



News Release
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EPA's Nanotech Regs: Ironic Parameters Clean-up – Clam-up – Screw-up?

During summer vacation, the lead US environmental regulatory agency acknowledged it has approved at least 15 novel nanoscale chemicals. Earlier this year EPA sanctioned the unproven use of iron nanoparticles to clean up a pesticide dump. Hearings this week.

Hard on the heels of a US Environmental Protection Agency (EPA) commitment to consult openly and widely on the development of a regulatory approach to nanotechnology, the government has given the green light to introduce more than 15 novel, nano-formulated chemicals. Additionally, the EPA itself is experimentally testing iron nanoparticles to clean up groundwater in “Superfund” toxic dumps in a number of locations. The composition of the approved nano-chemicals, their potential commercial end-uses and even the manufacturers’ names have been withheld under the EPA’s sweeping Confidential Business Information (CBI) provisions. The agency meets with industry and civil society in Washington, DC this Thursday/Friday to discuss its plans for a voluntary “stewardship program” for nanoscale materials.

Nanoscale particles (approximately 100 nm in size and smaller) behave differently from larger-scale particles of the same material. With only a reduction in size, materials may be stronger or lighter or more heat-resistant or better conductors of electricity – or more toxic. The impacts of manufactured nanoparticles on the environment and on human health are unknown and unpredictable and toxicological data are scarce.

In August, BNA (Bureau of National Affairs) reported in its *Daily Environment Report* that it had asked EPA to explain the agency’s review of nanoscale chemicals under the Toxic Substances Control Act (TSCA) following a notice in the *Federal Register* that an un-named company would begin manufacturing siloxane-coated alumina nanoparticles. [BNA, *Daily Environment Report*, Aug. 16, 2006, No. 158, Page A-7.] According to EPA officials, only one nano-chemical reviewed by the agency exhibited novel properties of concern to regulators. “The companies’ patent lawyers would probably beg to differ,” says Kathy Jo Wetter of ETC Group. “The government hasn’t even agreed on standards for measuring or otherwise characterizing nanoparticles and the EPA has neither the tools nor the expertise to evaluate them. Nanotech companies are telling patent examiners and venture capitalists that they are taking advantage of nanoscale, quantum effects to create novel materials while telling the EPA that these chemicals are just the same-old, same-old.”

EPA’s Jim Alwood told ETC Group that the agency doesn’t keep a running tab on whether or not chemicals are manufactured on the nanoscale, making it very difficult to estimate how many nanoscale chemicals are in production. Alwood thinks that by now, there are “significantly more” than the 15

chemicals reported in August.ⁱ The Confidential Business Information provisions under TSCA – the regulatory framework for industrial chemicals – make it extremely difficult to find out who is making what.

Asked how EPA could be sure that the government isn't letting nanoscale materials with novel properties slip through the cracks, Alwood explained that regulators rely on data submitted by companies in their pre-manufacture notices.ⁱⁱ "These are the folks who created the toxic dumps the EPA is charged with cleaning up," says Pat Mooney, executive director of ETC Group. "Maybe EPA trusts them, but the public does not."

Groundless groundwater experimentation: In addition to paving the way for companies to produce and commercialize nanoscale chemicals, EPA is actively contributing to the release of engineered nanomaterials in the environment. In January, the agency announced a plan to clean up the Nease Chemical Superfund site in the state of Ohio by injecting "nanoscale zero-valent iron" (NZVI) into the groundwater. (See <http://www.epa.gov/Region5/sites/nease/background.htm>)

"There is increasing evidence that at least some nanoparticles can be toxic in the environment and potentially unsafe for human exposure. Despite this, the EPA is experimenting with the release of iron nanoparticles in the groundwater to clean up a pesticide dump," notes Pat Mooney.

It was just two years ago that the UK's Royal Society recommended unambiguously that "the use of free nanoparticles in environmental applications such as remediation of groundwater be prohibited."ⁱⁱⁱ ETC Group consulted with Dr. Mark Wiesner, a professor of Civil and Environmental Engineering at Duke University (North Carolina) who studies how nanoparticles move through soil and water, to see if scientific consensus had been reached on the safety of using iron nanoparticles for groundwater remediation since the time of the Royal Society report's publication. Dr. Wiesner explained that while iron is found naturally in groundwater environments, it was still too early to know all the environmental implications of NZVI: There is the possibility that iron as nanoparticles or conventional material could mobilize some metal or other substance in the groundwater that wasn't mobile before, for example – we don't know for certain what "the effects of the medicine" are.^{iv}

"What we are learning from this experience," Kathy Jo Wetter concludes, "is that the EPA doesn't understand the concept of consultation and is prepared to place its trust in the chemical industry rather than in its own experience with chemical pollution."

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ETC group has launched a competition for the design of a nano-hazard symbol. Following initial vetting by a panel of eminent judges, the top 10 designs will be taken to the World Social Forum in Nairobi, Kenya in January 2007 where Forum participants will be invited to vote on their favorite. The winning design will be submitted to national and international regulatory agencies. For further information see: <http://www.etcgroup.org/nanohazard>

ⁱ Telephone conversations with Jim Alwood, October 12 and 16, 2006.

ⁱⁱ Telephone conversation with Jim Alwood, October 12, 2006.

ⁱⁱⁱ The Royal Society & The Royal Academy of Engineering, *Nanoscience and nanotechnologies: opportunities and uncertainties*, July 2004. Summary, p. 5. Available on the Internet: www.nanotec.org.uk/report/summary.pdf

^{iv} Telephone conversation with Dr. Mark Wiesner, October 17, 2006; email communication, October 18, 2006.