeppli C.**, Amaral H.I.F., Wermaille C., Wenger C., Kipfer R., Berg M., *Beurteilung des Abbauverhaltens von CKWs an Altlastenstandorten mittels Einzelstoff-Isotopenanalyse (CSIA) und Grundwasserdatierung. Teil 1: Grundlagen (assessing degradation of chlorinated ethenes in contaminated aquifers using compound-specific isotope analysis. Part 1: theoretical considerations)*. Altlasten Spektrum (3), 105-110s 2011
2. **Aeppli C.**, Amaral H.I.F., Wermaille C., Wenger C., Kipfer R., Berg M., *Beurteilung des Abbauverhaltens von CKWs an Altlastenstandorten mittels Einzelstoff-Isotopenanalyse (CSIA) und Grundwasserdatierung. Teil 2: Fallstudien (assessing degradation of chlorinated ethenes in contaminated aquifers using compound-specific isotope analysis. Part 2: case studies)*. Altlasten Spektrum (4), 161-171 2011
1. Berg M., Zwank L., Bolotin J., **Aeppli C.**, Haener A., Moeller M., Munz C., Ziegler U. *Einzelstoff-Isotopenanalyse zur Beurteilung des Abbauverhaltens von Methyl-tert-butylether (MTBE) an einem Altlastenstandort (assessing MTBE transformation in a contaminated aquifer using compound-specific isotope analysis)*. Altlasten Spektrum (14), 20-26 2005

Contributions at National and International Scientific Conferences (* = presenter)

1. **Aeppli C.**,* Beirne EC, Sterling H, How Biodegradable is Sunlight-Exposed Petroleum? Formation and Degradation of Oil Photoproducts after Spills. International Biodeterioration & Biodegradation Symposium (IBBS), virtual; Sept 6-9 **2021**; oral presentation.
2. **Aeppli C.*** Mitchell D., Keyes P., McFarlin K., Prince R., Zhao L., Nedwed T. *Investigating the Influence of Oil Weathering on Dispersant Effectiveness*. Gulf of Mexico Oil Spill and Ecosystem Conference, Tampa FL, Feb 3-6 **2020**; oral presentation.
3. **Aeppli C.*** Nacci, D.E., Clark, B.W., Beirne, E., McNabb, N.A., Whitehead, A., Baker, G. *The Relative Toxicity to Fish Embryos of PAHs and Photo-Products in Weathered Oil Residues*. Gulf of Mexico Oil Spill and Ecosystem Conference, Tampa FL, Feb 3-6 **2020**; oral presentation.
4. **Aeppli C.**,* Katz S., Chen H., Beirne E. *Formation, Detection, and Fate of Oil Photo-products Formed after Marine Oil Spills*. 42nd AMOP Technical Seminar on Environmental Contamination and Response, Halifax CA, June 4-6 **2019**; oral presentation.
5. **Aeppli C.**,* *How Toxic is Weathered Oil? The Potential Effects of Oil Photo-products on Oil Toxicity*. Gulf of Mexico Oil Spill and Ecosystem Conference, New Orleans LA, Feb 4-7 **2019**; oral presentation.
6. **Aeppli C.*** *Analysis of Oil Photo-Products: Insights About Oil Weathering from New Analytical Methods*. Gulf of Mexico Oil Spill and Ecosystem Conference, New Orleans LA, Feb 4-7 **2019**; oral presentation.
7. Berine E.,* Clark B., D. Nacci D., Ricker R., Baker G., **Aeppli C.** *Bioaccumulation of oxygenated oil photo-products relative to non-polar compounds under laboratory conditions*. Gulf of Mexico Oil Spill and Ecosystem Conference, New Orleans LA, Feb 4-7 **2019**; poster presentation.
8. Keyes P.,* Beirne E., **Aeppli C.** *Can photooxidized oil be biodegraded by marine microbes?* Gulf of Mexico Oil Spill and Ecosystem Conference, New Orleans LA, Feb 4-7 **2019**; poster presentation.
9. Regan T.,* **Aeppli C.**, *How does oil photo-oxidation influence the toxicity of oil? Computational predicting the toxicity of oil photo-products*. Gulf of Mexico Oil Spill and Ecosystem Conference, New Orleans LA, Feb 4-7 **2019**; poster presentation.
10. **Aeppli C.*** *Formation and fate of oxygenated oil weathering products after the Deepwater Horizon oil spill*. Gordon Research Conference Organic Geochemistry, Plymouth NH July 31-Aug 3, **2018**; oral presentation.
11. **Aeppli C.**,* Katz S., Beirne E., Nabi D.,* **Aeppli C.**, *New Methods to Determine the Toxicity of Oxygenated Oil Transformation Products in Weathered Deepwater Horizon Oil Residues*. Gulf of Mexico Oil Spill and Ecosystem Conference, New Orleans LA, Feb 5-9 **2018**; oral presentation.
12. Beirne E.,* Katz S., Clark B., D. Nacci D., Ricker R., Baker G., **Aeppli C.** *Exposure and Uptake of Oil Hydrocarbons and Oxygenated Oil Weathering Products in Fish Egg Incubation Experiments Using Weathered Oil*. Gulf of Mexico Oil Spill and Ecosystem Conference, New Orleans LA, Feb 5-9 **2018**; poster presentation.
13. Forziati N.,* D. Nabi D., **Aeppli C.** *Determining the Acute and Sublethal Toxicity of Oxygenated Hydrocarbons in Weathered Oil*. Gulf of Mexico Oil Spill and Ecosystem Conference, New Orleans LA, Feb 5-9 **2018**; poster presentation.
14. Chen H.,* Katz S., **Aeppli C.** *Copepods toxicity of photo-irradiated oil: the role of PAHs and oxygenated photo-products*. Gulf of Mexico Oil Spill and Ecosystem Conference, New Orleans LA, Feb 5-9 **2018**; poster presentation.

15. **Aeppli C.**, Matrai P.M.,* *Short-term impact of oil slicks on surface water microbial community in Arctic conditions*. Gordon Research Conference Polar Marine Science, Ventura CA, March 26-31 **2017**; poster presentation.
16. Nabi D.,* Katz S.D., **Aeppli C.**, *Identification of oxygenated transformation products in weathered Deepwater Horizon oil samples and assessment of their bioaccumulation and toxicity potential*. Gulf of Mexico Oil Spill and Ecosystem Conference, New Orleans LA, Feb 6-9 **2017**; oral presentation.
17. Katz S.D.,* Nabi D., **Aeppli C.**, *Dynamics of carboxylic acids produced in weathered Deepwater Horizon oil samples and their water solubility*. Gulf of Mexico Oil Spill and Ecosystem Conference, New Orleans LA, Feb 6-9 **2017**; poster presentation.
18. Herzog A.,* **Aeppli C.**, *Linking chemical composition to toxicity of fresh and weathered oil samples collected from the 2010 Gulf of Mexico oil spill*. Gulf of Mexico Oil Spill and Ecosystem Conference, New Orleans LA, Feb 6-9 **2017**; poster presentation.
19. **Aeppli C.**,* Prince R.P., Radovic J.R., Reddy C.M., *Oxygenated hydrocarbons are prevalent degradation products formed after oil spills*. Ocean Sciences Meeting, New Orleans LA, Feb 21-26 **2016**; poster presentation.
20. Bostic J.,* Ziolkowski L., **Aeppli C.**, Swarthout R.F., Reddy C.M., *How bioavailable is weathered Deepwater Horizon oil?* Ocean Sciences Meeting, New Orleans LA, Feb 21-26 **2016**; poster presentation.
21. Johnson J.M.,* Wawrik B., **Aeppli C.**, Aydin E., Bonifay V., J. Sunne J., Callaghan A.V., *Meta-Omics analysis demonstrates biodegradation of MC252 oil in sand patties originating from the Deepwater Horizon oil spill*. Ocean Sciences Meeting, New Orleans LA, Feb 21-26 **2016**; poster presentation.
22. Swarthout R.F.,* Hamilton S., **Aeppli C.**, Valentine D.L., Reddy C.M., *The other major 2010 oil spill: Oil weathering after the Kalamazoo River dilbit spill*. Ocean Sciences Meeting, New Orleans LA, Feb 21-26 **2016**; poster presentation.
23. Sharpless C.M.,* Stewart O.C., Walters M., Swarthout R.F., **Aeppli C.**, Reddy C.M., *Comparison of experimental photooxidation rates and patterns in glass- and water-based oil slicks with daily weathering observed in the Gulf of Mexico*. Ocean Sciences Meeting, New Orleans LA, Feb 21-26 **2016**; poster presentation.
24. Orcutt B.N.,* **Aeppli C.**, Greenwood B.P., Sharrar A., Spaulding-Astudillo F., *Crude oil biodegradation by estuarine sediment microbial communities from diverse coastal environment*. Gulf of Mexico Research Initiative Ecosystem Conference, Tampa FL, Feb 1-4 **2016**; poster presentation
25. **Aeppli C.**,* Matrai P., *Effects of oil and dispersants on microbial community in Arctic sea surface layer*. Arctic Frontiers Conference, Tromsø, Norway, Jan 24-29 **2016**; poster presentation.
26. Chever F.,* Le Cuff N., Receveur J., Le Floche S., Boccadoro C., **Aeppli C.**, Camus L., *Environmental effects of Arctic oil spills: Oil biodegradation and persistence*. Arctic Frontiers Conference, Tromsø, Norway, Jan 24-29 **2016**; poster presentation.
27. Camus L.,* Word J., Jak R., Le Floch S., **Aeppli C.**, Boccadoro C., Comerma E., Cote J.S., Frantzen M., Hjorth M., Leavit Z., Matrai P., Nahrgang J., Nielsen T, Petersen S.F., Søreide J., Toxvaerd K., Tremblay J.E., Wiedmann M. *Net environmental benefit analysis support tool to assess oil spill response technologies and the environmental effects of Arctic oil spills*. Arctic Frontiers Conference, Tromsø, Norway, Jan 24-29 **2016**; oral presentation.
28. Struch R.,* Clark B., **Aeppli C.**, Ricker R.W., Champlin D.M., Bertrand A., Kirby I., Nacci D.E., Whitehead A. *Toxicity responses of killifish (*Fundulus heteroclitus*) embryos exposed to saturate, aromatic, and polar fractions of Louisiana sweet crude oil*. SETAC North America 36th Annual Meeting, Salt Lake City UT, Nov 2-4 **2015**; poster presentation.
29. Greenwood B.P.,* Sharrar A.M. Orcutt B.N., **Aeppli C.**, *Biodegradation of Macondo Well oil in coastal sediments: Influence of temperature and nutrients*. Gulf of Mexico Oil Spill and Ecosystem Conference, Houston TX, Feb 16-19 **2015**; oral presentation.
30. Lemkau, K.L.,* Kivenson, V.B., Carmichael, C.A., **Aeppli, C.**, Bagby, S.C., Wentz, K., Baxter, A., Paul, B.G., Pizarro, O., Yoerger, D., Reddy, C.M., Valentine, D.L., *Discovery and biogeochemical investigation of chlorinated industrial waste in the deep ocean*. AGU Fall Meeting **2014**, San Francisco CA, December 16, 2014; poster presentation.
31. **Aeppli C.**,* Nelson R.K., Carmichael C.M., Valentine D.L., Reddy C.M., *Formation of recalcitrant oxygenated hydrocarbons by natural weathering after the Deepwater Horizon disaster*. International Oil Spill Conference IOSC 2014, Savannah GA, May 5-8 **2014**; oral presentation.

32. **Aeppli C.**,* Nelson R.K., Kinnaman F.S., Valentine D.L., Reddy C.M., *Identification of microbial and abiotic oil degradation processes using high-resolution gas chromatography and stable isotopes*. Ocean Science Meeting, Honolulu HI, Feb 24-29 **2014**; oral presentation.
33. **Aeppli C.**,* Nelson R.K., Kinnaman F.S., Valentine D.L., Reddy C.M., *Identification of microbial and abiotic degradation of Macondo well oil at the sea surface and on beaches*. Gulf of Mexico Oil Spill and Ecosystem Conference, Mobile AL, Jan 26-29 **2014**; oral presentation.
34. **Aeppli C.**,* Nelson R.K., Valentine D.L., Reddy C.M., *Formation of recalcitrant oxygenated compounds upon weathering of petroleum in marine environments*. Gordon Research Conference Chemical Oceanography, Biddeford ME, Aug 4-8 **2013**; poster presentation.
35. **Aeppli C.**,* Nelson R.K., Carmichael C., Arakawa N., Aluwihare L.I., Valentine D.L., Reddy C.M., *Characterization of recalcitrant oxygenated hydrocarbons formed upon oil weathering after the Deepwater Horizon disaster*. 245th ACS National Meeting, New Orleans LA, Apr 7-11 **2013**; oral presentation.
36. **Aeppli C.**,* Carmichael C., Nelson R.K., Valentine D.L., Arakawa N., Aluwihare L.I., Reddy C.M., *Characterization of oxygenated hydrocarbons formed upon oil weathering after the Deepwater Horizon disaster*, Gulf of Mexico Oil Spill & Ecosystem Science Conference, New Orleans LA, Jan 21-23 **2013**; oral presentation.
37. **Aeppli C.**,* Valentine D.L., Kellermann M., Lorenson T., Reddy C.M., *Oil spill vs natural seepage: Contrasting weathering characteristics of oil from the Macondo well and Southern California oil seeps*. Gulf of Mexico Oil Spill & Ecosystem Science Conference, New Orleans LA, Jan 21-23 **2013**; poster presentation.
38. **Aeppli C.**,* Valentine D.L., Arakawa N., Aluwihare L.I. M.C. Redmond M.C., Nelson R.K., Reddy C.M., *Oxygenation of petroleum hydrocarbons after the Deepwater Horizon disaster*. AGU fall meeting 2012, San Francisco, December 3-7 **2012**; poster presentation.
39. **Aeppli C.**,* Carmichael C., Nelson R.K., Reddy C.M., *Identifying and Characterizing a Polar and Recalcitrant Fraction in Weathered Macondo 252 Well Oil*. SETAC North America 32th annual meeting, Boston/MA, November 13-17 **2011**; oral presentation.
40. **Aeppli C.**,* Holmstrand H., Bastviken D., Tysklind M., Reddy C.M., Gustafsson Ö. *Investigating formation and degradation of polychlorinated phenols in the environment based on chlorine isotope fractionation*. International Conference on Chemistry and the Environment (ICCE), Zurich/Switzerland, September 11-15 **2011**; oral presentation.
41. **Aeppli C.**,* Holmstrand H., Bastviken D., Tysklind M., Reddy C.M., Gustafsson Ö. *Investigating formation and degradation of polychlorinated phenols in the environment using chlorine and carbon stable isotope fractionation*. ACS National Meeting, Denver/US, Aug 28-Sept 1 **2011**; oral presentation.
42. **Aeppli C.**,* Wiegert C., Holmstrand H., Gustafsson Ö. *Chlorine isotope fractionation of organic contaminants: added value for in-situ assessment of natural attenuation processes*. Groundwater Quality 2010 conference, International Association for Hydrological Sciences, Zurich/Switzerland, June 13-18 **2010**; oral presentation.
43. **Aeppli C.**,* Wiegert C., Holmstrand H., Andersson A., Gustafsson Ö. *A novel method for analyzing chlorine isotope fractionation for source and fate assessment of organochlorine soil and groundwater pollutants*. EGU 2010 General Assembly, European Geosciences Union, Vienna/Austria, May 2-7 **2010**; oral presentation.
44. **Aeppli C.**,* Amaral H., Berg M., Kipfer R, Hofstetter T.B., Schwarzenbach R.P. *Assessing natural attenuation of a PCE-contaminated aquifer using a combined CSIA and groundwater dating approach*. 18th Goldschmidt Conference, Vancouver/Canada, July **2008**; oral presentation.

Other Presentations

1. **Aeppli C.**, Fields D., Niemisto M., Beirne E. *Arctic Copepods and Oil Spills: When to Apply Dispersants?* Arctic Challenges, Innovations, & Commerce Expo (Arctic C-ICE), Mar 16-17, **2020**; oral presentation (virtual)
2. **Aeppli C.**, *Shining light on marine oil spills: Photo-oxidation effects on the composition, properties, and dispersibility of oil*. ExxonMobil Dispersant Webinar series, Oct 20, **2020**; oral presentation (virtual).
3. **Aeppli C.**, *Fate of petroleum at the sea surface: What did we learn from studying the Deepwater Horizon oil spill?* Eawag Environmental Chemistry Seminar Series, Swiss Federal Institute of Aquatic Sciences and Technology, Dübendorf, Switzerland, July 7, **2019**; oral presentation.
4. **Aeppli C.**, *How does oil photo-oxidation change the composition and property of oil residues?* Ohmsett Dispersant Workshop, Leonardo/NJ, July 25-26, **2019**; oral presentation.
5. **Aeppli C.**, *Formation and characterization of oxygenated oil weathering products after the Deepwater Horizon oil spill*. Ohmsett Dispersant Workshop, Leonardo/NJ, Aug 7-8, **2018**; oral presentation.
6. **Aeppli C.**, *Oil weathering: How did Macondo Well oil change over time?* Sea Grant in the Gulf of Mexico Oil Spill Seminar 'Where did the oil go?' Mobile/AL, April 14, **2016**; oral presentation.

7. **Aeppli C.**, *Beyond PAHs: Occurrence and Fate of Oxygenated Hydrocarbons and Other Polar Compounds in Crude and Weathered Oil*. NOAA Assessment and Restoration Division webinar, December 14 **2015**; online presentation.
8. **Aeppli C.**, *The fate of petroleum hydrocarbons after oil spills: New analytical methods to look at old problems*. Southern Maine Community College Seminar, South Portland ME, November 13, **2014**; oral presentation.
9. **Aeppli C.**, *The fate of petroleum hydrocarbons after oil spills: New analytical methods to look at old problems*. Ocean Studies Seminar Series, Maine Maritime Academy, Castine ME, October 27, **2014**; oral presentation.
10. Reddy C.M., **Aeppli C.** *Unprecedented Weathering of Macondo Well Oil*. Gulf of Mexico Research Initiative (GoMRI) Webinar, October 22, **2014**; online presentation.
11. Reddy, C.M., **Aeppli, C.** *Oil spill fingerprinting: Now and the future*. U.S. Coast Guard's National Pollution Funds Center (NPFC), Arlington, VA, August 27, **2014**; (oral presentation).
12. **Aeppli C.** *40 Years of oil spill research: New ways of looking at old problems*. Bigelow Laboratory Café Scientifique Series, Boothbay ME, July 15 **2014**; oral presentation.
13. **Aeppli C.**, Nelson R.K., Kinnaman F.S., Valentine D.L., Reddy C.M. *Identification of microbial and abiotic oil degradation processes using high-resolution gas chromatography and stable isotopes*. Bates College / U Maine biofuel group seminar, Lewiston ME, March 26, **2014**; oral presentation
14. **Aeppli C.** Where did all the oil go? *The chemistry of oil weathering after the Deepwater Horizon oil spill*. Eawag Environment Chemistry Department Seminar. Dubendorf/Switzerland, Feb 11, **2014**; oral presentation
15. **Aeppli C.** Where did all the oil go? *The chemistry of oil weathering after the Deepwater Horizon oil spill*. Bowdoin College Chemistry department seminar. Brunswick/ME, Dec 6, **2013**; oral presentation
16. Reddy C.M., **Aeppli C.**, Nelson R.K., Kellermann M., Valentine D., *Recurrent oil sheens at the Deepwater Horizon disaster site fingerprinted with synthetic hydrocarbon drilling fluids*, Deep-C consortium meeting, Tallahassee/FL, Sept 10-11 **2013**; oral presentation.
17. **Aeppli C.**, Nelson R.K., Carmichael C.A., Reddy C.M., *Towards a characterization of recalcitrant oxygenated compounds in naturally weathered Macondo well oil*, Deep-C consortium meeting, Tallahassee/FL, Sept 10-11 **2013**; poster presentation.
18. **Aeppli C.**, *Transformation and sources of organic compounds in the environment: New insights using stable isotopes and high resolution gas chromatography*, Bigelow Seminar Series, Bigelow Laboratory for Ocean Sciences, East Boothbay/ME, January 14, **2013**; invited speaker.
19. **Aeppli C.**, *Transformation and sources of organic compounds in the environment: New insights using stable isotopes and high resolution gas chromatography*, Skidaway Seminar Series, Skidaway Institute of Oceanography, Savannah/GA, February 7, **2013**; invited speaker.
20. **Aeppli C.**, Carmichael C.A., Nelson R.K., Lemkau K.L., Redmond M.C., Valentine D.L., Arakawa N., Aluwihare L.I. and Reddy C.M., *Formation of oxygenation hydrocarbons upon oil weathering after the Deepwater Horizon Disaster*. 2nd Deep-C consortium / Gulf of Mexico Research Initiative project meeting, Tallahassee/FL, August 22, **2012**; poster presentation.
21. **Aeppli C.**, *Insights into the environmental formation and degradation of halogenated phenols from stable isotope analysis*. Spring Meeting of the DFG Research Unit 763, Oberjoch/Germany, March 3, **2012**; invited speaker.
22. **Aeppli C.**, *The overlooked fraction in weathered Deepwater Horizon oil: polar, persistent, potentially toxic*. Department of Marine Chemistry & Geochemistry Seminar, Woods Hole, MA, January 31, **2012**; oral presentation.
23. **Aeppli C.**, *Characterizing weathering processes of Deepwater Horizon oil*. Annual WHOI postdoc symposium, Woods Hole MA, October 20, **2011**; oral presentation.
24. **Aeppli C.**, *Assessing sources and fate of organochlorine soil and groundwater pollutants based on their chlorine stable isotopic composition*. Environmental Chemistry Group Seminar, ETH Zurich, October 15, **2010**; oral presentation.
25. **Aeppli C.**, *Assessing the biotransformation of organochlorine soil and groundwater contaminants using compound-specific isotope analysis (CSIA)*. Department of Applied Environmental Science Pollutant Dynamics Seminar, Stockholm University, March 31 **2010**; oral presentation.
26. **Aeppli C.**, *Assessing the biotransformation of soil and groundwater contaminants using compound-specific isotope analysis (CSIA)*. Environmental Chemistry Seminar, Umeå University/Sweden, March 18 **2010**; oral presentation.