

Nanotechnology: Learning from past mistakes

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A new expert analysis in *Nature Nanotechnology* questions whether industry, government and scientists are successfully applying lessons learned from past technologies to ensure the safe and responsible development of emerging nanotechnologies.

The study applies the 12 "late lessons from early warnings," published by the European Environment Agency (EEA) in 2001, to the emerging field of nanotechnology. EEA's "lessons" are drawn from case studies that include the introduction of ozone-damaging halocarbons and of environmentally persistent and toxic PCBs.

The authors of this latest study, who include Steffen Foss Hansen of the Technical University of Denmark and Project on Emerging Nanotechnologies Chief Science Advisor Andrew Maynard, conclude that while the nanotechnology community is doing some things right, "we are still in danger of repeating old, and potentially costly, mistakes."

"Despite a good start, nanotechnology commercialization appears hampered and diverted because many of the same government organizations responsible for promoting nanotechnology also are responsible for regulating it. Risk research strategies are weak and not leading to clear answers to critical safety questions and to filling clear knowledge gaps. Collaborations on risk research, environment and health monitoring, and 'green' applications are hindered by disciplinary and institutional barriers. Most importantly, stakeholders and the public are not being fully engaged," according to lead author Hansen.

"Nanotechnology is all about looking to the future—solving new challenges with new science," says Maynard. "But if it is to succeed, we also need to look back and heed the lessons of the past. And those lessons are clear—work with foresight, honesty and humility; be grounded in reality; and listen to people. We still have a chance to get it right with nanotechnology. But we are not there yet."

The commentary "Late lessons from early warnings for nanotechnology" is currently available online at www.nature.com/nnano .

Source: Project on Emerging Nanotechnologies

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