At first, we were uncomfortable with this title because it sounded as if we were describing a group of compounds that were in the process of actively moving from one medium to another. Upon further consideration, we became convinced of the suitability of our title. According to the *American Heritage Dictionary*, “emerging” means, “newly formed or just coming into prominence.” During the past decade, a variety of water contaminants have indeed become much more prominent in the minds of environmental engineers and scientists. To provide readers of *Environmental Engineering Science* with a better understanding of the newest group of emerging water contaminants, we asked recognized leaders in the field to review the sources, behavior, and treatment of eight different individual or families of emerging contaminants. In particular, we wanted to address questions such as: Why do new water contaminants emerge? How can we better anticipate the next set of emerging contaminants? What common themes do we encounter among the emerging water contaminants?

The papers in this issue illustrate how the intersection of sensitive new analytical techniques, modern industrial products, and improved understanding of science and engineering lead to the emergence of new contaminants. To emphasize the connections between the different emerging contaminants, we asked the authors of each manuscript to discuss sources of the contaminants, analytical methods, fate, and transport properties and treatment. In some cases, other recent reviews were available for one or more of these aspects, so the manuscripts took a different focus.

There are eight papers included in this issue, each covering a specific contaminant or class of contaminants. We begin with two highly soluble contaminants that have recently gained prominence due to their association with rocket propellants. *N*-Nitrosodimethylamine (review by Mitch *et al.*) is a potent human carcinogen that has recently been discovered to enter the water system not only as a component of rocket fuel, but also as a byproduct of wastewater chlorination. Perchlorate (review by Xu *et al.*) is manufactured mainly as the oxidizer in solid rocket and missile propellants, and is released primarily during the periodic replacement and use of such fuels.

The next two reviews address two other highly soluble contaminants that are released as minor components of commonly used chemicals. 1,4-Dioxane (review by Zenker *et al.*) is used as a stabilizer of solvents such as 1,1,1-trichloroethane, and often remains as a residual contaminant following remediation of the highly volatile solvent. Methyl tert butyl ether (MTBE) and other fuel oxygenates (review by Deeb *et al.*) are currently required by the Clean Air Act as significant components of gasoline. Both 1,4-dioxane and MTBE are more soluble than the compounds with which they are released, resulting in rapidly expanding groundwater plumes.

The following two reviews address classes of compounds that recently have been detected in municipal wastewater effluent and effluent-receiving waters. Endocrine-disrupting compounds (EDCs) are synthetic and natural compounds that mimic natural hormones in the endocrine systems of animals. Together with pharmaceuticals and personal care products, EDCs have emerged as serious concerns in the water industry due to concerns about their potential to cause adverse human and ecological effects (review by Snyder *et al.*). The degradation metabolites of nonionic surfactants such as alkylphenol polyethoxylates (APEOs) (review by Montgomery-Brown and Reinhard) also are a concern due to their widespread distribution and resistance to treatment. APEOs are used in household and industrial detergents, petroleum refining, pulp and paper production, crop protection chemicals, and plastics and textiles manufacturing.

The next review addresses another class of compounds that are associated with soaps and detergents. Fluorinated alkyl surfactants (FASs) are compounds that are extremely useful industrial products due to their unique chemical properties and their ability to resist breakdown. Recently, these compounds have emerged as water contaminants due to their detection in remote regions of the world with no known local sources (review by Schultz *et al.*). These bioaccumulative compounds are commonly
used in a variety of products, such as fire-fighting foams, insecticides, and repellents, and are released to the environment by normal use and through accidental releases.

We wrap up this special issue with a review of human calciviruses (review by Huffman et al.), single-stranded ribosomal nucleic acid viruses that are ubiquitous in the environment and are now recognized to be responsible for the vast majority of nonbacterial gastroenteritis outbreaks in humans. In fact, these pathogenic viruses have recently been headlining the news as the culprits of the cruise ship gastroenteritis outbreaks, and are of particular interest to water-treatment specialists.

Finally, we would like to thank all of the contributors to this issue as well as the reviewers for their hard work and prompt responses. We believe that these papers and the references included therein provide a representative overview of the current state of research on some of the most important emerging contaminants in water. We hope that the reviews will lead to a greater understanding of these specific emerging contaminants and will help us to develop the wisdom needed to obviate the need for future special issues on emerging contaminants.

Prof. Lisa Alvarez-Cohen and Prof. David L. Sedlak
University of California, Berkeley
Guest Editors