



Woodrow Wilson  
International  
Center  
for Scholars

Contact: Todd Kuiken  
Phone: (202) 691-4398 (work)  
(865) 384-4490 (cell)  
[todd.kuiken@wilsoncenter.org](mailto:todd.kuiken@wilsoncenter.org)

*News Release*

**Release No. 53-09  
July 8, 2009**

## **Contaminated Site Remediation: Are Nanomaterials the Answer? *First Map of Global Nanoremediation Sites Available Online***

WASHINGTON—A new review article appearing in *Environmental Health Perspectives* (EHP) co-authored by Dr. Todd Kuiken, a research associate for the Project on Emerging Nanotechnologies (PEN), focuses on the use of nanomaterials for environmental cleanup. It provides an overview of current practices; research findings; societal issues; potential environment, health, and safety implications; and possible future directions for nanoremediation. The authors conclude that the technology could be an effective and economically viable alternative for some current site cleanup practices, but potential risks remain poorly understood.

According to Dr. Kuiken, “Despite the potentially high performance and low cost of nanoremediation, more research is needed to understand and prevent any potential adverse environmental impacts, particularly studies on full-scale ecosystem-wide impacts. To date, little research has been done.”

In its 2004 report *Nanoscience and nanotechnologies: opportunities and uncertainties* (available at: <http://www.nanotec.org.uk/finalReport.htm>), the British Royal Society and Royal Academy of Engineering recommended that the use of free manufactured nanoparticles be prohibited for environmental applications such as remediation until further research on potential risks and benefits had been conducted. The European Commission's Scientific Committee on Emerging and Newly Identified Health Risks (SCENIHR) called for further risk research in 2005 while acknowledging environmental remediation technology as one of nanotechnology's potential benefits.

Supplemental material published with the EHP review identifies 45 sites where nanomaterials have been used for soil and groundwater remediation, covering seven countries and 12 U.S. states. Most of the materials discussed are a form of nano-scale zero-valent iron that are injected into the ground in a slurry which provide a reducing environment that enables the breakdown of contaminants.

To coincide with the release of the EHP article, PEN has for the first time made publicly available an interactive, online map of global nanoremediation sites. The map (available at: [http://www.nanotechproject.org/inventories/remediation\\_map/](http://www.nanotechproject.org/inventories/remediation_map/)) shows which nanomaterials have been used where and includes detailed information on the contaminants treated and the nature of

the treatment. It provides a unique source of information on the intentional release of nanomaterials into the environment to treat contaminated ground and water.

The EHP article is available online at: <http://dx.doi.org/10.1289/ehp.0900793>

### **About Nanotechnology**

Nanotechnology is the ability to measure, see, manipulate and manufacture things usually between 1 and 100 nanometers. A nanometer is one billionth of a meter; a human hair is roughly 100,000 nanometers wide. In 2007, the global market for goods incorporating nanotechnology totaled \$147 billion. Lux Research projects that figure will grow to \$3.1 trillion by 2015.

The **Project on Emerging Nanotechnologies** was launched in 2005 by the **Wilson Center** and **The Pew Charitable Trusts**. It is a partnership dedicated to helping business, governments, and the public anticipate and manage the possible health and environmental implications of nanotechnology. To learn more, visit [www.nanotechproject.org](http://www.nanotechproject.org).

###