Environmental Science & Technology Letters

Editorial

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The Best of the Best in 2015!

Manuscripts submitted to *ES&T Letters* undergo several rigorous technical reviews, first by an Associate Editor and then by multiple external reviewers, to ensure that these studies are of the highest scientific quality. From those papers that pass our technical review, we accept for publication only those studies that also warrant urgent publication. As a result, the papers published in *ES&T Letters* are of both quality and of great immediate interest to our readers. Among these excellent papers, the editors of *ES&T Letters* enjoy recognizing a few papers that particularly stand out among those we published in the past year. For 2015, we identified four studies that merited inclusion in our awards for "Best Papers". For these awards, we do not select our papers from specific topical categories, and we do not rank them in any order (other than sometimes listing them in alphabetical order). We also have no fixed number of papers that will receive this special level of recognition. The papers chosen from publications in 2015 span several important topics, ranging from chemicals in groundwater and air to cleaning up used water for further use or discharge into the environment.

For quite some time, C_8 perfluoroalkyl substances dominated our environmental concerns. Recent U.S. Environmental Protection Agency guidance also suggests monitoring for C_4 and C_6 perfluoroalkyl substances. The work of K. A. Barzen-Hanson and J. A. Field, on Discovery and Implications of C_2 and C_3 Perfluoroalkyl Sulfonates in Aqueous Film-Forming Foams and Groundwater, found that even shorter chain C_2 and C_3 perfluoroalkyl sulfonates need to be included in the monitoring list of these types of chemicals. Via analysis of both aqueous film-forming foams and groundwater samples where fire training activities were performed, perfluoroethanesulfonate and pefluoropropanesulfonate were detected at concentrations of up to 7.5 and 63 μg/L, respectively. Because these small chain compounds are highly soluble and mobile in the environment, the length of contaminant plumes may be much longer than previously thought on the basis of monitoring for longer chain compounds. Additionally, sorption-based removal is likely to be ineffective for the short chain perfluoroalkyl substances [*Environ. Sci. Technol. Lett.* **2015**, *2* (4), 95−99, DOI: 10.1021/acs.estlett.5b00049 (http://pubs.acs.org/doi/abs/10.1021/acs.estlett.5b00049)].

We are increasingly aware that we all share the same global environment and that chemicals do not respect international boundaries or borders. In the study Variability in Sources and Concentrations of Saharan Dust Phosphorus over the Atlantic Ocean by A. Gross, T. Goren, C. Pio, J. Cardoso, O. Tirosh, M. C. Todd, D. Rosenfeld, T. Weiner, D. Custódio, and A. Angert, phosphate source apportionment in trans-Atlantic Saharan dust was examined during all major dust events in 2011 using phosphate $\delta^{18}O$ measurement. The authors identified multiple active dust P sources in the Western Sahara and showed the global importance of these sources to the Atlantic Ocean, rain forests of America, and other locations around the planet [*Environ. Sci. Technol. Lett.* **2015**, *2* (2), 31−37, DOI: 10.1021/ez500399z (http://pubs.acs.org/doi/abs/10.1021/ez500399z)].

Hydraulic fracturing continues to be a prevalent environmental issue in the news, with discussions of earthquakes caused by brine disposal, leakage of methane, and the potential contamination of groundwater. With so many different chemicals used in hydraulic fracturing fluid formulations, J. D. Rodgers, T. L. Burke, S. G. Osborn, and J. N. Ryan developed a method for evaluating which compounds had the highest probability of reaching groundwater wells used for drinking water (A Framework for Identifying Organic Compounds of Concern in Hydraulic Fracturing Fluids Based on Their Mobility and Persistence in Groundwater). Via a combination of partitioning values (which will dictate transport) and hydrolysis and biodegradation rate constants, the screening identified that there were 15 compounds with elevated exposure potential. Only three of these compounds, however, currently have health-based standards [*Environ. Sci. Technol. Lett.* **2015**, *2* (6), 158−164, DOI: 10.1021/acs.estlett.5b00090 (http://pubs.acs.org/doi/full/10.1021/acs.estlett.5b00090)].

The energy used in the United States for our water infrastructure is estimated to consume 3−5% of the electricity we generate, a level that is clearly not sustainable. One way to reduce the carbon footprint of wastewater treatment is to use anaerobic technologies, avoiding the need to aerate the wastewater. However, nutrient removal remains a great challenge for anaerobic treatment technologies. J. Delgado Vela, L. B. Stadler, K. J. Martin, L. Raskin, C. B. Bott, and N. G. Love reviewed available technologies in their critical study of emerging techniques Prospects for Biological Nitrogen Removal from Anaerobic Effluents during Mainstream Wastewater Treatment. They concluded that development of effective nitrogen removal technologies will require the development of sensor-mediated controls, improved computational models, and improved removal efficiency relative to reducing energy demands [*Environ. Sci. Technol. Lett.* **2015**, *2* (9), 234−244, DOI: 10.1021/acs.estlett.5b00191 (http://pubs.acs.org/doi/abs/10.1021/acs.estlett.5b00191)].

It is a pleasure and honor to receive and publish such high-quality and important papers in *ES&T Letters*. While we have identified a few particularly outstanding papers this year, there are many other excellent papers that were published in the journal. We look forward to receiving and publishing the next round of "best papers" for manuscripts published in this journal in 2016.

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AUTHOR INFORMATION

Notes

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