

Environment-in-Nanotechnology Discursive Space

	Passive Ecological Modernization	Long-term Preparatory	Short-term Precautionary	Reflexive Ecological Modernization
Symbols/ Imagery	Chemistry and particles Atoms and molecules as building blocks Enlarged images of carbon nanotube wires and buckyballs Flower-patterns of nanoscale movement	Good case: manufacturing nature's way Bad case: Grey goo = replicators that run wild Cogs, gears, assembly line, building blocks Risk: Uncertainty	Invisible toxins everywhere Green goo = nanobiotechnology or biology out of control Living self-assemblers DNA motors	Manufacturing nature's way Life-cycle Holistic Soft machines
Arguments	We have time to avoid wow-to-yuck trajectory This is not GMOs Existing regulation works Research first, regulate later Quasi-axiomatic shift to cleaner chemicals, production, and materials Energy efficiency Train has not left the station	MNT is logical We need to be prepared for abuse scenarios We have experience going back to the 80s Environmental prevention through MNT Dissolve problems on the molecular scale	Past regulation doesn't work International approach needed Train has left the station	Twin environment and economic goals Prevention of crisis Avoid costly clean-up Avoid costly regulation Avoid technological backfire Build in flexibility & resilience Long term view & benefits
Problem	Risk is complexity, but Inevitable part of "progress"	Risk of abuse of MNT Risk is uncertain	Risk of nanoparticles Risk of runaway biology Risk is uncertain & ambiguous	Risk of not actualizing the visionary potential Risk is uncertain
Solution	More (open) Research Public-Private partnerships Risks handled by existing institutions	Prepare by focusing on MNT possible directions Toxic risks handled by existing institutions	Changes to institutions needed Global moratorium International conference on new technologies	Public deliberation "upstream" solutions multidisciplinary effort international effort
Role of science	To find facts To provide open basic research Social science interprets	To define defensive processes and threats To develop molecular assemblers	To research toxicity To wait for a publicly approved consensus on applications and direction	To work toward larger goals identified by a mix of actors Good science not necessarily good for humans
Role of public	Discerning consumers Passive consumers	Interested and educated Deserve to be informed	Sceptical consumers The conscience of policy	Involved and educated public