



References

- 3M Company. 1999. "Fluorochemical Use, Distribution and Release Overview." USEPA Public Docket AR226-0550. St. Paul, MN, May 26, 1999. <http://www.fluoridealert.org/wp-content/pesticides/pfos.fr.final.docket.0008.pdf>.
- 3M Company. 1999a. "The science of organic fluorochemistry." USEPA. OPPT-2002-0043-0006. Retrieved from <http://www.fluoridealert.org/pesticides/pfos.fr.final.docket.0006.pdf>
- 3M Company. 2000. "Sulfonated Perfluorochemicals in the Environment: Sources, Dispersion, fate and Effects." St. Paul, MN, March 1, 2000. <http://www.fluoridealert.org/wp-content/pesticides/pfos.fr.final.docket.0005.pdf>
- 3M Company. 2006. "3M Production History: Perfluorooctanesulfonyl Fluoride (POSF)." http://www.pops.int/documents/meetings/poprc/submissions/Comments_2006/3M.doc.
- 3M Company. 2017a. "About 3M AdMD Fluoropolymers." http://solutions.3m.com/wps/portal/3M/en_EU/Dyneon_EU/Dyneon_Fluoropolymers/ContactHowtoBuy/AboutDyneon/ (accessed April 27, 2017).
- 3M Company. 2017b. "3M and Fluorochemicals." 2017.
- 14 CFR 139.317 Code of Federal Regulations, Part 139 - Certification of Airports, Section 317 - Aircraft rescue and firefighting: Equipment and agents. <https://www.gpo.gov/fdsys/pkg/CFR-2012-title14-vol3/xml/CFR-2012-title14-vol3-part139.xml>
- 40 CFR 258.40 Code of Federal Regulations, Part 258 - Criteria for Municipal Solid Waste Landfills, Section 258.40 Design criteria. <https://www.gpo.gov/fdsys/pkg/CFR-2008-title40-vol24/xml/CFR-2008-title40-vol24-sec258-40.xml>
- ACS (American Cancer Society). 2016. "Teflon and Perfluorooctanoic Acid (PFOA)." Last revised January 5, 2016. <https://www.cancer.org/cancer/cancer-causes/teflon-and-perfluorooctanoic-acid-pfoa.html>. Accessed May 21, 2017.
- Ahmad, M., A.U. Rajapaksha, J. E. Lim, M. Zhang, N. Bolan, D. Mohan, M. Vithanage, S. S. Lee, and Y.S. Ok. 2014. "Biochar as a sorbent for contaminant management in soil and water: A review." *Chemosphere* 99: 19-33.
- Ahrens, L. 2011. "Polyfluoroalkyl Compounds in the Aquatic Environment: A Review of their Occurrence and Fate," *Journal of Environmental Monitoring* 13: 20-31. <http://dx.doi.org/10.1039/C0EM00373E>.
- Ahrens, L., S. Felizeter, R. Sturm, Z. Xie, and F. Ebinghaus. 2009. "Polyfluorinated compounds in waste water treatment plant effluents and surface waters along the River Elbe, Germany." *Marine Pollution Bulletin* 58: 1326-1333.
- Ahrens L., Z. Xie, and R. Ebinghaus. 2010. "Distribution of perfluoroalkyl compounds in seawater from northern Europe, Atlantic Ocean, and Southern Ocean." *Chemosphere* 78 (8): 1011-6.
- Ahrens, L., M. Shoeib, T. Harner, S. C. Lee, R. Guo, and E. J. Reiner. 2011. "Wastewater Treatment Plant and Landfills as Sources of Polyfluoroalkyl Compounds to the Atmosphere." *Environmental Science and Technology* 45: 8098-8105. <http://dx.doi.org/10.1021/es1036173>
- Ahrens L., M. Shoeib, T. Harner, D. Lane, R. Guo, and E. J. Reiner. 2011a. "Comparison of Annular Diffusion Denuder and High-Volume Air Samplers for Measuring Per- and Polyfluoroalkyl Substances in the Atmosphere. *Analytical Chemistry* 83: 9622-9628.
- Ahrens L., T. Harner, M. Shoeib, D. A. Lane, and J. G. Murphy. 2012. "Improved characterization of gas-particle partitioning for per- and polyfluoroalkyl substances in the atmosphere using annular diffusion denuder samplers." *Environmental Science and Technology* 46 (13): 7199-206.
- Ahrens L., and M. Bundschuh. 2014. "Fate and effects of poly- and perfluoroalkyl substances in the aquatic environment: A

review." *Environmental Toxicology and Chemistry* 33: 1921–1929. DOI: 10.1002/etc.2663.

Ahrens, L., J. Hedlund, W. Wiebke Dürig, R. Troger, and K. Wiberg. 2015. "Screening of PFAS in Groundwater and Surface Water." Swedish Environmental Protection Agency.
<http://naturvardsverket.diva-portal.org/smash/get/diva2:915446/FULLTEXT01.pdf>.

Al-Amoudi, A.S., and A. M. Farooque. 2005. "Performance, restoration and autopsy of NF membranes used in seawater pretreatment." *Desalination* 178: 261–271.

Al-Amoudi, A. and R. W. Lovitt. 2007. "Fouling strategies and the cleaning system of NF membranes and factors affecting cleaning efficiency." *Journal of Membrane Science* 303: 4–28.

Allred, B. M., J. R. Lang, M. A. Barlaz, and J. A. Field. 2015. "Physical and Biological Release of Poly- and Perfluoroalkyl Substances (PFAS) from Municipal Solid Waste in Anaerobic Model Landfill Reactors." *Environmental Science and Technology* 49 (13): 7648–7656. [doi:10.1021/acs.est.5b01040](https://doi.org/10.1021/acs.est.5b01040).

Al-Sofi, M.A.B. 2001. "Seawater desalination—SWCC experience and vision." *Desalination* 135 (1–3): 121–139.

Amec Foster Wheeler. 2017. "Site 8 Pilot Test Results Report, Former Pease Air Force Base." Prepared for Air Force Civil Engineering Center, Joint Base San Antonio – Lakeland, Texas.

Amini, A., Y. Kim, J. Zhang, T. Boyer, and Q. Zhang. 2015. "Environmental and economic sustainability of ion exchange drinking water treatment for organics removal." *Journal of Cleaner Production* 104: 413–421.

Anderson, R. H., G. Cornell Long, R. C. Porter, and J. K. Anderson. 2016. "Occurrence of select perfluoroalkyl substances at U.S. Air Force aqueous film-forming foam release sites other than fire-training areas: Field-validation of critical fate and transport properties." *Chemosphere* 150: 678–685. <http://dx.doi.org/10.1016/j.chemosphere.2016.01.014>

Antea Group. 2011. "Perfluorocarbon (PFC)-Containing Firefighting foams and their Use in Minnesota: Survey and Sampling Activities, State Fiscal Year 2011." June 30. <https://www.pca.state.mn.us/sites/default/files/c-pfc1-20.pdf>

Anumol, T., S. Dagnino, D. R. Vandervort, and S. A. Snyder. 2016. "Transformation of Polyfluorinated compounds in natural waters by advanced oxidation processes." *Chemosphere*, 144: 1780–1787

Appleman, T. D., E. Dickenson, C. Bellona, and C. P. Higgins. 2013. "Nanofiltration and Granular Activated Carbon Treatment of Perfluoroalkyl Acids." *Journal of Hazardous Materials* 260: 740–746.

Appleman, T., C. P. Higgins, O. Quinones, B. Vanderford, C. Klstad, J. Ziegler-Holady, E. Dickenson. 2014. "Treatment of Poly- and Perfluoroalkyl Substances in U.S. Full-Scale Water Treatment Systems." *Water Research* 51: 246–255.

Arabi, S. and A. Lugowski. 2015. "Lessons Learned from Successful Applications of Biological Landfill Leachate Treatment." *Environmental Science and Engineering Magazine* 28(1): 52–55.
<https://esemag.com/biosolids/lessons-learned-successful-applications-biological-landfill-leachate-treatment/>.

Armitage, J. M., I. T. Cousins, R. C. Buck, K. Prevedouros, M. H. Russell, M. MacLeod, and S. H. Korzeniowski. 2006. "Modeling Global-Scale Fate and Transport of Perfluorooctanoate Emitted from Direct Sources." *Environmental Science and Technology* 40: (22) 6969–6975.

Armitage, J. M., M. MacLeod, and I. T. Cousins. 2009. "Modeling the global fate and transport of perfluorooctanoic acid (PFOA) and perfluorooctanoate (PFO) emitted from direct sources using a multispecies mass balance model." *Environmental Science and Technology* 43(4): 1134–40.

Arvaniti, O. S., Y. Hwang, H. R. Andersen, T. S. Nikolaos, and S. S. Athanasios. 2014. "Removal of Perfluorinated Compounds from Water using Nanoscale Zero-Valent Iron." *Singapore International Water Week*.

Arvaniti, O. S., Y. Hwang, H. R. Andersen, A. S. Stasinakis, N. S. Thomaidis, and M. Aloupi. 2015. "Reductive degradation of perfluorinated compounds in water using Mg-aminoclay coated nanoscale zero valent iron." *Chemical Engineering Journal* 262: 133–139.

Asher, B. J., Y. Wang, A. O. De Silva, S. Backus, D. C. Muir, C. S. Wong, and J. W. Martin. 2012. "Enantiospecific perfluorooctane sulfonate (PFOS) analysis reveals evidence for the source contribution of PFOS-precursors to the Lake

Ontario foodweb." *Environmental Science and Technology* 46 (14): 7653-60.

ASTM (ASTM International). 2007. *Standard Guide for Sampling Ground-Water Monitoring Wells*. D 4448-01 (2007). West Conshohocken, PA: ASTM International.

ASTM 2011. *Standard Practice for Environmental Site Assessments: Phase II Environmental Site Assessment Process*, ASTM E 1903-11. West Conshohocken, PA: ASTM International.

ASTM 2013a. *Standard Guide for Sampling Ground-Water Monitoring Wells*. ASTM D 4448-01 (2013). West Conshohocken, PA: ASTM International.

ASTM 2013b. *Standard Guide for Selection of Soil and Rock Sampling Devices Used with Drill Rigs for Environmental Investigations*. ASTM D 6169/6169M-13. West Conshohocken, PA: ASTM International.

ASTM 2013c. *Standard Practice for Environmental Site Assessments: Phase I Environmental Site Assessment Process*. ASTM E1527-13. West Conshohocken, PA: ASTM International.

ASTM 2014a. *Standard Guide for Core Sampling Submerged, Unconsolidated Sediments*. ASTM D 4823-95 (2014). West Conshohocken, PA: ASTM International.

ASTM 2014b. *Standard Guide for Developing Conceptual Site Models for Contaminated Sites*. E1689-95 (2014). West Conshohocken, PA: ASTM International.

ASTM 2017a. *Standard Test Method for Determination of Perfluorinated Compounds in Soil by Liquid Chromatography Tandem Mass Spectrometry (LC/MS/MS)*. D 7968-17a. West Conshohocken, PA: ASTM International.

ASTM 2017b. *Standard Test Method for Determination of Perfluorinated Compounds in Water, Sludge, Influent, Effluent and Wastewater by Liquid Chromatography Tandem Mass Spectrometry (LC/MS/MS)*. D 7979-17. West Conshohocken, PA: ASTM International.

ASTSWMO (Association of State and Territorial Solid Waste Management Officials). 2015. "Perfluorinated Chemicals (PFCs): Perfluorooctanoic Acid (PFOA) and Perfluorooctane Sulfonate (PFOS) Information Paper. Remediation and Reuse Focus Group Federal Facilities Research Center." Washington, D. C.

<https://clu-in.org/download/contaminantfocus/pops/POPs-ASTSWMO-PFCs-2015.pdf>

Atkinson, C., S. Blake, T. Hall, R. Kanda, and P. Rumsby. 2008. "Survey of the prevalence of perfluorooctane sulphonate (PFOS), perfluorooctanoic acid (PFOA) and related compounds in drinking water and their sources." WRc Ref: DEFRA 7585, February. Available at: http://dwi.defra.gov.uk/research/completed-research/reports/DWI70_2_212PFOS.pdf.

ATSDR (Agency for Toxic Substances and Disease Registry). 2008. "Health Consultation: PFOS Detections in the City of Brainerd, Minnesota - City of Brainerd, Crow Wing County, Minnesota," prepared by the Minnesota Department of Health, St. Paul, Minnesota. August 13.

ATSDR 2012. "Public Health Assessment for Perfluorochemical Contamination in Southern Washington County, Northern Dakota County, and Southeastern Ramsey County, Minnesota." Jan. 5, 2012.

ATSDR. 2015. "Draft Toxicological Profile for Perfluoroalkyls." Atlanta, GA: Division of Toxicology and Environmental Medicine/Applied Toxicology Branch. US Department of Health and Human Services.
<http://www.atsdr.cdc.gov/toxprofiles/tp200.pdf>.

ATSDR 2015a. *ToxGuide® for Perfluoroalkyls*. U.S. Department of Health and Human Services, Public Health Service, Agency for Toxic Substances and Disease Registry. Atlanta, GA. Accessed May 2017.
<https://www.atsdr.cdc.gov/substances/toxsubstance.asp?toxid=237>

ATSDR. 2016. "Per- and Polyfluoroalkyl Substances and Your Health: Health Effects of PFAS." Updated August 30, 2016.
https://www.atsdr.cdc.gov/pfc/health_effects_pfc.html.

ATSDR. 2017. "An Overview of Perfluoroalkyl and Polyfluoroalkyl Substances and Interim Guidance for Clinicians Responding to Patient Exposure Concerns." Interim Guidance. Revised on 6/7/2017.
https://www.atsdr.cdc.gov/pfc/docs/pfas_clinician_fact_sheet_508.pdf.

- Avendaño, S. M., and J. Liu. 2015. "Production of PFOS from aerobic soil biotransformation of two perfluoroalkyl sulfonamide derivatives." *Chemosphere* 119: 1084-1090.
- Awad, E., X. Zhang, S. P. Bhavsar, S. Petro, P. W. Crosier, E. J. Reiner, R. Fletcher, S. A. Tittlemier, and E. Braekevelt. 2011. "Long-term environmental fate of perfluorinated compounds after accidental release at Toronto airport." *Environmental Science and Technology* 45: 8081-8089.
- AWWA (American Water Works Association). 2016. "Perfluorinated Compounds Treatment and Removal." Fact Sheet.
- Backe, W. J., T. C. Day, and J. A. Field. 2013. "Zwitterionic, cationic, and anionic fluorinated chemicals in aqueous film forming foam formulations and groundwater from U.S. military bases by nonaqueous large-volume injection HPLC-MS/MS." *Environmental Science and Technology* 47: 5226-5234.
- Baduel, C., C. J. Paxman, and J. F. Mueller. 2015. "Perfluoroalkyl substances in a firefighting training ground (FTG), distribution and potential future release." *Journal of Hazardous Materials* 296: 46-53.
- Banks, R. E., B. E. Smart, and J. C. Tatlow. 1994. *Organofluorine Chemistry: Principles and Commercial Applications*. New York, N. Y.: Spring Science + Business Media.
- Bao Y., J. Niu, Z. Xu, D. Gao, J. Shi, X. Sun, and Q. Huang. 2014. "Removal of perfluorooctane sulfonate (PFOS) and perfluorooctanoate (PFOA) from water by coagulation: mechanisms and influencing factors." *Journal of Colloid and Interface Science* 434: 59-64. doi: 10.1016/j.jcis.2014.07.041.
- Barber, J. L., U. Berger, C. Chaemfa, S. Huber, A. Jahnke, C. Temme, and K. C. Jones. 2007. "Analysis of per- and polyfluorinated alkyl substances in air samples from Northwest Europe." *Journal of Environmental Monitoring* 9(6): 530-541.
- Bartell S. M. 2017. "Online Serum PFOA Calculator for Adults." *Environ Health Perspectives* 125 (10): 104502 -1 to 3. <https://doi.org/10.1289/EHP2820>
- Barton, C. A., L. E. Butler, C. J. Zarzecki, J. Flaherty, and M. Kaiser. 2006. "Characterizing perfluorooctanoate in ambient air near the fence line of a manufacturing facility: comparing modeled and monitored values." *Journal of the Air and Waste Management Association* 56 (1): 48-55.
- Barton, C. A., M. A. Kaiser, and M. H. Russell. 2007. "Partitioning and removal of perfluorooctanoate during rain events: the importance of physical-chemical properties." *Journal of Environmental Monitoring* 8: 839-846.
- Barton, C. A., M. A. Botelho, and M. A. Kaiser. 2008. "Solid vapor pressure and enthalpy of sublimation for perfluorooctanoic acid." *Journal of Chemical and Engineering Data* 53 (4): 939-941.
- Barton, C.A., C. J. Zarzecki, and M. H. Russell. 2010. "A site-specific screening comparison of modeled and monitored air dispersion and deposition for perfluorooctanoate." *Journal of the Air and Waste Management Association* 60(4): 402-411.
- Bardos, R. P., B. D. Bone, R. Boyle, F. Evans, N. D. Harries, T. Howard, and J. W. Smith. 2016. "The rationale for simple approaches for sustainability assessment and management in contaminated land practice." *Science of the Total Environment* 563-564: 755-768.
- Barzen-Hanson, K. A., S. C. Roberts, S. Choyke, K. Oetjen, A. McAlees, N. Riddell, R. McCrindle, P. L. Ferguson, C. P. Higgins, and J. A. Field. 2017. "Discovery of 40 Classes of Per- and Polyfluoroalkyl Substances in Historical Aqueous Film-Forming Foams (AFFFs) and AFFF-Impacted Groundwater." *Environmental Science and Technology* 51 (4): 2047-2057.
- Baudequin C., E. Couallier, M. Rakib, I. Deguerry, R. Severac, and M. Pabon. 2011. "Purification of firefighting water containing a fluorinated surfactant by reverse osmosis coupled to electrocoagulation-filtration." *Separation and Purification Technology* 76(3) :275-82.
- Becker, A. M., S. Gerstmann, and H. Frank. 2008. "Perfluorooctane surfactants in waste waters, the major source of river pollution." *Chemosphere* 72 (1): 115-121.
- Becker, A. M., S. Gerstmann, and H. Frank. 2010. "Perfluorooctanoic acid and perfluorooctane sulfonate in two fish species collected from the Roter Main River, Bayreuth, Germany." *Bulletin of Environmental Contamination and Toxicology* 84 (1): 132.

- Benskin, J. P., L. Ahrens, D. C. G. Muir, B. F. Scott, C. Spencer, B. Rosenberg, G. Tomy, H. Kylin, R. Lohmann, and J. W. Martin. 2011. "Manufacturing Origin of Perfluorooctanoate (PFOA) in Atlantic and Canadian Arctic Seawater." *Environmental Science and Technology* 46: 677-685.
- Benskin, J. P., B. Li, M. G. Ikononou, J. R. Grace, and L. Y. Li. 2012. "Per- and polyfluoroalkyl substances in landfill leachate: patterns, time trends, and sources." *Environmental Science and Technology* 46: 11532-11540.
- Benskin J. P., D. C. Muir, B. F. Scott, C. Spencer, A. O. De Silva, H. Kylin, J. W. Martin, A. Morris, R. Lohmann, G. Tomy, B. Rosenberg, S. Taniyasu, and N. Yamashita. 2012a. "Perfluoroalkyl acids in the Atlantic and Canadian Arctic Oceans." *Environmental Science and Technology* 46 (11): 5815-23.
- Bjorklund, J. A., K. Thuresson, and C. A. de Wit. 2009. "Perfluoroalkyl Compounds (PFCs) in Indoor Dust: Concentrations, Human Exposure Estimates, and Sources." *Environmental Science and Technology* 43: 2276-2281.
- Blaine, A. C., C. D. Rich, L. S. Hundal, C. Lau, M. A. Mills, K. M. Harris and C. P. Higgins 2013. "Uptake of Perfluoroalkyl Acids into Edible Crops via Land Applied Biosolids: Field and Greenhouse Studies." *Environmental Science and Technology* 47 (24): 14062-14069
- Blaine, A. C., C. D. Rich, E. M. Sedlacko, L. S. Hundal, K. Kumar, C. Lau, M. A. Mills, K. M. Harris and C. P. Higgins. 2014. "Perfluoroalkyl Acid Distribution in Various Plant Compartments of Edible Crops Grown in Biosolids-Amended Soils." *Environmental Science and Technology* 48 (14): 7858-7865.
- Blotevogel, J., R. J. Giraud, and T. Borch. 2018. "Reductive defluorination of perfluorooctanoic acid by zero-valent iron and zinc: A DFT-based kinetic model." *Chemical Engineering Journal* 335: 248-254.
- Birk, G. 2015. "RemBind Remediation of PFAS." Tersus Environmental Webinar Series, April 9, 2015. Available at: <https://register.gotowebinar.com/recording/3416140124011835396>
- Birk, G. and D. Alden. 2017. "Ex Situ Treatments of Aqueous Film-Forming Foam Impacted Water," Presented at the *Fourth International Symposium on Bioremediation and Sustainable Environmental Technologies*, May.
- Bossi R., K. Vorkamp, and H. Skov. 2016. "Concentrations of organochlorine pesticides, polybrominated diphenyl ethers and perfluorinated compounds in the atmosphere of North Greenland." *Environmental Pollution* 217: 4-10.
- Boulanger, B., J. D. Vargo, J. L. Schnoor, and K. C. Hornbuckle, 2005. "Evaluation of Perfluorooctane Surfactants in a Wastewater Treatment System and in a Commercial Surface Protection Product." *Environmental Science and Technology* 39 (15): 5524-5530.
- Braunig, J., C. Baduel, A. Heffernan, A. Rotander, E. Donaldson, and J. F. Mueller, 2017. "Fate and redistribution of perfluoroalkyl acids through AFFF-impacted groundwater." *Science of the Total Environment* 596-597: 360-368.
- Brewer, J. (Calgon Corporation). 2017. "Granular Activated Carbon: A Proven Solution for PFAS," presentation at the Cleanup Conference, September.
- Brooke, D., A. Footitt, and T. A. Nwaogu. 2004. Environment Agency. Environmental Risk Evaluation Report: Perfluorooctanesulphonate (PFOS). Section 2: General Information on Exposure. http://www.pops.int/documents/meetings/poprc/submissions/Comments_2006/sia/pfos.uk.risk.eval.report.2004.pdf7
- Brusseau, M. L., 2018. "Assessing the potential contributions of additional retention processes to PFAS retardation in the subsurface." *Science of the Total Environment* 613: 176-185.
- Buck, R. C. 2015. "Toxicology Data for Alternative "Short-Chain" Fluorinated Substances." pp. 451-477 in: *Toxicological Effects of Perfluoroalkyl and Polyfluoroalkyl Substances*. DeWitt, J.C. (Ed.). Humana Press.
- Buck, R. C., J. Franklin, U. Berger, J. M. Conder, I. T. Cousins, P. de Voogt, A. A. Jensen, K. Kannan, S. A. Mabury, and S. P. van Leeuwenet. 2011. "Perfluoroalkyl and Polyfluoroalkyl Substances in the Environment: Terminology, Classification, and Origins." *Integrated Environmental Assessment and Management* 7: 513-541. Open access <http://dx.doi.org/10.1002/ieam.258>
- Burdick, J., I. Ross, J. McDonough, J. Miles, and K. Nowack. 2016. "Poly- and Perfluoroalkyl Substances (PFAS) Treatment: State of the Practice and Mythbusting," presentation as part of webinar on Impacts from Fire Fighting Foams: Policy,

Regulation, Characterization and Treatment for PFCs, sponsored by USEPA and the Society of American Military Engineers (SAME). (multiple technologies) <https://www.same.org/calendar/ModuleID/6303/ItemID/963/mct/EventDetails>

Burns, D. C., D. A. Ellis, H. Li, C. J. McMurdo, and E. Webster. 2008. "Experimental pKa Determination for Perfluorooctanoic Acid (PFOA) and the Potential Impact of pKa Concentration Dependence on Laboratory-Measured Partitioning Phenomena and Environmental Modeling." *Environmental Science and Technology* 42: 9283-9288.

Busch, J., L. Ahrens, R. Sturm, and R. Ebinhaus. 2010. "Polyfluoroalkyl Compounds in Landfill Leachates." *Environmental Pollution* 158: 1467-1471.

Butt C. M., U. Berger, R. Bossi, and G. T. Tomy. 2010. "Levels and trends of poly- and perfluorinated compounds in the arctic environment." *Science of the Total Environment*. 408(15): 2936-65.

Butt, C. M., D. C. Muir, and S. A. Mabury. 2014. "Biotransformation pathways of fluorotelomer-based polyfluoroalkyl substances: A review." *Environmental Toxicology and Chemistry* 33(2): 243-267.

C8SP (C8 Science Panel). 2017. "C8 Science Panel. Probable Links Reports." http://www.c8sciencepanel.org/prob_link.html

Cai M., Z. Zhao, Z. Yin, L. Ahrens, P. Huang, M. Cai, H. Yang, J. He, R. Sturm, R. Ebinghaus, and Z. Xie. 2011. "Occurrence of perfluoroalkyl compounds in surface waters from the North Pacific to the Arctic Ocean." *Environmental Science and Technology* 46(2): 661-8.

Cai M., H. Yang, Z. Xie, Z. Zhao, F. Wang, Z. Lu, R. Sturm, and R. J. Ebinghaus. 2012a. "Per- and polyfluoroalkyl substances in snow, lake, surface runoff water and coastal seawater in Fildes Peninsula, King George Island, Antarctica." *Journal of Hazardous Materials* 209-210: 335-42.

Cai M., Z. Xie, A. Möller, Z. Yin, P. Huang, M. Cai, H. Yang, R. Sturm, J. He, and R. J. Ebinghaus. 2012b. "Polyfluorinated compounds in the atmosphere along a cruise pathway from the Japan Sea to the Arctic Ocean." *Chemosphere* 87(9): 989-97.

CA OEHHA (California Office of Environmental Health Hazard Assessment). 2012. Biomonitoring California. California Teachers Study (CTS) and Firefighters Occupational Exposures (FOX) Project. Accessed December 2017 at: <https://biomonitoring.ca.gov/results/chemical/154>

CA OEHHA. 2013. Biomonitoring California. California Teachers Study (CTS) Results – Perfluorochemicals (PFCs). Accessed February 2018 at: <https://biomonitoring.ca.gov/downloads/california-teachers-study-cts-results-perfluorochemicals-pfcs>

CA OEHHA. 2016. "Notice of Intent to List Perfluorooctanoic Acid (PFOA) and Perfluorooctane Sulfonate (PFOS)." <https://oehha.ca.gov/proposition-65/cnr/notice-intent-list-perfluorooctanoic-acid-pfoa-and-perfluorooctane-sulfonate>

CA RWQCB (California Regional Water Quality Control Board). 2016. "Water Quality Control Plan for the Sacramento and San Joaquin River Basins." Central Valley Region. http://www.waterboards.ca.gov/centralvalley/water_issues/basin_plans/

Calgon Corporation. 2017. "Treatment of Perfluorinated Compounds with Granular Activated Carbon," presentation by Eric Forrester of Calgon to the US Army Corps of Engineers, May.

Cao, M. H., B. B. Wang, H. S. Yu, L. L. Wang, S. H. Yuan, and J. Chen. 2010. "Photochemical decomposition of perfluorooctanoic acid in aqueous periodate with VUV and UV light irradiation." *Journal of Hazardous Materials* 179(1): 1143-1146.

Cappuyns, V., and B. Kessen. 2014. "Combining life cycle analysis, human health and financial risk assessment for the evaluation of contaminated site remediation." *Journal of Environmental Planning and Management* 57(7): 1101-1121.

Carter, K. E., and J. Farrell. 2008. "Oxidative destruction of perfluorooctane sulfonate using boron-doped diamond film electrodes." *Environmental Science and Technology* 42(16): 6111-6115.

Carter, K. E., and J. Farrell. 2009. "Electrochemical oxidation of trichloroethylene using boron-doped diamond film electrodes." *Environmental Science and Technology* 43(21): 8350-8354.

CDC (Centers for Disease Control and Prevention). 2017a. Fourth National Report on Human Exposure to Environmental Chemicals, Updated Tables, Volume 1.

https://www.cdc.gov/biomonitoring/pdf/FourthReport_UpdatedTables_Volume1_Jan2017.pdf

CDC. 2017b. National Biomonitoring Program Biomonitoring Summary Perfluorochemicals. Centers for Disease Control and Prevention 1600 Clifton Road Atlanta, GA 30329-4027, USA. Available at: https://www.cdc.gov/biomonitoring/PFAS_BiomonitoringSummary.html

CEPA. 2017. Canadian Environmental Protection Act, 1999. Federal Environmental Quality Guidelines: Perfluorooctane Sulfonate (PFOS). Environment and Climate Change Canada. February 2017. http://www.crccare.com/files/dmfile/CRCCARETechReport38Part3_AssessmentmanagementandremediationforPFOSandPFOA_ESLs2.pdf

CH2M. 2017. "PFAS Flocculation/Membrane Filtration Testing Results." Technical Memorandum prepared for Environment Canada, September 2017.

Chemours. 2017. "History of Teflon" https://www.chemours.com/Teflon/en_US/products/history.html. Accessed April 2017.

Chen, J., and P. Zhang. 2006. "Photodegradation of perfluorooctanoic acid in water under irradiation of 254 nm and 185 nm light by use of persulfate." *Water Science and Technology* 54(11-12): 317-325.

Chen, J., P. Y. Zhang, and J. Liu. 2006. "Photodegradation of perfluorooctanoic acid by 185 nm vacuum ultraviolet light." *Journal of Environmental Sciences (China)* 19(4): 387-390.

Chen, X., X. Xia, X. Wang, J. Qiao, and H. Chen. 2011. "A comparative study on sorption of perfluorooctane sulfonate (PFOS) by chars, ash and carbon nanotubes." *Chemosphere* 83 (10): 1313 - 1319. <https://doi.org/10.1016/j.chemosphere.2011.04.018>

Chen, Y.-C., S.-L. Lo, and Y.-C. Lee. 2012. "Distribution and Fate of Perfluorinated Compounds (PFCs) in a Pilot Constructed Wetland." *Desalination and Water Treatment* 37(1-3), 178-184.

Chen S., X. C. Jiao, N. Gai, X. J. Li, X. C. Wang, G. H. Lu, H. T. Piao, Z. Rao, and Y. L. Yang. 2016. "Perfluorinated compounds in soil, surface water, and groundwater from rural areas in eastern China." *Environmental Pollution* 211:124-31.

Cheng, J., C. D. Vecitis, H. Park, B. T. Mader, and M. R. Hoffmann. 2008. "Sonochemical degradation of perfluorooctane sulfonate (PFOS) and perfluorooctanoate (PFOA) in landfill groundwater: environmental matrix effects." *Environmental Science and Technology* 44(21): 8057-8063.

Cheng, J., C. D. Vecitis, H. Park, B. T. Mader, and M. R. Hoffmann. 2009. "Sonochemical degradation of perfluorooctane sulfonate (PFOS) and perfluorooctanoate (PFOA) in groundwater: kinetic effects of matrix inorganics." *Environmental Science and Technology* 44(1), 445-450.

Cheng, J. H., X. Y. Liang, S. W. Yang, and Y. Y. Hu. 2014. "Photochemical defluorination of aqueous perfluorooctanoic acid (PFOA) by VUV/Fe³⁺ system." *Chemical Engineering Journal* 239: 242-249.

Choe, J. K., M. H. Mehnert, J. S. Guest, T. J. Strathmann, and C. J. Werth. 2013. "Comparative Assessment of the Environmental Sustainability of Existing and Emerging Perchlorate Treatment Technologies for Drinking Water." *Environmental Science and Technology* 47 (9): 4644-4652.

Choe, J. K., A. M. Bergquist, S. Jeong, J. S. Guest, C. J. Werth, and T. J. Strathmann. 2015. "Performance and life cycle environmental benefits of recycling spent ion exchange brines by catalytic treatment of nitrate." *Water Resources* 80: 267-280.

Choi, D. G., J. H. Jeong, Y. S. Sim, E. S. Lee, W. S. Kim, and B. S. Bae. 2005. "Fluorinated Organic Inorganic Hybrid Mold as a New Stamp for Nanoimprint and Soft Lithography." *Langmuir* 21(21): 9390-9392.

Clara M., S. Scharf, S. Weiss, O. Gans, and C. Scheffknecht. 2008. "Emissions of perfluorinated alkylated substances (PFAS) from point sources— identification of relevant branches." *Water Science and Technology* 58(1) :59-66. doi:10.2166/wst.2008.641

Codling G., C. Halsall, L. Ahrens, S. Del Vento, K. Wiberg, M. Bergknut, H. Laudon, and R. Ebinghaus. 2014. "The fate of per- and polyfluoroalkyl substances within a melting snowpack of a boreal forest." *Environmental Pollution* 191:190-8.

Concawe (Conservation of Clean Air and Water in Europe). 2016. *Environmental Fate and Effects of Poly- and Perfluoroalkyl Substances (PFAS)*. Report No. 8/16. Auderghem, Belgium.

Conder, J. M., R. A. Hoke, W. De Wolf, M. H. Russell, and R. C. Buck. 2008. "Are PFCA's Bioaccumulative? A Critical Review and Comparison with Regulatory Criteria and Persistent Lipophilic Compounds." *Environmental Science and Technology* 42 (4): 995-1003.

Conte, L., L. Falletti, A. Zaggia, and M. Milan. 2015. "Polyfluorinated Organic Micropollutants Removal from Water by Ion Exchange and Adsorption." *Chemical Engineering Transactions* 43: 2015.

Covello, V.T. and F. Allen. 1988. *Seven Cardinal Rules of Risk Communication*. US Environmental Protection Agency, Office of Policy Analysis, Washington, D.C.

CRC CARE. 2017. *Assessment, Management and Remediation Guidance for Perfluorooctanesulfonate (PFOS) and Perfluorooctanoic Acid (PFOA) – Part 5: Management and Remediation of PFOS and PFOA*, CRC CARE Technical Report No. 38. CRC for Contamination Assessment and Remediation of the Environment: Newcastle, Australia.

<http://www.crccare.com/files/dmfile/CRC CARE Tech Report 38 Part 5 Assessment management and remediation for PFOS and PFOA Management and Assessment 2.pdf>.

Cummings, L. A. Matarazzo, N. Nelson, F. Sickels, and C. T. Storms. 2015. *New Jersey Drinking Water Quality Institute Subcommittee, Recommendation on Perfluorinated Compound Treatment Options for Drinking Water*. New Jersey Department of Environmental Protection, Trenton, N. J.

Cundy, A. B., R. P. Bardos, A. Church, M. Puschenreiter, W. Friesl-Hanl, I. Müller, S. Neu, M. Mench, N. Witters, and J. Vangronsveld. 2013. "Developing principles of sustainability and stakeholder engagement for 'gentle' remediation approaches: The European context." *Journal of Environmental Management* 129: 283-291.

D'Agostino, L. A., and S. A. Mabury. 2017. "Aerobic biodegradation of 2 fluorotelomer sulfonamide-based aqueous film-forming foam components produces perfluoroalkyl carboxylates." *Environmental Toxicology and Chemistry* 36(8): 2012-2021.

da Silva-Rackov, C. K., W. A. Lawal, P. A. Nfodzo, M. M. Vianna, C. A. do Nascimento, and H. Choi. 2016. "Degradation of PFOA by hydrogen peroxide and persulfate activated by iron-modified diatomite." *Applied Catalysis B: Environmental* 192: 253-259.

Danish EPA (Danish Environmental Protection Agency). 2015. *Alternatives to Perfluoroalkyl and Polyfluoroalkyl Substances (PFAS) in Textiles*. <http://www2.mst.dk/Udgiv/publications/2015/05/978-87-93352-16-2.pdf>.

Darwin, R. L. 2011. "Estimated Inventory of PFOS-based Aqueous Film Forming Foam (AFFF)." Prepared for the Fire Fighting Foam Coalition, Inc., Arlington, VA.

Dassuncao, C. X., C. Hu, X. Zhang, R. Bossi, M. Dam, B. Mikkelsen, and E. M. Sunderland. 2017. "Temporal Shifts in Poly-and Perfluoroalkyl Substances (PFASs) in North Atlantic Pilot Whales Indicate Large Contribution of Atmospheric Precursors." *Environmental Science and Technology* 51(8): 4512-4521.

Dauchy, X., V. Boiteux, C. Bach, A. Colin, J. Hemard, C. Rosin, and J. F. Munoz. 2017. "Mass flows and fate of per- and polyfluoroalkyl substances (PFASs) in the wastewater treatment plant of a fluorochemical manufacturing facility." *Science of The Total Environment* 576: 549-558.

Davis K. L., M. D. Aucoin, B. S. Larsen, M. A. Kaiser, and A. S. Hartten. 2007. "Transport of ammonium perfluorooctanoate in environmental media near a fluoropolymer manufacturing facility." *Chemosphere* 67: 2011-2019.

Delinsky A. D., M. J. Strynar, P. J. McCann, J. L. Varns, L. McMillan, S. F. Nakayama, A. B. Lindstrom. 2010. "Geographical distribution of perfluorinated compounds in fish from Minnesota lakes and rivers." *Environmental Science and Technology* 44(7): 2549-54.

Deng S., Q. Zhou, G. Yu, J. Huang, and Q. Fan. 2011. "Removal of perfluorooctanoate from surface water by polyaluminium chloride coagulation." *Water Research* 45 (4):1774-80.

D'Eon, J., M. D. Hurley, T. J. Wallington, and S. A. Mabury. 2006. "Atmospheric chemistry of N-methyl perfluorobutane

sulfonamidoethanol: Kinetics and mechanism of reactions with OH." *Environmental Science and Technology* 40: 1862-1868.

D'Eon, J. C., and S. A. Mabury. 2011. "Is indirect exposure a significant contributor to the burden of perfluorinated acids observed in humans?" *Environmental Science and Technology* 45: 7974-7984.

Dickenson, E. and C. Higgins. 2016. *Treatment Mitigation Strategies for Poly- and Perfluorinated Chemicals. Project #4322*. Water Research Foundation: Denver, Colorado.

DMEF. 2015. *Proposal for Maximum Levels for Total Organic Fluorine in Paper and Cardboard Food Packaging* (in Danish). Technical University of Denmark. Kongens Lyngby. Denmark.

Dobraca D., L. Israel, S. McNeel, R. Voss, M. Wang, R. Gajek, J-S. Park, S. Harwani, F. Barley, J. She, and R. Das. 2015. "Biomonitoring in California Firefighters: Metals and Perfluorinated Chemicals." *Journal of Occupational and Environmental Medicine* 57(1): 88-97.

Domingo J. L., and M. Nadal. 2017. "Per-and Polyfluoroalkyl Substances (PFAS) in Food and Human Dietary Intake: A Review of the Recent Scientific Literature." *Journal of Agricultural and Food Chemistry*. 65(3): 533-43.

Dominguez-Ramos, A., K. Chavan, V. García, G. Jimeno, J. Albo, K. V. Marathe, G. D. Yadav, and A. Irabien. 2014. "Arsenic removal from natural waters by adsorption or ion exchange: an environmental sustainability assessment." *Industrial and Engineering Chemistry Research* 53(49): 18920-18927.

Dreyer A., I. Weinberg, C. Temme, and R. Ebinghaus. 2009. "Polyfluorinated compounds in the atmosphere of the Atlantic and Southern Oceans: evidence for a global distribution." *Environmental Science and Technology* 43(17):6507-14.

Dreyer A., V. Matthias, I. Weinberg, and R. Ebinghaus. 2010. "Wet deposition of poly- and perfluorinated compounds in Northern Germany." *Environmental Pollution* 158(5):1221-7.

Dreyer A., T. Kirchgeorg, I. Weinberg, and V. Matthias. 2015. "Particle-size distribution of airborne poly- and perfluorinated alkyl substances." *Chemosphere* 129: 142-149.

Du, Z., S. Deng, Y. Bei, Q. Huang, B. Wang, J. Huang, G. Yu. 2014. "Adsorption behavior and mechanism of perfluorinated compounds on various adsorbents - A review." *Journal of Hazardous Materials* (274): 443-454.

Eberle, D, R. Ball, and T. B. Boving. 2017. "Impact of ISCO treatment on PFAA co-contaminants at a former fire training area." *Environmental Science and Technology* 51: 5127-5136.

Ege, S. N. 1999. *Organic Chemistry: Structure and Reactivity*. Fourth Edition. Boston: Houghton Mifflin Company.

Eggen, T., M. Moeder, and A. Arukwe. 2010. "Municipal landfill leachates: A significant source for new and emerging pollutants." *Science of the Total Environment* 408: 5147-5157. DOI: 10.1016/j.scitotenv.2010.07.049

Ellis D.A., J. W. Martin, A. O. De Silva, S. A. Mabury, M. D. Hurley, M. P. Sulbaek Andersen, and T. J. Wallington. 2004. "Degradation of fluorotelomer alcohols: a likely atmospheric source of perfluorinated carboxylic acids." *Environmental Science and Technology* 38(12): 3316-21.

Emmett E. A., F. S. Shofer, H. Zhang, D. Freeman, C. Desai, and L. M. Shaw. 2006. "Community exposure to perfluorooctanoate: Relationships between serum concentrations and exposure sources." *Journal of Occupational and Environmental Medicine* 48:759-770.

Emmett, E. A., H. Zhang, F. S. Shofer, N. Rodway, C. Desai, D. Freeman, and M. Hufford. 2009. "Development and successful application of a "Community-First" communication model for community-based environmental health research." *Journal of occupational and environmental medicine/American College of Occupational and Environmental Medicine* 51(2): 146.

Emmett, E. A., and C. Desai. 2010. "Community first communication: Reversing information disparities to achieve environmental justice." *Environmental Justice* 3(3): 79-84.

Endpoint Consulting. 2016. Bench-Scale VEG Research and Development Study: Implementation Memorandum for Ex-Situ Thermal Desorption of Perfluoroalkyl Compounds (PFCs) in Soils.
<http://www.endpoint-inc.com/wp-content/uploads/2016/05/VEG-Bench-Scale-PFCs-Soil.pdf>

- Environment Canada. 2006. Ecological Screening Assessment Report on Perfluorooctane Sulfonate, Its Salts, and Its Precursors that Contain the C₈F₁₇SO₂ or C₈F₁₇SO₃ or C₈F₁₇SO₂N Moiety. June 2006. Accessed October 11, 2017: https://www.ec.gc.ca/lcpe-cepa/documents/substances/spfo-pfos/ecological_sar_pfos_eng.pdf
- Environment Canada. 2012. Screening Assessment Report on Perfluorooctanoic Acid, Its Salts, and Its Precursors. August 2012. Accessed October 11, 2017: https://www.ec.gc.ca/ese-ees/370AB133-3972-454F-A03A-F18890B58277/PFOA_EN.pdf
- Environmental Working Group and Northeastern University Social Science Environmental Health Research Institute. 2017. *Mapping A Contamination Crisis*. <http://www.ewg.org/research/mapping-contamination-crisis#.WbbRI-SWzcs>.
- Enviropacific. 2017. "Treatment of PFAS in Soils, Sediments and Water." http://www.enviropacific.com.au/wp-content/uploads/2016/09/Enviropacific_Treatment-of-PFAS.pdf
- Eriksson, U., A. Karrman, A. Rotander, B. Mikkelsen, and M. Dam. 2013. "Perfluoroalkyl substances (PFASs) in food and water from Faroe Islands." *Environmental Science and Pollution Research* 20: 7940-7948.
- Espana, V., M. Mallavarapu, and S. Naidu. 2015. "Treatment technologies for aqueous perfluorooctanesulfonate (PFOS) and perfluorooctanoate (PFOA): A critical review with an emphasis on field testing," *Environmental Technology and Innovation* 4: 168-181.
- ESTCP (Environmental Security Technology Certification Program). 2011. Final Report, Assessing Alternative Endpoints for Groundwater Remediation at Contaminated Sites. ESTCP Project ER-200832. May
- Fakouri, Baygi. S., B. S. Crimmins, P. K. Hopke, and T. M. Holsen. 2016. "Comprehensive Emerging Chemical Discovery: Novel Polyfluorinated Compounds in Lake Michigan Trout." *Environmental Science and Technology* 50 (17): 9460-8.
- Falk, S., K. Failing, S. Georgii, H. Brunn, and T. Stahl. 2015. "Tissue specific uptake and elimination of perfluoroalkyl acids (PFAAs) in adult rainbow trout (*Oncorhynchus mykiss*) after dietary exposure." *Chemosphere* 129: 150-156. <https://doi.org/10.1016/j.chemosphere.2014.06.061>
- Fang S., X. Chen, S. Zhao, Y. Zhang, W. Jiang, L. Yang, and L. Zhu. 2014. "Trophic magnification and isomer fractionation of perfluoroalkyl substances in the food web of Taihu Lake, China." *Environmental Science and Technology* 48 (4): 2173-82.
- Favara, P., J. Tunks, J. Hatton, and W. DiGiuseppi. 2016. "Sustainable Remediation Considerations for Treatment of 1, 4-Dioxane in Groundwater." *Remediation Journal* 27(1): 133-158.
- Federal Aeronautics Administration (FAA). 2006. Aqueous Film Forming Foam (AFFF) meeting MIL-F-24385. FAA CertAlert No. 06-02. February 8, 2006.
- Federal Aeronautics Administration (FAA). 2016. Update on Mil-Spec Aqueous Film Forming Foam (AFFF). FAA CertAlert No. 16-05. September 1, 2016.
- Filipovic, M., H. Laudon, M. S. McLachlan, and U. Berger. 2015. "Mass balance of perfluorinated alkyl acids in a pristine boreal catchment." *Environmental Science and Technology* 49 (20): 12127-12135.
- Flores, C., F. Ventura, J. Martin-Alonso, and J. Caixach. 2013. "Occurrence of perfluorooctane sulfonate (PFOS) and perfluorooctanoate (PFOA) in N.E. Spanish surface waters and their removal in a drinking water treatment plant that combines conventional and advanced treatments in parallel lines." *Science of the Total Environment* 461-462: 618-626.
- FluoroCouncil. 2017. *Research Relevant to Short-Chain PFAS*. (<http://accfc.sachsdigital.com/resources/research/>).
- Franklin J., 2016. "How reliable are field-derived biomagnification factors and trophic magnification factors as indicators of bioaccumulation potential? Conclusions from a case study on per-and polyfluoroalkyl substances." *Integrated Environmental Assessment and Management* 12(1): 6-20.
- Fraser A. J., T. F. Webster, D. J. Watkins, J. W. Nelson, H. M. Stapleton, A. M. Calafat, K. Kato, M. Shoeib, V. M. Vieira, and M. D. McClean. 2012. "Polyfluorinated compounds in serum linked to indoor air in office environments." *Environmental Science and Technology* 46 (2): 1209-15.
- Fricke, M., and U. Lahl. 2005. *Risk Evaluation of Perfluorinated Surfactants as Contribution to the Current Debate on the EU Commission's REACH Document*. UWSF-Z Umweltchem kotox, 17: 36-49.

Frisbee, S. J., A. P. Brooks Jr., A. Maher, P. Flensburg, S. Arnold, T. Fletcher, K. Steenland, A. Shankar, S. S. Knox, C. Pollard, J. A. Halverson, V. M. Vieira, C. Jin, K. M. Leyden, and A. M. Ducatman. 2009. "The C8 Health Project: Design, Methods, and Participants." *Environmental Health Perspectives* 117 (12): 1873-1882.

Frömel, T., C. Gremmel, I. Dimzon, and P. de Voogt. 2016. "Investigations on the presence and behavior of precursors to perfluoroalkyl substances in the environment as a preparation of regulatory measures." Retrieved from: <https://www.umweltbundesamt.de/publikationen/investigations-on-the-presence-behavior-of>

Fromme, H., C. Mosch, M. Morovitz, I. Alba-Alejandre, S. Boehmer, M. Kiranoglu, and W. Völkel. 2010. "Pre-and postnatal exposure to perfluorinated compounds (PFCs)." *Environmental Science and Technology* 44 (18): 7123-7129.

Fromme H., A. Dreyer, S. Dietrich, L. Fembacher, T. Lahrz, W. Völkel. 2015. "Neutral polyfluorinated compounds in indoor air in Germany – the LUPE 4 study." *Chemosphere* 139: 572-578.

Fujii, Y., K. H. Harada, and A. Koizumi. 2013. "Occurrence of perfluorinated carboxylic acids (PFCAs) in personal care products and compounding agents." *Chemosphere* 93 (3): 538-44. doi: 10.1016/j.chemosphere.2013.06.049 Epub 2013 Aug 6

Gauthier S. A., and S. A. Mabury. 2005. "Aqueous photolysis of 8:2 fluorotelomer alcohol." *Environmental Toxicology and Chemistry* 24: 1837-1846. DOI: 10.1897/04-591R.1.

Ge H., E. Yamazaki, N. Yamashita, S. Taniyasu, A. Ogata, and M. Furuuchi. 2017. "Particle size specific distribution of perfluoro alkyl substances in atmospheric particulate matter in Asian cities." *Environ Science: Process and Impacts* 19: 549-560 DOI: 10.1039/c6em00564k.

Gellrich, V., T. Stahl, and T. P. Knepper. 2012. "Behavior of perfluorinated compounds in soils during leaching experiments." *Chemosphere* 87 (9): 1052-1056.

Gebbink, W.A., U. Berger, and I. T. Cousins. 2015. "Estimating human exposure to PFOS isomers and PFCA homologues: the relative importance of direct and indirect (precursor) exposure." *Environment International* 74: 160-9.

Gebbink WA, Bignert A, and U. Berger. 2016. "Perfluoroalkyl Acids (PFAAs) and Selected Precursors in the Baltic Sea Environment: Do Precursors Play a Role in Food Web Accumulation of PFAAs?" *Environmental Science and Technology* 50 (12): 6354-62.

Gerber, B. J. and G. W. Neeley. 2005. "Perceived risk and citizen preferences for governmental management of routine hazards." *Policy Studies Journal* 33 (3): 395-418.

Gewurtz S. B., S. P. Bhavsar, P. W. Crozier, M. L. Diamond, P. A. Helm, C. H. Marvin, and E. J. Reiner. 2009. "Perfluoroalkyl contaminants in window film: indoor/outdoor, urban/rural, and winter/summer contamination and assessment of carpet as a possible source." *Environmental Science and Technology* 43: 7317-7323.

Gewurtz S.B., S. P. Bhavsar, S. Petro, C. G. Mahon, X. Zhao, D. Morse, E. J. Reiner, S. A. Tittlemier, E. Braekevelt, and K. Drouillard. 2014. "High levels of perfluoroalkyl acids in sport fish species downstream of a firefighting training facility at Hamilton International Airport, Ontario, Canada." *Environment International* 67:1-11.

Giesy, J. P. and K. Kannan. 2001. "Global Distribution of Perfluorooctane Sulfonate in Wildlife." *Environmental Science and Technology*, 35 (7): 1339e1342.

Giesy, J. P., J. E. Naile, J. S. Khim, P. D. Jones, and J. L. Newsted. 2010. "Aquatic toxicology of perfluorinated chemicals." In *Reviews of Environmental Contamination and Toxicology* 202 (1-52). Springer New York.

Giri, R. R., H. Ozaki, T. Morigaki, S. Taniguchi, and R. Takanami. 2011. "UV photolysis of perfluorooctanoic acid (PFOA) in dilute aqueous solution." *Water Science and Technology* 63 (2): 276-282.

Giri, R. R., H. Ozaki, T. Okada, S. Taniguchi, and R. Takanami. 2012. "Factors influencing UV photodecomposition of perfluorooctanoic acid in water." *Chemical Engineering Journal* 180: 197-203.

Gobelius, L. 2016. *Uptake of Per- and Polyfluoroalkyl Substances by Plant*. Master's Thesis. Swedish University of Agricultural Sciences, Uppsala, Sweden, 74 p.

Gobelius, L., J. Lewis, and L. Ahrens. 2017. "Plant Uptake of Per- and Polyfluoroalkyl Substances at a Contaminated Fire

Training Facility to Evaluate the Phytoremediation Potential of Various Plant Species." *Environmental Science and Technology* 51(21): 12602-12610

Goldenberg, M., and K. R. Reddy. 2014. "Sustainability Assessment of Excavation and Disposal versus In Situ Stabilization of Heavy Metal-Contaminated Soil at a Superfund Site in Illinois." In *Geo-Congress 2014: Geo-characterization and Modeling for Sustainability* (pp. 2245-2254).

Gomez-Ruiz, B., S. Gómez-Lavín, N. Diban, V. Boiteux, A. Colin, X. Dauchy, and A. Urtiaga. 2017. "Efficient electrochemical degradation of poly- and perfluoroalkyl substances (PFASs) from the effluents of an industrial wastewater treatment plant." *Chemical Engineering Journal* 322: 196-204.

Goosey E, and S. Harrad. 2012. "Perfluoroalkyl substances in UK indoor and outdoor air: Spatial and seasonal variation, and implications for human exposure." *Environment International* 45: 86-90.

Gordon, S. C. 2011. "Toxicological evaluation of ammonium 4,8-dioxo-3H-perfluorononanoate, a new emulsifier to replace ammonium perfluorooctanoate in fluoropolymer manufacturing." *Regulatory Toxicology and Pharmacology* 59: 64-80.

Gore-Tex. 2017. "Our History." <https://www.gore-tex.com/experience/our-history> Accessed September 2017.

Goss, K. U. 2008. "The pK(a) Values of PFOA and Other Highly Fluorinated Carboxylic Acids." *Environmental Science and Technology* 42 (2): 456-458.

Goss, K. U., G. Bronner, T. Harner, M. Hertel, and T. C. Schmidt. 2006. "The partition behavior of fluorotelomer alcohols and olefins." *Environmental Science and Technology* 40 (11): 3572-3577.

Government of Canada. 2005. *Addressing psychosocial factors through capacity building: A guide for managers of contaminated sites*. Minister of Health, Her Majesty the Queen in Right of Canada. Retrieved from: http://publications.gc.ca/collections/collection_2013/sc-hc/H46-2-05-430-eng.pdf

Government of Western Australia Department of Environmental Regulation. 2016. Interim Guideline on the Assessment and Management of Perfluoroalkyl and Polyfluoroalkyl Substances (PFAS), Contaminated Sites Guidelines. February 2016. Accessed November 22, 2017: <https://www.der.wa.gov.au/images/documents/your-environment/contaminated-sites/guidelines/Guideline-on-Assessment-and-Management-of-PFAS-.pdf>

Gremmel, C., T. Frömel, and T. P. Knepper. 2016. "Systematic determination of perfluoroalkyl and polyfluoroalkyl substances (PFASs) in outdoor jackets." *Chemosphere* 160: 173-180

Gu, Y., W. Dong, C. Luo, and T. Liu. 2016. "Efficient Reductive Decomposition of Perfluorooctanesulfonate in a High Photon Flux UV/Sulfite System." *Environmental Science and Technology* 50 (19): 10554-10561.

Guelfo, J. L. and C. P. Higgins. 2013. "Subsurface transport potential of perfluoroalkyl acids at aqueous film-forming foam (AFFF)-impacted sites." *Environmental Science and Technology* 47 (9): 4164-71. doi: 10.1021/es3048043. Epub 2013 Apr 25.

Guo, Z., X. Liu, K. Krebs, and N. Roache. 2009. *Perfluorocarboxylic Acid Content in 116 Articles of Commerce*. EPA/600/R-09/033. Office of Research and Development, National Risk Management Research Laboratory. U.S. Environmental Protection Agency: Research Triangle Park, NC.

Gyllenhammar, I., U. Berger, M. Sundström, P. McCleaf, K. Eurén, S. Eriksson, S. Ahlgren, S. Lignell, M. Aune, N. Kotova, and A. Glynn. 2015. "Influence of contaminated drinking water on perfluoroalkyl acid levels in human serum - A case study from Uppsala, Sweden." *Environmental Research* 140: 673-683.

Hadley, P. W., R. Arulanantham, and D. Gandhi. 2015. "Yardsticks to Integrate Risk Assessment, Risk Management, and Groundwater Remediation." *Remediation*. 3: 9-30.

Hale, J. R. 2016. "Distribution of PFOS in Groundwater from AFFF Storage, Handling, and Use." Accepted to *NGWA Groundwater Solutions: Innovating to Address Emerging Issues in Groundwater Resources Symposium*.

Hamid, H. and L. Y. Li. 2016. "Role of Wastewater Treatment Plant in Environmental Cycling of Poly- and Perfluoroalkyl Substances." *Ecocycles* 2: 43-53.

- Hamid H., L. Y. Li, and J. R. Grace. 2018. "Review of the fate and transformation of per-and polyfluoroalkyl substances (PFASs) in landfills." *Environmental Pollution*. 235: 74-84.
- Hansen, K. J., H. O. Johnson, J. S. Eldridge, J. L. Butenhoff, and L. A. Dick. 2002. "Quantitative Characterization of Trace Levels of PFOS and PFOA in the Tennessee River." *Environmental Science and Technology* 36 (8): 1681-1685.
- Hao, F., W. Guo, A. Wang, Y. Leng, and H. Li. 2014. "Intensification of sonochemical degradation of ammonium perfluorooctanoate by persulfate oxidant." *Ultrasonics Sonochemistry* 21(2): 554-558.
- Harclerode, M. A., D. R. Risdale, D. Darmendrail, P. Bardos, F. Alexandrescu, P. Nathanail, L. Pizzol, and E. Rizzo. 2015. "Integrating the Social Dimension in Remediation Decision-Making: State of the Practice and Way Forward." *Remediation Journal*, 1.
- Harclerode, M. A., P. Lal, N. Vedwan, B. Wolde, and M. E. Miller. 2016a. "Evaluation of the role of risk perception in stakeholder engagement to prevent lead exposure in an urban setting." *Journal of Environmental Management* 184: 132-142.
- Harclerode, M.A., T. Macbeth, M. E. Miller, C. Gurr, and T. S. Myers. 2016b. "Early Decision Framework for Integrating Sustainable Risk Management for Complex Remediation Sites: Drivers, Barriers, and Performance Metrics." *Journal of Environmental Management*, Special Issue: Sustainable Remediation. 184, 57-66.
- Harding-Marjanovic, K.C., E. F. Houtz, S. Yi, J. A. Field, D. L. Sedlak, and L. Alvarez-Cohen. 2015. "Aerobic biotransformation of fluorotelomer thioether amido sulfonate (Lodyne) in AFFF-amended microcosms." *Environmental Science and Technology* 49: 7666-7674
- Harding-Marjanovic K. C., S.Yi, T. S. Weathers, J. O. Sharp, D. L. Sedlak, and L. Alvarez-Cohen. 2016. "Effects of aqueous film-forming foams (AFFFs) on trichloroethene (TCE) dechlorination by a dehalococcoides mccartyi-containing microbial community." *Environmental Science and Technology* 50 (7): 3352-61.
- Haukås, M., U. Berger, H. Hop, B. Gulliksen, and G. W. Gabrielsen. 2007. "Bioaccumulation of per-and polyfluorinated alkyl substances (PFAS) in selected species from the Barents Sea food web." *Environmental Pollution* 148(1): 360-371.
- He, H. P., J. G. Guo, X. D. Xie, and J. L. Peng. 2001. "Location and migration of cations in Cu²⁺-adsorbed montmorillonite." *Environment International* 26: 347-352.
- Hekster, F. M., R. W. Laane, and P. de Voogt. 2003. *Environmental and Toxicity Effects of Perfluoroalkylated Substances*. Reviews of Environmental Contamination and Toxicology pp. 99-121. New York: Springer.
- Hellsing, M. S., S. Josefsson, A. V. Hughes, and L. Ahrens. 2016. "Sorption of perfluoroalkyl substances to two types of minerals." *Chemosphere* 159: 385-391.
- Herrick, R.L., J. Buckholz, F. M. Biro, A. M. Calafat, X. Ye, C. Xie, and S. M. Pinney. 2017. "Polyfluoroalkyl substance exposure in the Mid-Ohio River Valley, 1991-2012." *Environmental Pollution* 228: 50-60.
- Herzke, D., E. Olsson, and P. Posner. 2012. "Perfluoroalkyl and Polyfluoroalkyl Substances (PFASs) in Consumer Products in Norway a Pilot Study." *Chemosphere* 88: 980-987.
- Hickman Jr., H. L. 1999. "A Brief History of Solid Waste Management in the US During the Last 50 Years," September/October and November/December Parts 2 and 3. *MSW Management*.
<http://foresternetwork.com/daily/waste/a-brief-history-of-solid-waste-management-in-the-us-1950-to-2000/>.
- Higgins, C. P., J. A. Field, C. S. Criddle, and R. G. Luthy. 2005. "Quantitative Determination of Perfluorochemicals in Sediments and Domestic Sludge." *Environmental Science and Technology* 39 (11): 3946 - 3956.
- Higgins, C. P., and R. G. Luthy. 2006. "Sorption of perfluorinated surfactants on sediments." *Environmental Science and Technology* 40 (23): 7251-7256.
- Higgins, C. P., and R. G. Luthy. 2007. "Modeling Sorption of Anionic Surfactants onto Sediment Materials: An a priori Approach for Perfluoroalkyl Surfactants and Linear Alkylbenzene Sulfonates." *Environmental Science and Technology* 41(9): 3254-3261.

- Hohenstein, G. 2016. "Overview of Remediation Technologies for PFAS." Presentation at Emerging Contaminants Summit, March.
- Holmquist, H., S. Schellenberger, I. van der Veen, G. M. Peters, I. T. Cousins, and P. E. G. Leonards. 2016. "Properties, Performance and Associated Hazards of State-Of-The-Art Durable Water Repellent (DWR) Chemistry for Textile Finishing." *Environment International* 91: 251-264.
- Hong, S., J. S. Khim, J. Park, M. Kim, W.-K. Kim, J. Jung, S. Hyun, J.-G. Kim, H. Lee, H. J. Choi, G. Codling, and J. P. Giesy. 2013. "In situ fate and partitioning of waterborne perfluoroalkyl acids (PFAAs) in the Youngsan and Nakdong River Estuaries of South Korea." *Science of the Total Environment* 445-446: 136-145.
- Hori, H., E. Hayakawa, H. Einaga, S. Kutsuna, K. Koike, T. Ibusuki, and R. Arakawa. 2004. "Decomposition of environmentally persistent perfluorooctanoic acid in water by photochemical approaches." *Environmental Science and Technology* 38 (22): 6118-6124.
- Hori, H., Y. Nagaoka, A. Yamamoto, T. Sano, N. Yamashita, S. Taniyasu, and S. Kutsuna. 2006. "Efficient Decomposition of Environmentally Persistent Perfluorooctane Sulfonate and Related Fluorochemicals Using Zerovalent Iron in Subcritical Water." *Environmental Science and Technology* 40: 1049-1054.
- Hori, H., A. Yamamoto, K. Koike, S. Kutsuna, I. Osaka, and R. Arakawa. 2007. "Photochemical decomposition of environmentally persistent short-chain perfluorocarboxylic acids in water mediated by iron (II)/(III) redox reactions." *Chemosphere* 68 (3): 572-578.
- Hori, H., Y. Nagaoka, M. Murayama, and S. Kutsuna. 2008. "Efficient decomposition of perfluorocarboxylic acids and alternative fluorochemical surfactants in hot water." *Environmental Science and Technology* 42: 7438-7443.
- Hou, D., Q. Gu, F. Ma, and S. O'Connell. 2016. "Life cycle assessment comparison of thermal desorption and stabilization/solidification of mercury contaminated soil on agricultural land." *Journal of Cleaner Production* 139: 949-956.
- Houde, M., A. O. De Silva, D. C. G. Muir, and R. J. Letcher. 2011. "Monitoring of Perfluorinated Compounds in Aquatic Biota: An Updated Review." *Environmental Science and Technology* 45: 7962-7973.
- Houtz, E. F. and D. L. Sedlak. 2012. "Oxidative conversion as a means of detecting precursors to perfluoroalkyl acids in urban runoff." *Environmental Science and Technology* 46: 9342-9349.
- Houtz, E. F., C. P. Higgins, J. A. Field, and D. L. Sedlak. 2013. "Persistence of perfluoroalkyl acid precursors in AFFF-impacted groundwater and soil." *Environmental Science and Technology* 47(15): 8187-8195. doi: 10.1021/es4018877.
- Hu X. C., D. Q. Andrews, A. B. Lindstrom, T. A. Bruton, L. A. Schaider, P. Grandjean, R. Lohmann, C. C. Carignan, A. Blum, S. A. Balan, C. P. Higgins, and E. M. Sunderland. 2016. "Detection of poly- and perfluoroalkyl substances (PFASs) in U.S. drinking water linked to industrial sites, military fire training areas, and wastewater treatment plants." *Environmental Science and Technology Letters* 3 (10): 344-50. DOI: [10.1021/acs.estlett.6b00260](https://doi.org/10.1021/acs.estlett.6b00260).
- Huang, J., X. Wang, Z. Pan, X. Li, Y. Ling, and L. Li. 2016. "Efficient degradation of perfluorooctanoic acid (PFOA) by photocatalytic ozonation." *Chemical Engineering Journal* 296: 329-334.
- Hurley, M.D., M. P. Sulbaek Andersen, T. J. Wallington, D. A. Ellis, J. W. Martin, and S. A. Mabury. 2004. "Atmospheric chemistry of perfluorinated carboxylic acids: Reaction with OH radicals and atmospheric lifetimes." *The Journal of Physical Chemistry A* 108:615-620.
- Huset, C., M. A. Barlaz, D. F. Barofsky, and J. A. Field. 2011. "Quantitative Determination of Fluorochemicals in Municipal Landfill Leachates." *Chemosphere* 82 (10): 1380-1386.
- IARC (International Agency for Research on Cancer). 2016. "Some Chemicals Used as Solvents and in Polymer Manufacture." *IARC Monographs on the Evaluation of Carcinogenic Risk to Humans*. V. 110: Lyon, France: World Health Organization. <http://monographs.iarc.fr/ENG/Monographs/vol110/mono110.pdf>
- Intergovernmental Data Quality Task Force (IDQTF). 2005. Uniform Federal Policy for Quality Assurance Project Plans. Evaluating, Assessing, and Documenting Environmental Data Collection and Use Programs. Part 1: UFP-QAPP Manual. Final, Version 1, March 2005. EPA: EPA-505-B-04-900A, DoD: DTIC ADA 427785

International Organization for Standardization (ISO). 2009. Technical Committee (TC) 147, Water quality – Determination of perfluorooctanesulfonate (PFOS) and perfluorooctanoate (PFOA) – Method for unfiltered samples using solid phase extraction and liquid chromatography/mass spectrometry, ISO 25101:2009.

Interstate Technology and Regulatory Council (ITRC). 2011a. *Project Risk Management for Site Remediation*. RRM-1. Washington, D.C.: ITRC, Remediation Risk Management Team.

ITRC. 2011b. *Green and sustainable remediation: State of the science and practice*. GSR-1. Washington D.C.: ITRC, Green and Sustainable Remediation Team.

ITRC. 2011c. *Green and sustainable remediation: A practical framework*. GSR-2. Washington, D.C.: ITRC, Green and Sustainable Remediation Team, Remediation Risk Management Team.

ITRC. 2012. *Using Remediation Risk Management to Address Groundwater Cleanup Challenges at Complex Sites*. RRM-2. Washington, D.C.: ITRC, Remediation Risk Management Team.

Izadpanah, A. A., and A. Javidnia. 2012. "The Ability of a Nanofiltration Membrane to Remove Hardness and Ions from Diluted Seawater." *Water* 4: 283-294. doi:[10.3390/w4020283](https://doi.org/10.3390/w4020283)

Jahnke A., U. Berger, R. Ebinghaus, and C. Temme. 2007a. "Latitudinal gradient of airborne polyfluorinated alkyl substances in the marine atmosphere between Germany and South Africa (53 degrees N-33 degrees S)." *Environmental Science and Technology* 41(9): 3055-61.

Jahnke, A., S. Huber, C. Temme, H. Kylin, and U. Berger. 2007b. "Development and application of a simplified sampling method for volatile polyfluorinated alkyl substances in indoor and environmental air." *Journal of Chromatography A* 1164: 1-9.

Jahnke, A., J. L. Barber, K. C. Jones, and C. Temme. 2009. "Quantitative trace analysis of polyfluorinated alkyl substances (PFAS) in ambient air samples from Mace Head (Ireland): A method intercomparison." *Atmospheric Environment* 43(4): 844-850.

Jin, L., P. Zhang, T. Shao, and S. Zhao. 2014. "Ferric ion mediated photodecomposition of aqueous perfluorooctane sulfonate (PFOS) under UV irradiation and its mechanism." *Journal of Hazardous Materials* 271: 9-15.

Jin, L., and P. Zhang. 2015. "Photochemical decomposition of perfluorooctane sulfonate (PFOS) in an anoxic alkaline solution by 185nm vacuum ultraviolet." *Chemical Engineering Journal* 280: 241-247.

Jin, L., C. Jiang, and P. Zhang. 2017. "Photochemical decomposition of 1H, 1H, 2H, 2H-perfluorooctane sulfonate (6: 2FTS) induced by ferric ions." *Journal of Environmental Sciences* 51: 120-127.

Johnson, R., A. Anschutz, J. Smolen, M. Simcik, and R. Penn. 2007. "The Adsorption of Perfluorooctane Sulfonate onto Sand, Clay, and Iron Oxide Surfaces" *Journal of Chemical Engineering Data* 52 (4): 1165-1170.

Kaiser, M. A., B. S. Larsen, C. C. Kao, and R. C. Buck. 2005. "Vapor pressures of perfluorooctanoic,-nonanoic,-decanoic,-undecanoic, and-dodecanoic acids." *Journal of Chemical and Engineering Data* 50: 1841-1843.

Kaiser, M. A., B. J. Dawson, C. A. Barton, and M. A. Botelho. 2010. "Understanding Potential Exposure Sources of Perfluorinated Carboxylic Acids in the Workplace." *Annals of Occupational Hygiene* 54: 915-922.

Kambala, V.S.R., and R. Maidu. 2013. Amine modified clay sorbents and methods for their use. U.S. Patent No. 0023408 A1, January 24, 2013. Washington, DC: U.S. Patent and Trademark Office

Kannan, K., S. Corsolini, J. Falandysz, G. Fillmann, K. Kumar, G. Loganathan, M. Mohd, J. Olivero, N. Van Wouwe, J. Yang, and K. Aldous. 2004. "Perfluorooctanesulfonate and Related Fluorochemicals in Human Blood from Several Countries." *Environmental Science and Technology* 38: 4489-4495.

Kannan K., L. Tao, E. Sinclair, S. D. Pastva, D. J. Jude, and J. P. Giesy. 2005. "Perfluorinated compounds in aquatic organisms at various trophic levels in a Great lakes food chain." *Archives of Contamination and Toxicology* 48: 559-566.

Karrman, A., B. van Bavel, U. Jarnberg, L. Hardell, and G. Lindstrom. 2006. "Perfluorinated Chemicals in Relation to Other Persistent Organic Pollutants in Human Blood." *Chemosphere* 64: 1582-1591.

Kärrman A., K. Elgh-Dalgren, C. Lafossas, and T. Møskeland. 2011. "Environmental levels and distribution of structural isomers of perfluoroalkyl acids after aqueous fire-fighting foam (AFFF) contamination." *Environmental Chemistry* 8: 372-380.

Kato, K., X. Ye, and A. M. Calafat. 2015. *Toxicological Effects of Perfluoroalkyl and Polyfluoroalkyl Substances*, Chapter 3: PFASs in the General Population. J.C. DeWitt, editor. Humana Press, p. 151-76.

KEMI (Swedish Chemicals Inspectorate). 2004. *Perfluorooctane Sulfonate (PFOS) Dossier Prepared in Support for a Nomination of PFOS to the UN-ECE LRTAP Protocol and the Stockholm Convention*. Sweden. August 2004.

KEMI (Swedish Chemicals Inspectorate). 2004. *Perfluorooctane Sulfonate (PFOS) Dossier Prepared in Support for a Nomination of PFOS to the UN-ECE LRTAP Protocol and the Stockholm Convention*. Sweden. August 2004.

KEMI. 2015. *Occurrence and Use of Highly Fluorinated Substances and Alternatives*. Swedish Chemicals Agency, Report 7/15. ISSN 0284-1185. Article number 361 164.

KEMI. 2017. *The 16 New POPs*. Sweden. June 2017.

Kerfoot, W. B. 2014. Method and Apparatus for Treating Perfluoroalkyl Compounds U.S. Patent No. 20,140,246,366. Washington, DC: U.S. Patent and Trademark Office.

Kerfoot, W. B. 2016. "Treatment of Emerging Contaminants of Concern with ActivateOzone," presented at the Florida Remediation Conference, Orlando, FL, Nov. 30-Dec. 1.

Kim S.K., and K. Kannan. 2007. "Perfluorinated acids in air, rain, snow, surface runoff, and lakes: relative importance of pathways to contamination of urban lakes." *Environmental Science and Technology* 41(24): 8328-34.

Kim S.-K., D.-H. Li, M. Shoeib, and K.-D. Zoh. 2014. "Contribution of diffuse inputs to the aqueous mass load of perfluoroalkyl acids in river and stream catchments in Korea." *Science of the Total Environment* 470-471:1430-1440.

Kirchgeorg T., A. Dreyer, J. Gabrieli, N. Kehrwald, M. Sigl, M. Schwikowski, C. Boutron, A. Gambaro, C. Barbante, and R. Ebinghaus. 2013. "Temporal variations of perfluoroalkyl substances and polybrominated diphenyl ethers in alpine snow." *Environmental Pollution* 178: 367-74.

Kirchgeorg T., A. Dreyer, P. Gabrielli, J. Gabrieli, L. G. Thompson, C. Barbante, and R. Ebinghaus. 2016. "Seasonal accumulation of persistent organic pollutants on a high-altitude glacier in the Eastern Alps." *Environmental Pollution* 218: 804-812.

Kissa, E. 2001. *Fluorinated Surfactants and Repellents, Second Edition Revised and Expanded*. Hubbard, A. T., Ed. Surfactant Science Series New York: Marcel Dekker, Inc.

Kotthoff, M., J. Müller, H. Jüring, M. Schlummer, and D. Fiedler. 2015. "Perfluoroalkyl and Polyfluoroalkyl Substances in Consumer Products." *Environmental Science and Pollution Research* 22 (9): 14546-14559.

Krafft, M.P. and J. G. Riess. 2015. "Selected physicochemical aspects of poly- and perfluoroalkylated substances relevant to performance, environment and sustainability—Part one." *Chemosphere* 129: 4-19.

Kramer, H. J., W. A. van den Ham, W. Slob, and M. N. Pieters. 1996. "Conversion factors estimating indicative chronic no-observed-adverse-effect-levels from short-term toxicity data." *Regulatory Toxicology and Pharmacology* 23: 249-255.

Krusic, P. J., A. A. Marchione, F. Davidson, M. Kaiser, C. C. Kao, R. Richardson, M. Botelho, R. Waterland, and R. C. Buck. 2005. "Vapor pressure and intramolecular hydrogen bonding in fluorotelomer alcohols." *The Journal of Physical Chemistry A* 109(28): 6232-6241.

Kuykendall, D. C., and A. McMullan. 2014. "Using an Environmental Footprint Analysis to Evaluate the Sustainability of Remedial Alternatives." In SPE International Conference on Health, Safety, and Environment. Society of Petroleum Engineers.

Kwadijk, C. J. A. F., I. Velzeboer, and A. A. Koelmans. 2013. "Sorption of perfluorooctane sulfonate to carbon nanotubes in aquatic sediments." *Chemosphere* 90 (5): 1631-1636

Kwadijk, C. J. A. F., M. Kotterman, and A. A. Koelmans. 2014. "Partitioning of perfluorooctanesulfonate and perfluorohexanesulfonate in the aquatic environment after an accidental release of aqueous film forming foam at Schiphol

Amsterdam airport." *Environmental Toxicology and Chemistry* 33(8): 1761-1765

Kwok, K. Y., S. Taniyasu, L. W. Yeung, M. B. Murphy, P. K. Lam, Y. Horii, K. Kannan, G. Petrick, R. K. Sinha, and N. Yamashita. 2010. "Flux of perfluorinated chemicals through wet deposition in Japan, the United States, and several other countries." *Environmental Science and Technology* 44 (18): 7043-9.

Kwok, K. Y., E. Yamazaki, N. Yamashita, S. Taniyasu, M. Murphy, Y. Horii, G. Petrick, R. Kallerborn, K. Kannan, K. Murano, and P. K. S. Lam. 2013. "Transport of perfluoroalkyl substances (PFAS) from an arctic glacier to downstream locations: Implications for sources." *Science of the Total Environment* 447: 46-55.

Lai S., J. Song, T. Song, Z. Huang, Y. Zhang, Y. Zhao, G. Liu, J. Zheng, W. Mi, J. Tang, S. Zou, R. Ebinghaus, and Z. Xie. 2016. "Neutral polyfluoroalkyl substances in the atmosphere over the northern South China Sea." *Environmental Pollution* 214: 449-55.

Lamb, D. T., K. Venkatraman, N. Bolan, N. Ashwath, G. Choppala, and R. Naidu. 2014. "Phytocapping: an alternative technology for the sustainable management of landfill sites." *Critical Reviews in Environmental Science and Technology* 44 (6): 561-637.

Lang, J. R. 2016. "Per- and Polyfluoroalkyl Substances in Municipal Solid Waste and Landfill Leachate." Under the direction of Dr. Morton A. Barlaz. <https://repository.lib.ncsu.edu/bitstream/handle/1840.20/33339/etd.pdf?sequence=1>.

Lang, J. R., B. M. Allred, J. A. Field, and M. A. Barlaz. 2016. "Physical and biological release of poly- and perfluoroalkyl substances (PFAS) in laboratory-scale anaerobic bioreactors filled with carpet and clothing." *Environmental Science and Technology* 50: 5024–5032.

Lang, J. R., B. M. Allred, J. A. Field, J. W. Levis, and M.A. Barlaz. 2017. "National Estimate of Per- and Polyfluoroalkyl Substance (PFAS) Release to US Municipal Landfill Leachate." *Environmental Science and Technology* 51 (4): 2197–2205.

Langer V., A. Dreyer, and R. Ebinghaus. 2010. "Polyfluorinated compounds in residential and nonresidential indoor air." *Environmental Science and Technology* 44: 8075-8081.

Lanza, H. A., R. S. Cochran, J. F. Mudge, A. D. Olson, B. R. Blackwell, J. D. Maul, C. J. Salice, and T. A. Anderson. 2017. "Temporal monitoring of PFOS accumulation in aquatic biota downstream of historical aqueous film forming foam use areas." *Environmental Toxicology and Chemistry* 36 (8): 2022 – 2029.

Lassen, C., J. Kjøholt, S. H. Mikkelsen, M. Warming, A. A. Jensen, R. Bossi, and I. B. Nielsen. 2015. *Polyfluoroalkyl substances (PFASs) in textiles for children – Survey of chemical substances in consumer products*. No. 136. Danish Environmental Protection Agency, Copenhagen, Denmark

Lechner, M. and H. Knapp. 2011. Carryover of perfluorooctanoic acid (PFOA) and perfluorooctane sulfonate (PFOS) from soil to plant and distribution to the different plant compartments studied in cultures of carrots (*Daucus carota* sp. *Sativus*), potatoes (*Solanum tuberosum*), and cucumbers (*Cucumis sativus*). *Journal of Agricultural and Food Chemistry* 59: 11011-11018.

Lee, Y.-C., S.-L. Lo, P.-T. Chiueh, and D.-G. Chang. 2009. "Efficient decomposition of perfluorocarboxylic acids in aqueous solution using microwave-induced persulfate." *Water Research* 43 (11): 2811-2816.

Lee, Y.-C., S.-L. Lo, P.-T. Chiueh, Y.-H. Liou, and M.-L. Chen, M. 2010. "Microwave-hydrothermal decomposition of perfluorooctanoic acid in water by iron-activated persulfate oxidation." *Water Research* 44 (3): 886-892.

Lee, Y., S. Lo, J. Kuo, and C. Hsieh. 2012a. "Decomposition of perfluorooctanoic acid by microwave-activated persulfate: Effects of temperature, pH, and chloride ions." *Frontiers of Environmental Science and Engineering* 6 (1): 17-25.

Lee, Y.-C., S.-L. Lo, J. Kuo, and Y.-L. Lin. 2012b. "Persulfate oxidation of perfluorooctanoic acid under the temperatures of 20–40 C." *Chemical Engineering Journal* 198-199: 27-32.

Lee, Y., M. Chen, C. Huang, J. Kuo, and S. Lo. 2016. "Efficient sonochemical degradation of perfluorooctanoic acid using periodate." *Ultrasonics Sonochemistry* 31 499-505.

Li, X., L. W. Yeung, M. Xu, S. Taniyasu, P. K. Lam, N. Yamashita, and J. Dai. 2008. "Perfluorooctane sulfonate (PFOS) and other fluorochemicals in fish blood collected near the outfall of wastewater treatment plant (WWTP) in Beijing."

Environmental Pollution 156 (3): 1298-303.

Li, X., S. Chen, X. Quan, and Y. Zhang. 2011. "Enhanced Adsorption of PFOA and PFOS on Multiwalled Carbon Nanotubes under Electrochemical Assistance." *Environmental Science and Technology* 45 (19): 8498-8505

Li, X., J. Ma, G. Liu, J. Fang, S. Yue, Y. Guan, and X. Liu. 2012. "Efficient reductive dechlorination of monochloroacetic acid by sulfite/UV process." *Environmental Science and Technology* 46 (13): 7342-7349.

Liang, X., J. Cheng, C. Yang, and S. Yang. 2016. "Factors influencing aqueous perfluorooctanoic acid (PFOA) photodecomposition by VUV irradiation in the presence of ferric ions." *Chemical Engineering Journal* 298: 291-299.

Liao, Z., and J. Farrell. 2009. "Electrochemical oxidation of perfluorobutane sulfonate using boron-doped diamond film electrodes." *Journal of Applied Electrochemistry* 39 (10): 1993-1999.

Lin, A. Y. C., S. C. Panchangam, and C.C. Lo. 2009. "The Impact of Semiconductor, Electronics and Optoelectronic Industries on Downstream Perfluorinated Chemical Contamination in Taiwanese Rivers." *Environmental Pollution* 157 (4): 1365-1372.

Lin, A. Y. C., Panchangam, S. C., Chang, C. Y., Hong, P. A., and Hsueh, H. F. 2012a. "Removal of perfluorooctanoic acid and perfluorooctane sulfonate via ozonation under alkaline conditions." *Journal of Hazardous Materials* 243: 272-277.

Lin, H., J. Niu, S. Ding, and L. Zhang. 2012b. "Electrochemical degradation of perfluorooctanoic acid (PFOA) by Ti/SnO₂-Sb, Ti/SnO₂-Sb/PbO₂ and Ti/SnO₂-Sb/MnO₂ anodes." *Water Research* 46 (7): 2281-2289.

Lin, A. Y., S. C. Panchangam, Y. T. Tsai, and T. H. Yu. 2014. "Occurrence of perfluorinated compounds in the aquatic environment as found in science park effluent, river water, rainwater, sediments, and biotissues." *Environmental Monitoring and Assessment* 186 (5): 3265-75

Lin, H., Y. Wang, J. Niu, Z. Yue, and Q. Huang. 2015a. "Efficient sorption and removal of perfluoroalkyl acids (PFAAs) from aqueous solution by metal hydroxides generated in situ by electrocoagulation." *Environmental Science and Technology* 49 (17): 10562-9.

Lin, J., S. Lo, C. Hu, Y. Lee, and J. Kuo. 2015b. "Enhanced sonochemical degradation of perfluorooctanoic acid by sulfate ions." *Ultrasonics Sonochemistry* 22 542-547.

Lin, J., C. Hu, and S. Lo. 2016. "Effect of surfactants on the degradation of perfluorooctanoic acid (PFOA) by ultrasonic (US) treatment." *Ultrasonics Sonochemistry* 28: 130-135.

Lindstrom, A. B., M. J. Strynar, A. D. Delinsky, S. F. Nakayama, L. McMillan, E. L. Libelo, M. Neill, and L. Thomas. 2011. "Application of WWTP Biosolids and Resulting Perfluorinated Compound Contamination of Surface and Well Water in Decatur, Alabama, USA." *Environmental Science and Technology* 45 (19): 8015-8021.

Lindstrom, A., M. Strynar, and L. Libelo. 2011. "Polyfluorinated Compounds: Past, Present, and Future." *Environmental Science and Technology* 45: 7954-7961.

Lipp, P., F. Sacher, and G. Baldauf. 2010. "Removal of organic micro-pollutants during drinking water treatment by nanofiltration and reverse osmosis." *Desalination and Water Treatment* 13(1-3): 226-237.

Lipson, D. S., B. Raine, and M. Webb. 2013. "Transport of Perfluorooctane Sulfonate (PFOS) in Fractured Bedrock at a Well-Characterized Site." *Proceedings of the SETAC Europe Conference, Glasgow*.

Liu, W., Y. Jin, X. Quan, K. Sasaki, N. Saito, S. F. Nakayama, I. Sato, and S. Tsuda. 2009. "Perfluorosulfonates and perfluorocarboxylates in snow and rain in Dalian, China." *Environment International* 35 (4): 737-42.

Liu, W., S. Chen, K. H. Harada, and A. Koizumi. 2011. "Analysis of perfluoroalkyl carboxylates in vacuum cleaner dust samples in Japan." *Chemosphere* 85(11):1734-41.

Liu, W., S. Chen, K. H. Harada, and A. Koizumi. 2011. "Analysis of perfluoroalkyl carboxylates in vacuum cleaner dust samples in Japan." *Chemosphere* 85(11):1734-41.

Liu, J. and S. Mejia-Avenida. 2013. "Microbial degradation of polyfluoroalkyl chemicals in the environment: A review." *Environment International* 61: 98-114.

- Liu, X., Z. Guo, A. K. Krebs, H. R. Pope, and R. F. Roache. 2014. "Concentrations and trends of perfluorinated chemicals in potential indoor sources from 2007 through 2011 in the US." *Chemosphere* 98: 51-57.
- Liu, X., Z. Guo, E. E. Folk, and N. F. Roache. 2015. "Determination of Fluorotelomer Alcohols in Selected Consumer Products and Preliminary Investigation of Their Fate in the Outdoor Environment." *Chemosphere* 129: 81-86.
- Liu, B., H. Zhang, D. Yao, J. Li, L. Xie, X. Wang, Y. Wang, G. Liu, and B. Yang. 2015a. "Perfluorinated compounds (PFCs) in the atmosphere of Shenzhen, China: Spatial distribution, sources and health risk assessment." *Chemosphere* 38:511-8.
- Liu, Z., Y. Lu, T. Wang, P. Wang, Q. Li, A. C. Johnson, S. Sarvajayakesavalu, and A. J. Sweetman. 2016. "Risk assessment and source identification of perfluoroalkyl acids in surface and ground water: Spatial distribution around a mega-fluorochemical industrial park, China." *Environment International* 91: 69-77.
- Loewen, M., F. Wania, F. Wang, and G. Tomy. 2008. "Altitudinal Transect of Atmospheric and Aqueous Fluorinated Organic Compounds in Western Canada." *Environmental Science and Technology* 42: 2374-2379.
- Lohmann, R., E. Jurado, H. A. Dijkstra, and J. Dachs. 2013. "Vertical eddy diffusion as a key mechanism for removing perfluorooctanoic acid (PFOA) from the global surface oceans." *Environmental Pollution* 179: 88-94.
- Loi-Brügger, A., S. Panglisch, G. Hoffmann, P. Buchta, and R. Gimbel. 2008. "Removal of trace organic substances from river bank filtrate - performance study of RO and NF Membranes." *Water Science and Technology: Water Supply* 8(1): 85-92.
- Luo, Q. 2015. *Degradation of Perfluoroalkyl Acids by Enzyme Catalyzed Oxidative Humification Reactions*. PhD Dissertation, University of Georgia, Athens Georgia.
- Lupton, S. J., J. K. Huwe, D. J. Smith, K. L. Dearfield, and J. J. Johnston. 2014. "Distribution and excretion of perfluorooctane sulfonate (PFOS) in beef cattle (*Bos taurus*)." *Journal of Agricultural and Food Chemistry* 62 (5): 1167-1173.
- Lyu, X. J., W. W. Li, P. K. Lam, and H. Q. Yu. 2015a. "Boiling significantly promotes photodegradation of perfluorooctane sulfonate." *Chemosphere* 138: 324-327.
- Lyu, X. J., W. W. Li, P. K. Lam, and H. Q. Yu. 2015b. "Insights into perfluorooctane sulfonate photodegradation in a catalyst-free aqueous solution." *Scientific reports*, 5.
- Martin, J. W., S. A. Mabury, K. R. Solomon, and D. C. Muir. 2003a. "Bioconcentration and tissue distribution of perfluorinated acids in rainbow trout (*Oncorhynchus mykiss*)." *Environmental Toxicology and Chemistry* 22: 196-204. <http://dx.doi.org/10.1002/etc.5620220126>.
- Martin, J. W., S. A. Mabury, K. R. Solomon, and D. C. Muir. 2003b. "Dietary accumulation of perfluorinated acids in juvenile rainbow trout (*Oncorhynchus mykiss*)." *Environmental Toxicology and Chemistry* 22: 189-195. <http://dx.doi.org/10.1002/etc.5620220125>.
- Martin, J. W., D. M. Whittle, D. C. G. Muir, and S. A. Mabury. 2004. "Perfluoroalkyl contaminants in a food web from Lake Ontario." *Environmental Science and Technology* 38: 5379-5385.
- Martin, J. W., D. A. Ellis, S. A. Mabury, M. D. Hurley, and T. J. Wallington. 2006. "Atmospheric chemistry of perfluoroalkanesulfonamides: Kinetic and product studies of the OH radical and Cl atom initiated oxidation of N-ethyl perfluorobutanesulfonamide." *Environmental Science and Technology* 40: 864-872.
- Martin, J. W., B. J. Asher, S. Beesoon, J. P. Benskina, and M. S. Ross. 2010. "PFOS or PreFOS? Are perfluorooctane sulfonate precursors (PreFOS) important determinants of human and environmental perfluorooctane sulfonate (PFOS) exposure?" *Journal of Environmental Monitoring* 12: 1929-2188. DOI: 10.1039/c0em00295j
- Martin, J. W., S. A. Mabury, K. R. Solomon, and D. C. G. Muir. 2013. "Progress toward understanding the bioaccumulation of perfluorinated alkyl acids." *Environmental Toxicology and Chemistry* 32 (11): 2421-2423. <https://doi.org/10.1002/etc.2376>
- Maul, G. A., Y. Kim, A. Amini, Q. Zhang, and T. H. Boyer. 2014. "Efficiency and life cycle environmental impacts of ion-exchange regeneration using sodium, potassium, chloride, and bicarbonate salts." *Chemical Engineering Journal* 254: 198-209.
- McGuire, M. E., C. Schaefer, T. Richards, W. J. Backe, J. A. Field, E. Houtz, D. L. Sedlak, J. L. Guelfo, A. Wunsch, and C. P.

- Higgins. 2014. "Evidence of remediation-induced alteration of subsurface poly- and perfluoroalkyl substance distribution at a former firefighter training area." *Environmental Science and Technology* 48:6644-6652
- McKenzie, E. R., R. L. Siegrist, J. E. McCray, and C. P. Higgins. 2015. "Effects of chemical oxidants on perfluoroalkyl acid transport in one-dimensional porous media columns." *Environmental Science and Technology* 49 (3): 1681-9. doi: 10.1021/es503676p. Epub 2015 Jan 26.
- McKenzie, E. R., R. L. Siegrist, J. E. McCray, and C. P. Higgins. 2016. "The influence of a non-aqueous phase liquid (NAPL) and chemical oxidant application on perfluoroalkyl acid (PFAA) fate and transport." *Water Research* 92: 199-207. doi: 10.1016/j.watres.2016.01.025. Epub 2016 Jan 14.
- MDH. 2008. Health Consultation - PFOS Detections in the City of Brainerd, Minnesota. Prepared by the Minnesota Department of Health. August 13, 2008. Accessed Jan.30, 2018 at <http://www.health.state.mn.us/divs/eh/hazardous/topics/pfcs/pfosdetectbrainerd.pdf>
- MDH 2017. MDH Current Activities: Perfluorochemicals (PFCs) in Minnesota, updated October 2017 (<http://www.health.state.mn.us/divs/eh/hazardous/topics/pfcs/index.html#activities>, see also: <http://www.health.state.mn.us/divs/eh/hazardous/topics/pfcs/index.html#Environment> (both accessed on-line Jan. 18, 2018). Minnesota Department of Health.
- Mejia-Avendaño, S. and J. Liu. 2015. "Production of PFOS from aerobic soil biotransformation of two perfluoroalkyl sulfonamide derivatives." *Chemosphere* 119: 1084-1090.
- Mejia-Avendaño, S., S. V. Duy, S. Sauvé, and J. Liu. 2016. "Generation of perfluoroalkyl acids from aerobic biotransformation of quaternary ammonium polyfluoroalkyl surfactants." *Environmental Science and Technology* 50 (18): 9923-32.
- Mimna, R. 2017. Calgon Memorandum titled "Reactivation of Activated Carbon for PFAS Removal," June.
- Mitchell, S. M., M. Ahmad, A. L. Teel, and R. J. Watts. 2014. "Degradation of perfluorooctanoic acid by reactive species generated through catalyzed H₂O₂ propagation reactions." *Environmental Science and Technology Letters* 1(1): 117-121.
- Miteni. 2016. *Miteni-Company Profile-History*. <http://www.miteni.com/Company%20Profile/History/history.html> Accessed April 26, 2017.
- Mogensen, U. B., P. Grandjean, F. Nielsen, P. Weihe, and E. Budtz-Jørgensen. 2015. "Breastfeeding as an Exposure Pathway for Perfluorinated Alkylate." *Environmental Science and Technology* 49(17): 10466-10473,
- Moody, C. A., and J. A. Field. 1999. "Determination of perfluorocarboxylates in groundwater impacted by fire-fighting activity." *Environmental Science and Technology* 33 (16): 2800-2806.
- Moody C. A., J. W. Martin, W. C. Kwan, D. C. Muir, and S. A. Mabury. 2002. "Monitoring perfluorinated surfactants in biota and surface water samples following an accidental release of fire-fighting foam into Etobicoke Creek." *Environmental Science and Technology* 36 (4): 545-51.
- Moody, C. A., G. N. Hebert, S. H. Strauss, and J. A. Field. 2003. "Occurrence and persistence of perfluorooctanesulfonate and other perfluorinated surfactants in groundwater at a fire-training area at Wurtsmith Air Force Base, Michigan, USA." *Journal of Environmental Monitoring* 5 (2): 341-345.
- Moriwaki H., Y. Takatah, and R. Arakawa. 2003. "Concentrations of perfluorooctane sulfonate (PFOS) and perfluorooctanoic acid (PFOA) in vacuum cleaner dust collected in Japanese homes." *Journal of Environmental Monitoring* 5 (5): 753-7.
- Moriwaki, H., Y. Takagi, M. Tanaka, K. Tsuruho, K. Okitsu, and Y. Maeda. 2005. "Sonochemical decomposition of perfluorooctane sulfonate and perfluorooctanoic acid." *Environmental Science and Technology* 39(9): 3388-3392.
- Moschet, C., B. M. Lew, S. Hasenbein, T. Anumol, and T. M. Young. 2017. "LC-and GC-QTOF-MS as Complementary Tools for a Comprehensive Micropollutant Analysis in Aquatic Systems." *Environmental Science and Technology* 51(3): 1553-1561.
- MPCA (Minnesota Pollution Control Agency). 2017. *Perfluorochemical (PFC) Waste Sites*. https://www.epa.gov/sites/production/files/2017-02/documents/2016_pfoa_stewardship_summary_table_0.pdf
- Naile, J. E., J. S. Khim, S. Hong, J. Park, B. O. Kwon, J. S. Ryu, J. H. Hwang, P. D. Jones, and J. P. Giesy. 2013. "Distributions and

bioconcentration characteristics of perfluorinated compounds in environmental samples collected from the west coast of Korea." *Chemosphere* 90(2): 387-394.

National Environmental Protection Council (NEPC). 2013. National Environment Protection (Assessment of Site Contamination) Measure 1999, Volume 9: Schedule B6 Guideline On The Framework for Risk-Based Assessment of Groundwater Contamination. Federal Register of Legislative Instruments F2013C00288.

Newton, S., R. McMahan, J. A. Stoeckel, M. Chislock, A. Lindstrom, and M. Strynar. 2017. "Novel polyfluorinated compounds identified using high resolution mass spectrometry downstream of manufacturing facilities near Decatur, Alabama." *Environmental Science and Technology* 51(3): 1544-1552.

National Groundwater Association (NGWA). 2017. "Groundwater and PFAS: State of Knowledge and Practice." <http://www.ngwa.org/Professional-Resources/Pages/Groundwater-and-PFAS.aspx>. December.

Navarro, I., A. de la Torre, P. Sanz, J. Pro, G. Carbonell, and M. L. Á. Martínez. 2016. "Bioaccumulation of emerging organic compounds (perfluoroalkyl substances and halogenated flame retardants) by earthworm in biosolid amended soils." *Environmental Research* 149: 32-39.

Navarro, I., A. de la Torre, P. Sanz, M. Á. Porcel, J. Pro, G. Carbonell, and M. de los Ángeles Martínez. 2017. "Uptake of Perfluoroalkyl Substances and Halogenated Flame Retardants by Crop Plants Grown in Biosolids- Amended Soils." *Environmental Research* 152: 199-206.

Ng, C. A. and K. Hungerbühler. 2013. "Bioconcentration of Perfluorinated Alkyl Acids: How Important is Specific Binding?" *Environmental Science and Technology* 47: 7214-7223.

Ng, C. A. and K. Hungerbühler. 2014. "Bioaccumulation of Perfluorinated Alkyl Acids: Observations and Models." *Environmental Science and Technology* 48: 4637-4648.

NH DES. 2017. On-line GIS application, PFAS Sampling Results. New Hampshire Department of Environmental Services. Accessed 5/16/2017
at: <http://nhdes.maps.arcgis.com/apps/View/index.html?appid=66770bef141c43a98a445c54a17720e2&dextent=-73.5743,42.5413,-69.6852,45.4489>

Nickelsen, M. G., and S. E. Woodard. 2017. "A sustainable system and method for removing and concentrating per- and polyfluoroalkyl substances (PFAS) from water." Patent No. US20170297926 A1. Washington, DC: U.S. Patent and Trademark Office.

Nilsson, H., A. Karrman, A. Rotander, B. van Bavel, G. Linstrom, and H. Westberg. 2013. "Professional ski waxers' exposure to PFAS and aerosol concentrations in gas phase and different particle size fractions." *Environmental Science: Processes and Impacts* 15: 814-822.

Niu, J., H. Lin, J. Xu, H. Wu, and Y. Li. 2012. "Electrochemical mineralization of perfluorocarboxylic acids (PFCAs) by Ce-doped modified porous nanocrystalline PbO₂ film electrode." *Environmental Science and Technology* 46 (18): 10191-10198.

Niu, J., H. Lin, C. Gong, and X. Sun. 2013. "Theoretical and experimental insights into the electrochemical mineralization mechanism of perfluorooctanoic acid." *Environmental Science and Technology* 47 (24): 14341-14349.

Niu, J., Y. Li, E. Shang, Z. Xu, and J. Liu. 2016. "Electrochemical oxidation of perfluorinated compounds in water." *Chemosphere* 146: 526-538.

NJ DEP, 2014. New Jersey Department of Environmental Protection. *Occurrence of Perfluorinated Chemicals in Untreated New Jersey Drinking Water Sources*. Final Report. April 2014.

NJ DWQI (New Jersey Drinking Water Quality Institute). 2017a. *Health-based Maximum Contaminant Level Support Document: Perfluorooctanoic Acid (PFOA)*. New Jersey Drinking Water Quality Institute, Health Effects Subcommittee. <http://www.nj.gov/dep/watersupply/pdf/pfoa-appendixa.pdf>

NJ DWQI. 2017b. *Maximum Contaminant Level Recommendation for Perfluorooctanoic Acid in Drinking Water, March 15, 2017, Basis and Background. Appendices A, B, C and D*.

Nowack, K., 2017. "GAC Treatment for PFC Removal." AWWA Webinar Program: Perfluorinated Compounds: Research and

Treatment Part I, Wednesday, April 5, 2017.

NTP (National Toxicology Program). 2016. *NTP Monograph on Immunotoxicity Associated with Exposure to Perfluorooctanoic Acid (PFOA) or Perfluorooctane Sulfonate (PFOS)*. Office of Health Assessment and Translation, Division of the National Toxicology Program, National Institute of Environmental Health Sciences. September.

https://ntp.niehs.nih.gov/ntp/ohat/pfoa_pfos/pfoa_pfosmonograph_508.pdf

NY DEC (New York Department of Environmental Conservation). 2017. "Adoption of Final Rule: 6NYCRR Part 597." Hazardous Substances Identification, Release Prohibition, and Release Reporting. <http://www.dec.ny.gov/regulations/104968.html>

NYS DOH. 2016. "Village of Hoosick Falls and Town of Hoosick Private Well Sampling, Perfluorooctanoic Acid (PFOA) Results Map - Updated August 3, 2016." New York State Department of Health. Accessed 5/16/2017

at: <http://www.villageofhoosickfalls.com/Water/Documents/NYSDOH-TestingResultsMap-08092016.png>

Ochoa-Herrera, V., and R. Sierra-Alvarez. 2008. "Removal of perfluorinated surfactants by sorption onto granular activated carbon, zeolite and sludge." *Chemosphere* 72:1588-1593.

Ochoa-Herrera, V., R. Sierra-Alvarez, A. Somogyi, N. E. Jacobsen, V. H. Wysocki, and J. A. Field. 2008. "Reductive defluorination of perfluorooctane sulfonate." *Environmental Science and Technology* 42 (9): 3260-3264.

OECD (Organisation for Economic Co-operation and Development). 2007. *Report of an OECD Workshop on Perfluorocarboxylic Acids (PFCAs) and Precursors*. ENV-JM-MONO(2007)11, Paris: OECD.

OECD (Organization for Economic Co-operation and Development). 2007a. Environmental Health and Safety Publications. *Series on Testing and Assessment No. 80. Guidance on Grouping of Chemicals*.

[http://www.oecd.org/officialdocuments/publicdisplaydocumentpdf/?doclanguage=en&docote=env/jm/mono\(2007\)28](http://www.oecd.org/officialdocuments/publicdisplaydocumentpdf/?doclanguage=en&docote=env/jm/mono(2007)28)

OECD. 2013. *Synthesis paper on per- and polyfluorinated chemicals (PFCs)*. OECD/UNEP Global PFC Group.

https://www.oecd.org/env/ehs/risk-management/PFC_FINAL-Web.pdf

OECD. 2015a. *Risk Reduction Approaches for PFASs - a Cross-Country Analysis*.

OECD. 2015b. *Working Towards a Global Emission Inventory of PFASs: Focus on PFCAs - Status Quo and the Way Forward*.

<http://www.oecd.org/chemicalsafety/risk-management/Working%20Towards%20a%20Global%20Emission%20Inventory%20f%20PFASS.pdf> (accessed May 19, 2017).

OECD. 2017. *OECD Portal on Per and Poly Fluorinated Chemicals*. Available from:

<http://www.oecd.org/chemicalsafety/portal-perfluorinated-chemicals/>.

Oliaei, F., D. Kriens, and K. Kessler. 2006. "Investigation of Perfluorochemical (PFC) Contamination in Minnesota Phase One." Report to Senate Environment Committee. Retrieved from: https://www.peer.org/assets/docs/mn/06_27_2_pfc_report.pdf

Oliaei F., D. Kriens, R. Weber, and A. Watson. 2013. "PFOS and PFC releases and associated pollution from a PFC production plant in Minnesota (USA)." *Environmental Science and Pollution Research* 20 (4): 1977-92.

Olsen, G., T. Church, J. Miller, J. Burris, K. Hansen, J. Lundberg, J. Armitage, R. Herron, Z. Medhdizadehkashi, J. Nobiletti, E. O'Neil, J. Mandel, and L. Zobel. 2003. "Perfluorooctanesulfonate and Other Fluorochemicals in the Serum of American Red Cross Adult Blood Donors." *Environmental Health Perspectives* 111: 1892-1901.

Olsen, G. W., J. M. Burris, M. M. Burlew, J. H. Mandel. 2003a. "Epidemiologic Assessment of Worker Serum Perfluorooctanesulfonate (PFOS) and Perfluorooctanoate (PFOA) Concentrations and Medical Surveillance Examinations." *Journal of Occupational Environmental Medicine* 45 (3): 260-270.

Olsen, G. W. 2015. "PFAS Biomonitoring in Higher Exposed Populations." *Toxicological Effects of Perfluoroalkyl and Polyfluoroalkyl Substances*, J.D. DeWitt, Editor. Humana Press. pp. 77-126.

Olsen, G.W., D. C. Mair, C. C. Lange, L. M. Harrington, T. R. Church, C. L. Goldberg, R. M. Herron H. Hanna, J. B. Nobiletti, and J. A. Rios. 2017. "Per- and polyfluoroalkyl substances (PFAS) in American Red Cross adult blood donors, 2000-2015." *Environmental Research* 157:87-95.

OSHA (Occupational Safety and Health Agency). 2013. *Fact Sheet: Controlling Hexavalent Chromium Exposures during*

Electroplating. United States Department of Labor.

Palma-Oliveira, J. M., and R. Gaspar. 2004. *Environmental education programs construction: some conceptual and evaluation guidelines*. Discursos: Língua, Cultura e Sociedade–Número especial: Global Trends on Environmental Education, pp. 19-35.

Pan, C. G., G. G. Ying, J. L. Zhao, Y. S. Liu, Y. S. Jiang, and Q. Q. Zhang. 2014. "Spatiotemporal distribution and mass loadings of perfluoroalkyl substances in the Yangtze River of China." *Science of the Total Environment* 493: 580-587.

Pancras, T., G. Schrauwen, T. Held, K. Baker, I. Ross, and H. Slenders. 2016. "Environmental fate and effects of poly- and perfluoroalkyl substances (PFAS)." Prepared for CONCAWE Report No. 8/16. Retrieved from <https://www.concawe.eu/publication/environmental-fate-and-effects-of-poly-and-perfluoroalkyl-substances-pfas-report-no-816/>

Park, H., C. D. Vecitis, J. Cheng, W. Choi, B. T. Mader, and M. R. Hoffmann. 2009. "Reductive Defluorination of Aqueous Perfluorinated Alkyl Surfactants: Effects of Ionic Headgroup and Chain Length." *The Journal of Physical Chemistry A* 113(4): 690–696.

Park, H., C. D. Vecitis, J. Cheng, N. F. Dalleska, B. T. Mader, and M. R. Hoffmann. 2011. "Reductive degradation of perfluoroalkyl compounds with aquated electrons generated from iodide photolysis at 254 nm." *Photochemical and Photobiological Sciences* 10 (12): 1945-1953.

Park, S., L. S. Lee, V. F. Medina, A. Zull, and S. Waisner. 2016. "Heat-activated persulfate oxidation of PFOA, 6: 2 fluorotelomer sulfonate, and PFOS under conditions suitable for in-situ groundwater remediation." *Chemosphere* 145: 376-383.

Parsons, J. R., M. Saez, J. Dolfig, and P. deVoogt. 2008. "Biodegradation of Perfluorinated Compounds." *Reviews of Environmental Contamination and Toxicology* 196: 53-71. David M. Whitacre Editor. Springer Science and Business Media LLC.

Patagonia. September 8, 2015. "Our DWR Problem [Updated]." The Footprint Chronicles. <http://www.patagonia.com/blog/2015/09/our-dwr-problem-updated/>

Payne, F.C., J. A. Quinnan, and S. T. Potter. 2008. *Remediation Hydraulics*. CRC Press.

Piekarz, A.M., T. Primbs, J. A. Field, D. F. Barofsky, and S. Simonich. 2007. "Semivolatile fluorinated organic compounds in Asian and western U.S air masses." *Environmental Science and Technology* 41:8248-55

Plumlee, M. H., K. McNeill, and M. Reinhard. 2009. "Indirect photolysis of perfluorochemicals: hydroxyl radical-initiated oxidation of N-ethyl perfluorooctane sulfonamido acetate (N-EtFOSAA) and other perfluoroalkanesulfonamides." *Environmental Science and Technology* 43: 3662-3668.

Post, G. B. 2013. *Perfluorinated Chemicals (PFCs) – Emerging Drinking Water Contaminants*. Presentation slides of Gloria B. Post, Office of Science, New Jersey Department of Environmental Protection, to the Delaware River Basin Commission, Toxics Advisory Committee, West Trenton, New Jersey, June 5, 2013. Accessed 5/16/2017 at:

http://www.state.nj.us/drbc/library/documents/TAC/06052013/toxics060513_post.pdf

Post G. B., P. D. Cohn, and K. R. Cooper. 2012. Perfluorooctanoic acid (PFOA), an emerging drinking water contaminant: A critical review of recent literature. *Environmental Research* 116: 93-117

Post G.B., J. A. Gleason, and K. R. Cooper. 2017. "Key scientific issues in developing drinking water guidelines for perfluoroalkyl acids: Contaminants of emerging concern." *PLOS Biology* 15(12): e2002855.

Poulsen, P. B., A. A. Jensen, E. Wallstrom, and E. N. P. R. O Aps. 2005. *More Environmentally Friendly Alternatives to PFOS-Compounds and PFOA*. Danish Environmental Protection Agency Environmental Project, 1013.

Prevedouros K., I. T. Cousins, R. C. Buck, and S. H. Korzeniowski. 2006. "Sources, Fate and Transport of Perfluorocarboxylates." *Environmental Science and Technology* 40 (1): 32-44.

Qi, Y., S. Huo, B. Xi, J. Zhang, and Z. He. 2016. "Spatial distribution and source apportionment of PFAS in surface sediments from five lake regions, China." *Scientific Reports*. 6:22674.

- Qu, Y., C. Zhang, F. Li, J. Chen, and Q. Zhou. 2010. "Photo-reductive defluorination of perfluorooctanoic acid in water." *Water Research* 44 (9): 2939-2947.
- Qu, Y., C. Zhang, P. Chen, Q. Zhou, and W. Zhang. 2014. "Effect of initial solution pH on photo-induced reductive decomposition of perfluorooctanoic acid." *Chemosphere* 107: 218-223.
- Rahman, M. F., 2014. "Removal of Perfluorinated Compounds from Ultrapure and Surface Waters by Adsorption and Ion Exchange." Doctor of Philosophy thesis, University of Waterloo, Ontario, Canada.
- Rahman, S. M., M. J. Eckelman, A. Onnis-Hayden, and A. Z. Gu. 2014. "Environmental Sustainability Assessment of Technologies for Removal of Contaminants of Emerging Concern." *Proceedings of the Water Environment Federation* (16): 6455-6469.
- Rankin, K., S. Mabury, T. Jenkins, and J. Washington. 2016. "A North American and Global Survey of Perfluoroalkyl Substances in Surface Soils: Distribution Patterns and Mode of Occurrence." *Chemosphere* 161: 333-341.
- Rao, N. S., and B. E. Baker. 1994. "Textile Finishes and Fluorosurfactants." In *Organofluorine Chemistry. Principles and Commercial Applications*, R. E Banks, B. E. Smart, and J. C. Tatlow, Eds. New York: Plenum Press.
- Ras, C. and H. von Blottnitz. 2012. "A comparative life cycle assessment of process water treatment technologies at the Secunda industrial complex, South Africa." *Water SA*, 38 (4): 549-554.
- Rattanaoudom, R., C. Visvanathan, S. K. Boontanon. 2012. "Removal of Concentrated PFOS and PFOA in Synthetic Industrial Wastewater by Powder Activated Carbon and Hydrotalcite." *Journal of Water Sustainability* 2(4): 245-258
- Rayne, S., K. Forest, and K. Friesen. 2008. "Congener-specific numbering systems for the environmentally relevant C4 through C8 perfluorinated homologue groups of alkyl sulfonates, carboxylates, telomer alcohols, olefins, and acids, and their derivatives." *Journal of Environmental Science and Health Part A* 43: 1391-1401.
- Renner, R. 2001. "Growing Concern Over Perfluorinated Chemicals." *Environmental Science and Technology* 35 (7): 154A-160A.
- Rich, C. D., A. C. Blaine, L. Hundal, and C. P. Higgins. 2015. "Bioaccumulation of Perfluoroalkyl Acids by Earthworms (*Eisenia fetida*) Exposed to Contaminated Soils." *Environmental Science and Technology* 49(2): 881-888.
- Riddell, N., G. Arsenault, J. P. Benskin, B. Chittim, J. W. Martin, A. McAlees, and R. McCrindle. 2009. "Branched perfluorooctane sulfonate isomer quantification and characterization in blood serum samples by HPLC/ESI-MS(/MS)." *Environmental Science and Technology*. 43: 7902-7908.
- Ritter, E. E., M. E. Dickinson, J. P. Harron, D. M. Lunderberg, P. A. DeYoung, A. E. Robel, J. A. Field, and G. F. Peaslee. 2017. "PIGE as a screening tool for Per- and polyfluorinated substances in papers and textiles." *Nuclear Instruments and Methods in Physics Research Section B: Beam Interactions with Materials and Atoms*, 407, pp.47-54.
- RIVM (National Institute for Public Health and the Environment). 2016. *Evaluation of substances used in the GenX technology by Chemours, Dordrecht*. RIVM Letter Report 2016-0174 M. Beekman et al. The Netherlands.
http://www.rivm.nl/en/Documents_and_publications/Scientific/Reports/2016/december/Evaluation_of_substances_used_in_the_GenX_technology_by_Chemours_Dordrec
- Rodriguez-Freire, L., R. Balachandran, R. Sierra-Alvarez, and M. Keswani. 2015. "Effect of sound frequency and initial concentration on the sonochemical degradation of perfluorooctane sulfonate (PFOS)." *Journal of Hazardous Materials* 300: 662-669.
- Rolland, J. P., R. M. Van Dam, D. A. Schorzman, S. R. Quake, and J. M. DeSimone. 2004. "Solvent-Resistant Photocurable "Liquid Teflon" for Microfluidic Device Fabrication." *Journal of the American Chemical Society* 126 (8): 2322-2323.
- Saito, N., K. Harada, K. Inoue, K. Sasaki, T. Yoshinaga, and A. Koizumi. 2004. "Perfluorooctanoate and Perfluorooctane Sulfonate Concentrations in Surface Water in Japan", *Journal of Occupational Health* (46): 49-59.
- Schaefer, C. E., C. Andaya, A. Urtiaga, E. R. McKenzie, and C. P. Higgins. 2015. "Electrochemical treatment of perfluorooctanoic acid (PFOA) and perfluorooctane sulfonic acid (PFOS) in groundwater impacted by aqueous film forming foams (AFFFs)." *Journal of Hazardous Materials* 295: 170-175.

- Schaefer, C. 2017. "Electrochemical treatment of perfluorooctanoic acid and perfluorooctane sulfonate: insights into mechanisms and application to groundwater treatment." *Chemical Engineering Journal* 317: 424-432
- Schaidler, L. A., S. A. Balan, A. Blum, D. Q. Andrews, M. J. Strynar, M. E. Dickinson, D. M. Lunderberg, J. R. Lang, and G. F. Peaslee. 2017. "Fluorinated Compounds in US Fast Food Packaging." *Environmental Science and Technology Letters* 4 (3): 105-111.
- Scher, D. P., J. E. Kelly, C. A. Huset, K. M. Barry, R. W. Hoffbeck, V. L. Yingling, and R. B. Messing. 2018. "Occurrence of perfluoroalkyl substances (PFAS) in garden produce at homes with a history of PFAS-contaminated drinking water." *Chemosphere* 196: 548-555
- Schuetze A., T. Heberer, S. Effkemann, and S. Juergensen. 2010. "Occurrence and assessment of perfluorinated chemicals in wild fish from Northern Germany." *Chemosphere* 78 (6): 647-52.
- Schultz, M., C. P. Higgins, C. A. Huset, R. G. Luthy, D. F. Barofsky, and J. A. Field. 2006. "Fluorochemical Mass Flows in a Municipal Wastewater Treatment Facility." *Environmental Science and Technology* 40: 7350-7357.
- Schwarzenbach, R. P., P. M. Gschwend, and D. M. Imboden. 2003. *Environmental Organic Chemistry, 2nd Edition*. Wiley-Interscience.
- Sedlak, M.D., and D. J. Greig. 2012. "Perfluoroalkyl compounds (PFCs) in wildlife from an urban estuary." *Journal of Environmental Monitoring* 14: 146-154.
- Sehmel, G. A. 1984. Deposition and Resuspension. In: Atmospheric Science and Power Production. U.S. Department of Energy. Report DOE/TIC-27601. Washington, DC
- Sepulvado, J. G., A. C. Blaine, L. S. Hundal, and C. P. Higgins. 2011. "Occurrence and Fate of Perfluorochemicals in Soil Following the Land Application of Municipal Biosolids." *Environmental Science and Technology* 45 (19): 8106-8112.
- SERDP-ESTCP. 2017. *In Situ and Ex Situ Remediation of Per- and Polyfluoroalkyl Substance Contaminated Groundwater*. FY Statement of Need. Environmental Restoration Program Area.
[https://www.serdp-estcp.org/Program-Areas/Environmental-Restoration/Contaminated-Groundwater/Contaminated-Groundwater-SONs/PFAS-Remediation/\(language\)/eng-US](https://www.serdp-estcp.org/Program-Areas/Environmental-Restoration/Contaminated-Groundwater/Contaminated-Groundwater-SONs/PFAS-Remediation/(language)/eng-US).
- Shan, G., M. Wei, L. Zhu, Z. Liu, and Y. Zhang. 2014. "Concentration profiles and spatial distribution of perfluoroalkyl substances in an industrial center with condensed fluorochemical facilities." *Science of the Total Environment* 490: 351-359.
- Shin, H-M., V.M. Vieira, P. B. Ryan, R. Detwiler, B. Sanders, K. Steenland, and S. M. Bartell. 2011. "Environmental Fate and Transport Modeling for Perfluorooctanoic Acid Emitted from the Washington Works Facility in West Virginia" *Environmental Science and Technology* 45: 1435-1442.
- Shoeib, M., T. Harner, M. Ikononou, and K. Kannan. 2004. "Indoor and outdoor air concentrations and phase partitioning of perfluoroalkyl sulfonamides and polybrominated diphenyl ethers." *Environmental Science and Technology* 38 (5):1313-20.
- Shoeib, M., P. Vlahos, T. Harner, A. Peters, M. Graustein, and J. Narayan. 2010. "Survey of polyfluorinated chemicals (PFCs) in the atmosphere over the northeast Atlantic Ocean." *Atmospheric Environment* 44: 2887-2893.
- Shoeib, M., T. Harner, G. M. Webster, and S. C. Lee. 2011. "Indoor sources of poly- and perfluorinated compounds (PFCs) in Vancouver, Canada: implications for human exposure." *Environmental Science and Technology* 45(19):7999-8005.
- Shoemaker, J. A., P. E. Grimmer, and B. K. Boutin. 2009. Determination of Selected Perfluorinated Alkyl Acids in Drinking Water by Solid Phase Extraction and Liquid Chromatography/Tandem Mass Spectrometry (LC/MS/MS). USEPA Method 537, Rev 1.1, EPA 600-R-08-092, 50 pp.
- SIA (Semiconductor Industry Association). 2008. "Use of PFAS/PFOA Compounds by USSIA Members in 2008." http://www.sematech.org/docubase/document/PFOS_Survey_2009_final.pdf
- Siegrist, R. L., M. Crimi, and T. J. Simpkin. (Eds.). 2011. *In situ chemical oxidation for groundwater remediation* (Vol. 3). Springer Science and Business Media.
- Skutlarek, D., M. Exner, and H. Farber. 2006. "Perfluorinated Surfactants in Surface and Drinking Waters." *Environmental*

Science and Pollution Research International 13 (5): 299.

Slinn, W.G.N. 1984. Precipitation Scavenging. In: Atmospheric Science and Power Production. U.S. Department of Energy. Report DOE/TIC-27601. Washington, DC.

Söderqvist, T., P. Brinkhoff, T. Norberg, L. Rosén, P. E. Back, and J. Norrman. 2015. "Cost-benefit analysis as a part of sustainability assessment of remediation alternatives for contaminated land." *Journal of Environmental Management* 157: 267-278.

Song, S., J. Fan, Z. He, L. Zhan, Z. Liu, J. Chen, and X. Xu. 2010. "Electrochemical degradation of azo dye CI Reactive Red 195 by anodic oxidation on Ti/SnO₂-Sb/PbO₂ electrodes." *Electrochimica Acta* 55(11): 3606-3613.

Song, Z., H. Tang, N. Wang, and L. Zhu. 2013. "Reductive defluorination of perfluorooctanoic acid by hydrated electrons in a sulfite-mediated UV photochemical system." *Journal of Hazardous Materials* 262: 332-338.

Song, Y., D. Hou, J. Zhang, D. O'Connor, G. Li, Q. Gu, S. Li, and P. Liu. 2018. "Environmental and socio-economic sustainability appraisal of contaminated land remediation strategies: A case study at a mega-site in China." *Science of The Total Environment* 610: 391-401.

Stahl, T., J. Heyn, H. Thiele, J. Huther, K. Failing, S. Georgii, and H. Brunn. 2009. "Carryover of perfluorooctanoic acid (PFOA) and perfluorooctane sulfonate (PFOS) from soil to plants." *Archives of Environmental Contamination and Toxicology* 57(2): 289-298.

Stahl, T., R. A. Riebe, S. Falk, K. Failing, and H. Brunn. 2013. "Long-term lysimeter experiment to investigate the leaching of perfluoroalkyl substances (PFAS) and the carry-over from soil to plants: results of a pilot study." *Journal of Agricultural and Food Chemistry* 61(8): 1784-1793.

Steinle-Darling, E. and M. Reinhard. 2008. "Nanofiltration for Trace Organic Contaminant Removal: Structure, Solution, and Membrane Fouling Effects on the Rejection of Perfluorochemicals." *Environmental Science and Technology* 42: 5292-5297.

Stratton, G. R., F. Dai, C. L. Bellona, T. M. Holsen, E. R. V. Dickenson, and S. Mededovic Thagard. 2017. "Plasma-Based Water Treatment: Efficient Transformation of Perfluoroalkyl Substances in Prepared Solutions and Contaminated Groundwater." *Environmental Science and Technology* 51(3): 1643-1648.

Stock, N.L., F. K. Lau, D. A. Ellis, J. W. Martin, D. G. Muir, and S. A. Mabury. 2004. "Polyfluorinated Telomer Alcohols and Sulfonamides in the North American Troposphere." *Environmental Science and Technology* 38: 991-996.

Stock, N.L., V. I. Furdui, D. C. Muir, and S. A. Mabury. 2007. "Perfluoroalkyl contaminants in the Canadian Arctic: evidence of atmospheric transport and local contamination." *Environmental Science and Technology* 41(10): 3529-36.

Strynar, M. J., and A. B. Lindstrom. 2008. "Perfluorinated compounds in house dust from Ohio and North Carolina, USA." *Environmental Science and Technology* 42(10): 3751-6.

Strynar, M. J., A. B. Lindstrom, S. F. Nakayama, P. P. Egeghy, and L. J. Helfant. 2012. "Pilot scale application of a method for the analysis of perfluorinated compounds in surface soils." *Chemosphere* 86 (3):252-257. doi: <https://doi.org/10.1016/j.chemosphere.2011.09.036>.

Sun, M., E. Arevalo, M. Strynar, A. Lindstrom, M. Richardson, B. Kearns, A. Pickett, C. Smith, and D. R. U. Knappe. 2016. "Legacy and Emerging Perfluoroalkyl Substances Are Important Water Contaminants in the Cape Fear River Watershed of North Carolina." *Environmental Science and Technology Letters* 3 (12): 415-419.

Szabo, J., Hall, J., Hall, J., Magnuson, M., Panguluri, S., and Meiners, G. 2017. "Treatment of Perfluorinated Alkyl Substances in Wash Water using Granular Activated Carbon and Mixed Media, USEPA Office of Research and Development, EPA/600/R-17/175

Tang, C. Y., Q. S. Fu, A. P. Robertson, C. S. Criddle, and J. O. Leckie. 2006. "Use of Reverse Osmosis Membranes to Remove Perfluorooctane Sulfonate (PFOS) from Semiconductor Wastewater." *Environmental Science and Technology* 40: 7343-7349.

Tang, C. Y., Q. S. Fu, C. S. Criddle, and J. O. Leckie. 2007. "Effect of flux (transmembrane pressure) and membrane properties on fouling and rejection of reverse osmosis and nanofiltration membranes treating perfluorooctane sulfonate containing wastewater." *Environmental Science and Technology* 41: 2008-2014.

Tang, H., Q. Xiang, M. Lei, J. Yan, L. Zhu, and J. Zou. 2012. "Efficient degradation of perfluorooctanoic acid by UV-Fenton process." *Chemical Engineering Journal* 184: 156-162.

Taniyasu, S., N. Yamashita, H. B. Moon, K. Y. Kwok, P. K. Lam, Y. Horii, G. Petrick, and K. Kannan. 2013. "Does wet precipitation represent local and regional atmospheric transportation by perfluorinated alkyl substances?" *Environment International* 55: 25-32.

Tao, Y., H. Kanoh, L. Abrams, and K. Kaneko. 2006. "Mesopore-modified zeolites: Preparation, characterization, and applications." *Chemical Reviews* 106:896-910.

TCEQ (Texas Commission on Environmental Quality). 2017. Texas Risk Reduction Program <https://www.tceq.texas.gov/remediation/trrp/trrp.html>

Thalheimer, A.H., L. B. McConney, I. K. Kalinovich, A. V. Pigott, J. D. Franz, H. T. Holbert, D. Mericas, and Z. J. Puchacz. 2017. "Use and Potential Impacts of AFFF Containing PFASs at Airports (No. Project 02-60)." The National Academies of Sciences, Engineering, and Medicine. Accessed online December 22, 2017: <https://trid.trb.org/view/1473089>.

Thompson J., G. Eaglesham, J. Reungoat, Y. Poussade, M. Bartkow, M. Lawrence, and J. F. Mueller. 2011. "Removal of PFOS, PFOA and other perfluoroalkyl acids at water reclamation plants in South East Queensland Australia." *Chemosphere*. 2011 Jan;82(1):9-17. doi: 10.1016/j.chemosphere.2010.10.040. Epub 2010 Nov 3.

Thoreson, K., 2017. "PlumeStop Technology with an Overview on In Situ Containment of Perfluorinated Chemicals (PFAS and PFOA)." Webinar presented February 16, 2017.

Trautmann, A., H. Schell, K. Schmidt, K. Mangold, and A. Tiehm. 2015. "Electrochemical degradation of perfluoroalkyl and polyfluoroalkyl substances (PFASs) in groundwater." *Water Science and Technology* 71(10): 1569-1575.

Trier, X., K. Granby, and J. H. Christensen. 2011. "Polyfluorinated surfactants (PFS) in paper and board coatings for food packaging." *Environmental Science and Pollution Research International* 18: 1108-1120.

Trudel, D., L. Horowitz, M. Wormuth, M. Scheringer, I. T. Cousins, and K. Hungerbuhler. 2008. "Estimating Consumer Exposure to PFOS and PFOA." *Risk Analysis* 28 (2): 251-269.

Tsai, Y-T., A. Y. Lin, Y-H. Weng, and K-C. Li. 2010. "Treatment of perfluorinated chemicals by electro-microfiltration." *Environmental Science and Technology* 44: 7914-7920.

UNEP (United Nations Environmental Programme). 2011. "Report of the Persistent Organic Pollutants Review Committee on the work of its sixth meeting, Addendum, Guidance on alternatives to perfluorooctane sulfonic acid and its derivatives, UNEP/POPS/POPRC.6/13/Add.3/Rev.1" <http://www.pops.int/TheConvention/POPsReviewCommittee/Meetings/POPRC6/POPRC6Documents/tabid/783/ctl/Download/mid/3507/Default.aspx?id=125>

Urriaga, A., C. Fernández-González, S. Gómez-Lavín, and I. Ortiz. 2015. "Kinetics of the electrochemical mineralization of perfluorooctanoic acid on ultracrystalline boron doped conductive diamond electrodes." *Chemosphere* (129): 20-26.

USDOD (United States Department of Defense). 2009. DoDI 4715.18 Emerging Contaminants, June 2009. <http://www.esd.whs.mil/Portals/54/Documents/DD/issuances/dodi/471518p.pdf>

USDOD EDQW (Environmental Data Quality Workgroup). 2017a. "Department of Defense (DoD) Quality Systems Manual (QSM) for Environmental Laboratories," Version 5.1, 2017. <http://www.denix.osd.mil/edqw/home/>

USDOD EDQW. 2017b. "Bottle Selection and other Sampling Considerations When Sampling for Per- and Poly-Fluoroalkyl Substances (PFASs)," Revision 1.2, July. <http://www.denix.osd.mil/edqw/home/>

USEPA (United States Environmental Protection Agency). 1974. Title XIV of The Public Health Service Act: Safety of Public Water Systems (Safe Drinking Water Act). <https://www.gpo.gov/fdsys/pkg/USCODE-2010-title42/pdf/USCODE-2010-title42-chap6A-subchapXII.pdf>

USEPA. 1987. "Compendium of Superfund Field Operations Methods." EPA 540/P-87/001a, OSWER 9355.0-14, September 1987.

USEPA. 1988. "CERCLA Compliance and Other Laws Manual: Interim Final." *EPA/540/G-89/006*.

USEPA. 1988a. "Guidance for Conducting Remedial Investigations and Feasibility Studies under CERCLA." EPA/540/G-89/004, OSWER Directive 9355.3-01, October 1988

USEPA. 1991. "ARARs Q's and A's: General Policy, RCRA, CWA, SDWA, Post-ROD Information, and Contingent Waivers." *OSWER Publication 9234.2-01/FS-A*. <https://semspub.epa.gov/work/HQ/174497.pdf>

USEPA. 1996. "Emission Factor Documentation for AP-42." Office of Air Planning and Standards, Emission Factor and Inventory Group, Section 12.20. July 1996.

USEPA. 1997. "Clarification of the Role of Applicable, or Relevant and Appropriate Requirements in Establishing Preliminary Remedial Goals under CERCLA." *OSWER memorandum 9200.4-23*. Aug 1997.

USEPA. 1998. "Hard Chrome Fume Suppressants and Control Technologies." Center for Environmental Research Information, National Risk Management Research Laboratory, Office of Research and Development. *EPA/625/R-98/002*.

USEPA. 2000. "EPA and 3M Announce Phaseout of PFOS." News Release. May 16, 2000.
https://archive.epa.gov/epapages/newsroom_archive/newsreleases/33aa946e6cb11f35852568e1005246b4.html

USEPA. 2000a. "Data Quality Objectives Process for Hazardous Waste Site Investigations." EPA QA/G-4HW Final. EPA/600/R-00/007, January 2000

USEPA 2000b. Perfluorooctyl Sulfonates: Proposed Significant New Use Rule. *Federal Register*, 65, 62, 319-62, 333.

USEPA. 2003a. "Human Health Toxicity Values in Superfund Risk Assessments." *OSWER Directive 9285.7-53*.

USEPA. 2003b. "Perfluorooctanoic Acid (PFOA), Fluorinated Telomers; Request for Comment, Solicitation of Interested Parties for Enforceable Consent Agreement Development, and Notice of Public Meeting." *68 Federal Register 18626*. Washington D.C.: EPA, April 16.

USEPA. 2005. *Superfund Community Involvement Handbook*. Washington, D.C.: Office of Emergency and Remedial Response. EPA 540-K-05-003, April.

USEPA. 2006a. "2010/2015 PFOA Stewardship Program." *EPA-HQ-2003-0012-1071*.
<http://www.epa.gov/opptintr/pfoa/pubs/pfoastewardship.htm>.

USEPA. 2006b. "Risk Management for Per- and Polyfluoroalkyl Substances (PFAS) under TSCA, PFOA Stewardship Program." <https://www.epa.gov/assessing-and-managing-chemicals-under-tsca/risk-management-and-polyfluoroalkyl-substances-pfass#tab-3>

USEPA. 2006c. "Guidance on Systematic Planning Using the Data Quality Objectives Process" EPA QA/G-4. EPA/240/B-06/001, February 2006.

USEPA. 2007. "Perfluoroalkyl Sulfonates; Significant New Use Rule." *72 Federal Register 57222*. Washington D.C. October 9.

USEPA. 2007a. *Risk Communication in Action: The Risk Communication Workbook*. Office of Research and Development, National Risk Management Research Laboratory, EPA/625/R-05/003. August.

USEPA. 2008. "Clean Diesel Technologies and Alternative Fuels." U.S. Environmental Protection Agency Region 9, Cleanup Clean Air Initiative, San Francisco, CA. March.

USEPA. 2009a. "Long-Chain Perfluorinated Chemicals (PFCs), Action Plan." https://www.epa.gov/sites/production/files/2016-01/documents/pfcs_action_plan1230_09.pdf

USEPA. 2009b. "PFOS Chromium Electroplater Study." US EPA - Region 5, Chicago, IL. September 2009.
https://www.in.gov/idem/ctap/files/plating_chromium_pfos_study.pdf

USEPA. 2009c. "Provisional Health Advisories for Perfluorooctanoic Acid (PFOA) and Perfluorooctane Sulfonate (PFOS)." <https://www.epa.gov/sites/production/files/2015-09/documents/pfoa-pfos-provisional.pdf>

USEPA. 2009d. "Washington Works Facility Order on Consent under SDWA Section 1431." March 10.

USEPA. 2010. "Superfund green remediation strategy." Washington DC: USEPA, Office of Solid Waste and Emergency Response and Office of Superfund Remediation and Technology Innovation

USEPA. 2012a. "A framework for sustainability indicators at EPA." EPA/600/R/12/687. Washington, DC: USEPA National Risk Management Research Laboratory, Office of Research and Development.

USEPA. 2012b. "Methodology for Understanding and Reducing a Project's Environmental Footprint." Office of Solid Waste and Emergency Response and Office of Superfund Remediation and Technology Innovation. September.

USEPA. 2013a. "Pore Water Sampling Operating Procedure, SESDPROC-513-R2, February

USEPA. 2013b. "Science and Ecosystem Support Division (SESD) Operating Procedure: Potable Water Supply Sampling." SESDPROC-305-R3. Effective date May 30, 2013.

USEPA. 2014a. "Emerging Contaminants Fact Sheet - PFOS and PFOA." USEPA. May. *EPA 505-F-11-002*.

USEPA. 2014b. "Naval Air Warfare Center Warminster Administrative Order under SDWA Section 1431." July 7.

USEPA. 2014c. "Climate Change Adaptation Plan." U.S. EPA 100-K14-001. June.

USEPA. 2015a. "Administrative Order for Response Action. Docket No.: SDWA-01-2015-0061." USEPA Region 1. <https://semspub.epa.gov/work/01/584719.pdf>

USEPA. 2015b. "Long-Chain Perfluoroalkyl Carboxylate and Perfluoroalkyl Sulfonate Chemical Substances; Significant New Use Rule." *80 Federal Register 2885*. Washington D.C.: EPA, January 21.

USEPA. 2015c. "Proposed Rule: Significant New Use Rules: Long-Chain Perfluoroalkyl Carboxylate and Perfluoroalkyl Sulfonate Chemical Substances." <https://www.regulations.gov/document?D=EPA-HQ-OPPT-2013-0225-0001>

USEPA. 2015d. "Risk-Screening Environmental Indicators (RSEI) Model Version 2.3.4. Technical Appendix B Physicochemical Properties for TRI Chemicals and Chemical Categories." <https://www.epa.gov/rsei/risk-screening-environmental-indicators-rsei-model-reference-document-history>.

USEPA. 2015e. "Climate Change Adaptation Technical Fact Sheet: Contaminated Sediment Remedies." EPA 542-F-15-009. Office of Superfund Remediation and Technology Innovation. April.

USEPA. 2016a. "Definitions." 40 CFR Part 300, Subpart A, Section 300.5. <https://www.gpo.gov/fdsys/pkg/CFR-2016-title40-vol30/xml/CFR-2016-title40-vol30-chapl-subchap1.xml#seqnum300.5>

USEPA. 2016b. "Drinking Water Health Advisory for Perfluorooctane Sulfonate (PFOS)." Office of Water (4304T). Health and Ecological Criteria Division, Washington, DC 20460. *EPA Document Number: 822-R-16-004*. May. https://www.epa.gov/sites/production/files/2016-05/documents/pfos_health_advisory_final_508.pdf

USEPA. 2016c. "Drinking Water Health Advisory for Perfluorooctanoic Acid (PFOA)." Office of Water (4304T). Health and Ecological Criteria Division, Washington, DC 20460. *EPA Document Number: 822-R-16-005*. https://www.epa.gov/sites/production/files/2016-05/documents/pfoa_health_advisory_final_508.pdf

USEPA. 2016d. "Fact Sheet PFOA and PFOS Drinking Water Health Advisories" https://www.epa.gov/sites/production/files/2016-06/documents/drinkingwaterhealthadvisories_pfoa_pfos_updated_5.31.16.pdf

USEPA. 2016e. "Health effects support document for perfluorooctane sulfonate (PFOS)." Office of Water. *EPA 822-R-16-002*. May

USEPA. 2016f. "Health effects support document for perfluorooctanoic acid (PFOA)." Office of Water. *EPA 822-R-16-003*. May.

USEPA. 2016g. "Regional Removal Management Levels (RMLs) User's Guide (May 2016)." Accessed May 2017. <https://www.epa.gov/risk/regional-removal-management-levels-rmls-users-guide>

USEPA. 2016h. Memorandum, *Consideration of Greener Cleanup Activities in the Superfund Cleanup Process*. August 2, 2016.

USEPA. 2016i. "High-Resolution Site Characterization (HRSC)." Last Updated September 23, 2016:
<https://clu-in.org/characterization/technologies/hrsc/>

USEPA. 2017a. "Assessing and Managing Chemicals under TSCA."
<https://www.epa.gov/assessing-and-managing-chemicals-under-tsca>

USEPA. 2017b. "Basic Information about Per- and Polyfluoroalkyl Substances (PFASs)."
<https://www.epa.gov/pfas/basic-information-about-and-polyfluoroalkyl-substances-pfass#tab-1>. Retrieved September 6, 2017.

USEPA. 2017c. "EPA Adds Saint-Gobain Performance Plastics Site in Hoosick Falls, N.Y. to the Federal Superfund List."
<https://www.epa.gov/newsreleases/epa-adds-saint-gobain-performance-plastics-site-hoosick-falls-ny-federal-superfund-list>

USEPA. 2017d. "EPA History: Resource Conservation and Recovery Act."
<https://www.epa.gov/history/epa-history-resource-conservation-and-recovery-act>. Retrieved September 11, 2017.

USEPA. 2017e. "EPA's Non-CBI Summary Tables for 2015 Company Progress Reports (Final Progress Reports)."
https://www.epa.gov/sites/production/files/2017-02/documents/2016_pfoa_stewardship_summary_table_0.pdf

USEPA. 2017f. "Monitoring Unregulated Drinking Water Contaminants Occurrence Data for the Unregulated Contaminant Monitoring Rule." <https://www.epa.gov/dwucmr/occurrence-data-unregulated-contaminant-monitoring-rule>

USEPA. 2017g. "New Chemicals Program Review of Alternatives for PFOA and Related Chemicals."
<https://www.epa.gov/assessing-and-managing-chemicals-under-tsca/new-chemicals-program-review-alternatives-pfoa-and>. Retrieved September 11, 2017.

USEPA. 2017h. "Per- and Polyfluoroalkyl Substances (PFASs) Overview PFAS CLU-IN.org page."
[https://clu-in.org/contaminantfocus/default.focus/sec/Per-_and_Polyfluoroalkyl_Substances_\(PFASs\)/cat/Overview/](https://clu-in.org/contaminantfocus/default.focus/sec/Per-_and_Polyfluoroalkyl_Substances_(PFASs)/cat/Overview/) Retrieved October 5, 2017

USEPA. 2017i. "Per- and Polyfluoroalkyl Substances (PFASs) under TSCA."
<https://www.epa.gov/assessing-and-managing-chemicals-under-tsca/and-polyfluoroalkyl-substances-pfass-under-tsca>

USEPA. 2017j. "Per- and Polyfluoroalkyl Substances (PFASs): What EPA is Doing."
<https://www.epa.gov/pfas/and-polyfluoroalkyl-substances-pfass-what-epa-doing>. Retrieved September 6, 2017.

USEPA. 2017k. *Persistent Organic Pollutants: A Global Issue, A Global Response*.
<https://www.epa.gov/international-cooperation/persistent-organic-pollutants-global-issue-global-response>. Retrieved May 4, 2017.

USEPA 2017l. "Regional Screening Level (RSL) Calculator." Accessed 26 May 2017.
https://epa-prgs.ornl.gov/cgi-bin/chemicals/csl_search

USEPA. 2017m. "Regional Screening Levels (RSLs) - Generic Tables (June 2017)."

USEPA. 2017n. "Research on Per- and Polyfluoroalkyl Substances (PFAS)."
<https://www.epa.gov/chemical-research/research-and-polyfluoroalkyl-substances-pfas>

USEPA. 2017o. "The Third Unregulated Contaminant Monitoring Rule (UCMR 3): Data Summary, January 2017."
<https://www.epa.gov/sites/production/files/2017-02/documents/ucmr3-data-summary-january-2017.pdf>

USEPA. 2017p. "Treatment of Perfluorinated Alkyl Substances in Wash Water Using Granular Activated Carbon and Mixed Media." EPA/600/R-17/175 June 2017

US Naval Research Laboratory. 2017. "Aqueous Film-Forming Foam."
<https://www.nrl.navy.mil/accomplishments/materials/aqueous-film-foam/>. Accessed September 2017.

van der Putte, I., M. Murin, M. van Velthoven, and F. Affourtit. 2010. "Analysis of the risks arising from the industrial use of Perfluorooctanoic Acid (PFOA) and Ammonium Perfluorooctanoate (APFO) and from their use in consumer articles. Evaluation of the risk reduction measures for potential restrictions on the manufacture, placing on the market and use of PFOA and APFO." RPS Advies, Delft, The Netherlands for European Commission Enterprise and Industry

Directorate-General. <https://ec.europa.eu/docsroom/documents/13037/attachments/1/translations/en/renditions/pdf>

Vandermoere, F. 2008. "Hazard perception, risk perception, and the need for decontamination by residents exposed to soil pollution: the role of sustainability and the limits of expert knowledge." *Risk Analysis* 28(2): 387-398.

Vecitis, C. D., H. Park, J. Cheng, B. T. Mader, and M. R. Hoffmann. 2008. "Kinetics and mechanism of the sonolytic conversion of the aqueous perfluorinated surfactants, perfluorooctanoate (PFOA), and perfluorooctane sulfonate (PFOS) into inorganic products." *The Journal of Physical Chemistry A* 112(18): 4261-4270.

Vecitis, C. D., H. Park, J. Cheng, B. T. Mader, and M. R. Hoffmann. 2009. "Treatment technologies for aqueous perfluorooctanesulfonate (PFOS) and perfluorooctanoate (PFOA)." *Frontiers of Environmental Science and Engineering China* 3(2): 129-151.

Vellanki, B. P., B. Batchelor, and A. Abdel-Wahab. 2013. "Advanced reduction processes: a new class of treatment processes." *Environmental Engineering Science* 30(5): 264-271.

Verner, M. A., G. Ngueta, E. T. Jensen, H. Fromme, W. Völkel, U. C. Nygaard, B. Granum, and M. P. Longnecker. 2016a. "A simple pharmacokinetic model of prenatal and postnatal exposure to perfluoroalkyl substances (PFASs)." *Environmental Science and Technology* 50: 978-86.

Verner, M. A., G. Ngueta, E. T. Jensen, H. Fromme, W. Völkel, U. C. Nygaard, B. Granum, and M. P. Longnecker. 2016b. "Correction to A Simple Pharmacokinetic Model of Prenatal and Postnatal Exposure to Perfluoroalkyl Substances (PFASs)." *Environmental Science and Technology* 50: 5420-1.

Vestergren, R., and I. T. Cousins, 2009. "Tracking the pathways of human exposure to perfluorocarboxylates." *Environmental Science and Technology* 43(15): 5565-5575.

VT DEC (Vermont Department of Environmental Conservation). 2016. Emergency Rule Coversheet: Vermont Hazardous Waste Regulations.

http://dec.vermont.gov/sites/dec/files/documents/2016_04_14%20VHWMR%20Signed%20APA%20forms.pdf April 14 2016.
See also <http://www.vectogether.org/wp-content/uploads/2013/10/Moran-Matt-VEC.Presentation.pdf>

Vidonish, J. E., K. Zygourakis, C. A. Masiello, G. Sabadell, and P. J. Alvarez. 2016. "Thermal Treatment of Hydrocarbon-Impacted Soils: A Review of Technology Innovation for Sustainable Remediation." *Engineering* 2(4): 426-437.

Vierke, L., U. Berger, and I. T. Cousins. 2013. "Estimation of the acid dissociation constant of perfluoroalkyl carboxylic acids through an experimental investigation of their water-to-air transport." *Environmental Science and Technology* 47(19): 11032-11039.

Vogan, J., I. Ross, J. Burdick, and J. Quinnan. 2015. "Advances in PFC investigation and remediation." Arcadis. 2016 Federal Contaminated Sites National Workshop. www.rpic-ibic.ca/documents/2016_FCS_NW/Presentation/32_-_Vogan_EN.pdf

Wallington, T. J., M. D. Hurley, J. Zia, D. J. Wuebbles, S. Sillman, A. Ito, J. E. Penner, D. A. Ellis, J. Martin, S. A. Mabury, O. J. Nielsen, and M. P. Sulbaek Andersen. 2006. "Formation of C₇F₁₅COOH (PFOA) and Other Perfluorocarboxylic Acids during the Atmospheric Oxidation of 8:2 Fluorotelomer Alcohol." *Environmental Science and Technology* 40(3): 924-930.

Walters, A., and D. Santillo. 2006. "Technical Note 06/2006: Uses of Perfluorinated Substances, Section 4.1 Product Sources of Perfluorocarboxylic Acids." Greenpeace Research Laboratories.

<http://www.greenpeace.to/publications/uses-of-perfluorinated-chemicals.pdf>

Wang, Y., P. Zhang, G. Pan, and H. Chen. 2008. "Ferric ion mediated photochemical decomposition of perfluorooctanoic acid (PFOA) by 254nm UV light." *Journal of Hazardous Materials* 160(1): 181-186.

Wang N., J. Liu, R. C. Buck, S. H. Korzeniowski, B. W. Wolstenholme, P. W. Folsom, and L. M. Sulecki. 2011. "6:2 Fluorotelomer sulfonate aerobic biotransformation in activated sludge of waste water treatment plants." *Chemosphere* 82 (6): 853-858.

Wang, Z., I. T. Cousins, M. Scheringer, K. Hungerbuehler, and K. February. 2013. "Fluorinated alternatives to long-chain perfluoroalkyl carboxylic acids (PFCAs), perfluoroalkane sulfonic acids (PFASs) and their potential precursors." *Environment International* 60: 242-248.

- Wang X., C. Halsall, G. Codling, Z. Xie, B. Xu B, Z. Zhao, Y. Xue, R. Ebinghaus, and K. C. Jones. 2014. "Accumulation of perfluoroalkyl compounds in tibetan mountain snow: temporal patterns from 1980 to 2010." *Environmental Science and Technology* 48 (1):173-81.
- Wang, Z., I. T. Cousins, M. Scheringer, K. Hungerbuehler, and K. February 2015. "Hazard Assessment of Fluorinated Alternatives to Long-Chain Perfluoroalkyl Acids (PFAAs) and their Precursors: Status Quo, Ongoing Challenges and Possible Solutions." *Environment International* 75: 172-179.
- Wang Z., Z. Xie, W. Mi, A. Möller, H. Wolschke, and R. Ebinghaus. 2015a. "Neutral Poly/Per-Fluoroalkyl Substances in Air from the Atlantic to the Southern Ocean and in Antarctic Snow." *Environmental Science and Technology* 49 (13):7770-5.
- Wang, Z., J. C. DeWitt, C. P. Higgins, and I. T. Cousins. 2017. "A Never-Ending Story of Per- and Poly-Fluoroalkyl Substances (PFASs)?" *Environmental Science and Technology* 51: 2508-2518.
- Washington State Legislature. 2006. "Persistent Bioaccumulative Toxins." Washington Administrative Code 173-333. <http://apps.leg.wa.gov/wac/default.aspx?cite=173-333>
- Washington State Legislature. 2008. "Identification of high priority chemicals -Report." RCW 70.240.030. <http://apps.leg.wa.gov/RCW/default.aspx?cite=70.240.030>
- Washington, J. W., H. Yoo, J. J. Ellington, T. M. Jenkins, and E. L. Libelo. 2010. "Concentrations, Distribution, and Persistence of Perfluoroalkylates in Sludge-Applied Soils near Decatur, Alabama, USA." *Environmental Science and Technology* 44 (22): 8390-8396.
- Washington, J.W., and T. M. Jenkins. 2015. "Abiotic hydrolysis of fluorotelomer-based polymers as a source of perfluorocarboxylates at the global scale." *Environmental Science and Technology* 49(24): 14129-14135.
- Watanabe, N., S. Takemine, K. Yamamoto, Y. Haga, and M. Takate. 2016. "Residual Organic Fluorinated Compounds from Thermal Treatment of PFOA, PFHxA, and PFOS Adsorbed onto GAC." *Material Cycles and Waste Management* 18:625-630
- Weber, O., R. W. Scholz, R. Bühlmann, and D. Grasmück. 2001. "Risk perception of heavy metal soil contamination and attitudes toward decontamination strategies." *Risk Analysis* 21(5): 967-967.
- Weber, A. K., L. B. Barber, D. R. LeBlanc, E. M. Sunderland, and C. D. Vecitis. 2017. "Geochemical and Hydrologic Factors Controlling Subsurface Transport of Poly- and Perfluoroalkyl Substances, Cape Cod, Massachusetts." *Environmental Science and Technology* 51(8): 4269-4279.
- Weppener, W. 2000. "Letter, with attachments, from 3M to Charles Auer, EPA OPPT, regarding the phase out plan for PFOS-based products." Tech. Rep. AR226-0600.
- Wiesmueller, G. A. 2012. "Perfluorinated compounds in the vicinity of a fire training area - Human biomonitoring among 10 persons drinking water from contaminated private wells in Cologne, Germany." *International Journal of Hygiene and Environmental Health*. 215 (2): 212-215.
- Willach, S., H. J. Brauch, and F. T. Lange. 2016. "Contribution of selected perfluoroalkyl and polyfluoroalkyl substances to the adsorbable organically bound fluorine in German rivers and in a highly contaminated groundwater." *Chemosphere* 145: 342-350.
- Wilkinson J. L., J. Swinden, P. S. Hooda, J. Barker, and S. Barton. 2016. "Markers of anthropogenic contamination: A validated method for quantification of pharmaceuticals, illicit drug metabolites, perfluorinated compounds, and plasticisers in sewage treatment effluent and rain runoff." *Chemosphere* 159:638-646.
- Wilkinson, J. L., P. S. Hooda, J. Swinden J. Barker, and S. Barton. 2017. "Spatial distribution of organic contaminants in three rivers of Southern England bound to suspended particulate material and dissolved in water." *Science of the Total Environment* 593-594: 487-497.
- Winkens, K., R. Vestergren, U. Berger, and I.T. Cousins. 2017. "Early life exposure to per- and polyfluoroalkyl substances (PFASs): A critical review." *Emerging Contaminants* 3: 55-68.
- Witteveen+Bos and TTE. 2016. *Emerging Contaminants, PFOS and PFOA, Production Use-Sources, Production and Applications*. Commissioned by RWS Leefomgeving (the Netherlands) and OVAM (Flanders).

<http://www.emergingcontaminants.eu/index.php/background-info/Factsheets-PFOS-intro/Factsheets-PFOS-production>

Accessed April 27, 2017.

Woodard, S., J. Berry, and B. Newman. 2017. "Ion Exchange Resin for PFAS removal and pilot test comparison to GAC." *Remediation Journal* 27:19-27.

World Bank. 2017a. *GEF Grant to Assist China's Efforts to Phase Out POPs*. April 7.

<http://www.worldbank.org/en/news/press-release/2017/04/07/gef-grant-to-assist-china-efforts-to-phase-out-pops> Accessed April 29, 2017.

World Bank. 2017b. *China – Reduction and Phase-Out of PFOS in Priority Sectors Project*. Washington, D.C.: World Bank Group.

<http://www.worldbank.org/en/news/loans-credits/2017/04/07/china-reduction-and-phase-out-of-pfos-in-priority-sectors-project>

Xiao, H., B. Lv, G. Zhao, Y. Wang, M. Li, and D. Li. 2011. "Hydrothermally enhanced electrochemical oxidation of high concentration refractory perfluorooctanoic acid." *The Journal of Physical Chemistry A* 115(47): 13836-13841.

Xiao, F., M. F. Simcik, and J. S. Gulliver. 2012. "Perfluoroalkyl acids in urban stormwater runoff: Influence of land use." *Water Research* 46: 6601-6608.

Xiao, F., M. F. Simcik, T. R. Halbach, and J. S. Gulliver. 2015. "Perfluorooctane sulfonate (PFOS) and perfluorooctanoate (PFOA) in soils and groundwater of a U.S. metropolitan area: Migration and implications for human exposure." *Water Research* 72: 64-74.

Xiao, X., B. A. Ulrich, B. Cheng, and C. P. Higgins. 2017. "Sorption of poly- and perfluoroalkyl substances (PFASs) relevant to aqueous film-forming foams (AFFF)-impacted groundwater by biochars and activated carbon." *Environmental Science and Technology* 51: 6342-6351.

Yamada, T., P. Taylor, R. Buck, M. Kaiser, and R. Giraud. 2005. "Thermal Degradation of Fluorotelomer Treated Articles and Related Materials." *Chemosphere* 61 (7): 974-984

Yamada, A., N. Bemrah, B. Veyrand, C. Pollono, M. Merlo, V. Desvignes, V. Sirot, M. Oseredczuk, P. Marchand, R. Cariou, J.-P. Antignac, B. L. Bizec, J.-C. Lebanc. 2014. "Perfluoroalkyl Acid Contamination and Polyunsaturated Fatty Acid Composition of French Freshwater and Marine Fishes." *Journal of Agricultural and Food Chemistry* 62: 7593-7603.

Yamashita, N., K. Kannan, S. Taniyasu, Y. Horii, G. Petrick, and T. Gamo. 2005. "A Global Survey of Perfluorinated Acids in Oceans." *Maritime Pollution Bulletin* 51: 658-668.

Yan, H., I. T. Cousins, C. Zhang, and Q. Zhou. 2015. "Perfluoroalkyl acids in municipal landfill leachates from China: Occurrence, fate during leachate treatment and potential impact on groundwater." *Science of the Total Environment* 524: 23-31.

Yang, Y., Y. I. Cho, and A. Fridman. 2012. *Plasma Discharge in Liquid: Water Treatment and Applications*. CRC Press. Boca Raton.

Yang, S., J. Cheng, J. Sun, Y. Hu, and X. Liang. 2013. "Defluorination of aqueous perfluorooctanesulfonate by activated persulfate oxidation." *PLoS One* 8(10) e74877.

Yang, B., Y. Han, Y. Deng, Y. Li, Q. Zhuo, and J. Wu. 2016. "Highly efficient removal of perfluorooctanoic acid from aqueous solution by H₂O₂-enhanced electrocoagulation-electroflotation technique." *Emerging Contaminants* 2(1): 49-55.

Yarwood, G., S. Kembell-Cook, M. Keinath, R. L. Waterland, S. H. Korzeniowski, R. C. Buck, M. H. Russell, and S. T. Wasburn, 2007. "High-Resolution Atmospheric Modeling of Fluorotelomer Alcohols and Perfluorocarboxylic Acids in the North American Troposphere," *Environmental Science and Technology* 41(16): 5756-5762.

Yates, B. J., R. Darlington, R. Zboril, and V. K. Sharma. 2014. "High-valent iron-based oxidants to treat perfluorooctanesulfonate and perfluorooctanoic acid in water." *Environmental Chemistry Letters* 12 (3):413-417. September. DOI10.1007/s10311-014-0463-5

Yeung, L. W. Y., A. O. De Silva, E. I. H. Loi, C. H. Marvin, S. Taniyasu, N. Yamashita, S. A. Mabury, D. C. G. Muir, and P. K. S.

- Lam. 2013. "Perfluoroalkyl substances and extractable organic fluorine in surface sediments and cores from Lake Ontario." *Environment International* 59:389-397. doi: 10.1016/j.envint.2013.06.026.
- Yin, P., Z. Hu, X. Song, J. Liu, and N. Lin. 2016. "Activated Persulfate Oxidation of Perfluorooctanoic Acid (PFOA) in Groundwater under Acidic Conditions." *International Journal of Environmental Research and Public Health* 13(6): 602.
- Yoo, H., J. W. Washington, T. M. Jenkins, and J. J. Ellington. 2011. "Quantitative determination of perfluorochemicals and fluorotelomer alcohols in plants from biosolid-amended fields using LC/MS/MS and GC/MS." *Environmental Science and Technology* 45: 7985-7990.
- Young, C. J., V. I. Furdui, J. Franklin, R. M. Koerner, D. C. G. Muir, and S. A. Mabury. 2007. "Perfluorinated acids in Arctic snow: New evidence for atmospheric formation." *Environmental Science and Technology* 41: 3455-3461.
- Young, C. J. and S. A. Mabury. 2010. "Atmospheric perfluorinated acid precursors: chemistry, occurrence, and impacts." In *Reviews of Environmental Contamination and Toxicology* Volume 208 (pp. 1-109). Springer New York.
- Yu, Q., S. Zhangk, J. Deng, G. Huang, and G. Yu. 2009. "Sorption of perfluorooctane sulfonate and perfluorooctanoate on activated carbons and resin: Kinetic and isotherm study." *Water Resources* 43: 1150-1158.
- Zareitalabad, P., J. Siemens, M. Hamer, and W. Amelung. 2013. "Perfluorooctanoic acid (PFOA) and perfluorooctanesulfonic (PFOS) in surface waters, sediments, soils and wastewater- A review on concentrations and distribution coefficients." *Chemosphere* 91: 725-732.
- Zhang, S., B. Szostek, P. K. McCausland, B. W. Wolstenholme, X. Lu, N. Wang, and R. C. Buck. 2013. "6:2 and 8:2 fluorotelomer alcohol anaerobic biotransformation in digester sludge from a WWTP under methanogenic conditions." *Environmental Science and Technology* 47(9): 4227-4235.
- Zhang, C., Y. Qu, X. Zhao, and Q. Zhou. 2015a. "Photoinduced reductive decomposition of perfluorooctanoic acid in water: Effect of temperature and ionic strength." *CLEAN-Soil, Air, Water* 43(2): 223-228.
- Zhang, H., L. Weid, X. He, Y. Wang, and Q. Zhang. 2015b. Uptake of Perfluoroalkyl Acids in the Leaves of Coniferous and Deciduous Broad-Leafed Trees. *Environmental Toxicology and Chemistry* 34: 1499-1504.
- Zhang, T., G. Pan, G., and Q. Zhou. 2016. "Temperature effect on photolysis decomposing of perfluorooctanoic acid." *Journal of Environmental Sciences* 42: 126-133.
- Zhang, L., L. S. Lee, J. Niu, and J. Liu. 2017. "Kinetic analysis of aerobic biotransformation pathways of a perfluorooctane sulfonate (PFOS) precursor in distinctly different soils." *Environmental Pollution* 229: 159-167.
- Zhao, B., M. Lv, and L. Zhou. 2012. "Photocatalytic degradation of perfluorooctanoic acid with β -Ga₂O₃ in anoxic aqueous solution." *Journal of Environmental Sciences* 24(4): 774-780.
- Zhao, Z., Z. Xie, A. Möller, R. Sturm, J. Tang, G. Zhang, and R. Ebinghaus. 2012. "Distribution and long-range transport of polyfluoroalkyl substances in the Arctic, Atlantic Ocean and Antarctic Coast." *Environmental Pollution* 170: 71-77.
- Zhao, H., J. Gao, G. Zhao, J. Fan, Y. Wang, and Y. Wang. 2013a. "Fabrication of novel SnO₂-Sb/carbon aerogel electrode for ultrasonic electrochemical oxidation of perfluorooctanoate with high catalytic efficiency." *Applied Catalysis B: Environmental* 136: 278-286.
- Zhao, L., M. Zhou, T. Zhang, and H. Sun. 2013b. "Polyfluorinated and perfluorinated chemicals in precipitation and runoff from cities across eastern and central China." *Archives of Environmental Contamination and Toxicology* 64:198-207.
- Zhao, L., J. Bian, Y. Zhang, L. Zhu, and Z. Liu. 2014. "Comparison of the sorption behaviors and mechanisms of perfluorosulfonates and perfluorocarboxylic acids on three kinds of clay minerals" *Chemosphere* 114: 51-58
- Zhao H. Z., L. Wang, Y. Y. Chang, and Y. Xu. 2016. "High-efficiency removal of perfluorooctanoic acid from water by covalently bound hybrid coagulants (CBHyC) bearing a hydrophobic quaternary ammonium group." *Separation and Purification Technology* 158: 9-15.
- Zhou, Q., H. P. He, J. X. Zhu, W. Shen, R. L. Frost, and P. Yuan. 2008. "Mechanism of p-nitrophenol adsorption from aqueous solution by HDTMA(+)-pillared montmorillonite - implications for water purification." *Journal of Hazardous Materials*

154:1025-1032.

Zhou, Q., S. Deng, Q. Yu, Q. Zhang, G. Yu, J. Huang, and H. He. 2010. "Sorption of perfluorooctane sulfonate on organo-montmorillonites," *Chemosphere* 78: 688-694.

Zhou, Q., S. Deng, B. Yang, J. Huang, and G. Yu. 2011. "Efficient electrochemical oxidation of perfluorooctanoate using a Ti/SnO₂-Sb-Bi anode." *Environmental Science and Technology* 45 (7): 2973-2979.

Zhou, M., M. Chi, H. Wang, and T. Jin. 2012a. "Anode modification by electrochemical oxidation: A new practical method to improve the performance of microbial fuel cells." *Biochemical Engineering Journal* 60:151-155.

Zhou, Q., G. Pan, and J. Zhang. 2013. "Effective sorption of perfluorooctane sulfonate (PFOS) on hexadecyltrimethylammonium bromide immobilized mesoporous SiO₂ hollow sphere." *Chemosphere* 90: 2461-2466.

Zhu, L. Z., and B. L. Chen. 2000. "Sorption behavior of p-nitrophenol on the interface between anion-cation organobentonite and water." *Environmental Science and Technology* 34: 2997-3002.

Zhu, R., Q. Chen, Q. Zhou, Y. Xi, J. Zhu, and H. He. 2016. "Adsorbents based on montmorillonite for contaminant removal from water: A review," *Applied Clay Science* 123: 239-258.

Zhuo, Q., S. Deng, B. Yang, J. Huang, B. Wang, T. Zhang, and G. Yu. 2012. "Degradation of perfluorinated compounds on a boron-doped diamond electrode." *Electrochimica Acta* 77:17-22.

Zhuo, Q., X. Li, F. Yan, B. Yang, S. Deng, J. Huang, and G. Yu. 2014. "Electrochemical oxidation of 1H, 1H, 2H, 2H-perfluorooctane sulfonic acid (6: 2 FTS) on DSA electrode: Operating parameters and mechanism." *Journal of Environmental Sciences* 26 (8): 1733-1739.

Zushi Y., and S. Masunaga. 2009. "Identifying the nonpoint source of perfluorinated compounds using a geographic information system based approach." *Environmental Toxicology and Chemistry* 28(4): 691-700.