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Cover Design: Samantha Whitham

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Treating water with nano

Water is arguably the natural resource most essential for life. Perhaps too often in rich countries the public takes the availability of clean water for granted. Sadly, increasing demand for economic development, and inefficient management joint with increasing pollution and climatic effects are putting more stress on natural water resources, leading to water scarcity in a growing portion of the world.

Achieving sustainable water use will be based on a combination of factors, among which the efficient and responsible management of resources is paramount. In addition, however, water treatment technologies will provide a critical contribution. This Insight focuses in particular on the potential that nanomaterials offer for the development of such technologies. The Perspective by [Pedro Alvarez and co-authors](#) presents an overview of the many ways in which, thanks to their small size, nanomaterials could be used effectively for water purification and filtration. More specifically, [Jae-Hong Kim and co-authors](#) examine the potential of catalytic nanomaterials in oxidation processes for water treatment. Nanomaterials can also be used more indirectly in water treatment. In particular, [Peter Vikesland](#) discusses the potential development of nano-enabled water-quality monitoring.

A new technology should not create more damage than benefits. For this reason, we asked [Paul Westerhoff and colleagues](#) to overview current knowledge on the potential risks that nanomaterials themselves pose to the quality of drinking water. Reassuringly, the evidence so far implies a very low risk level, though high-level assessment must persist to take into account future growth of nanomaterials production and potentially unforeseen hazards of future technologies.

Finally, the success of a nano-enabled water treatment methods will not depend only on their technical soundness. As pointed out by [David Jassby and co-authors in their Comment](#), scalability of nanomaterials remains the major challenge in their implementation. Furthermore, a technology can only be successfully employed if the public accepts it. As argued by [Andrew Maynard and Justin Kidd](#), current public perception would not in itself be an obstacle to nano-enabled water treatment, but industry must maintain an honest and transparent level of information to avoid the reversion of this situation.

[Fabio Pulizzi](#), Chief Editor
[Wenjie Sun](#), Associate Editor

Published online: 6 August 2018
<https://doi.org/10.1038/s41565-018-0238-4>

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