

Nanotechnology

- are the lessons learned?

Late Lessons from Early Warnings

So How Are We Applying the 12 lessons learned?



Box 1 The 12 lessons outlined by the EEA²

1. Acknowledge and respond to ignorance, uncertainty and risk in technology appraisal. meeting needs, and promote robust, diverse and adaptable technologies.
2. Provide long-term environmental and health monitoring and research into early warnings.
3. Identify and work to reduce scientific 'blind spots' and knowledge gaps.
4. Identify and reduce interdisciplinary obstacles to learning.
5. Account for real-world conditions in regulatory appraisal.
6. Systematically scrutinize claimed benefits and risks.
7. Evaluate alternative options for
8. Ensure use of 'lay' knowledge, as well as specialist expertise.
9. Account fully for the assumptions and values of different social groups.
10. Maintain regulatory independence of interested parties while retaining an inclusive approach to information and opinion gathering.
11. Identify and reduce institutional obstacles to learning and action.
12. Avoid 'paralysis by analysis' by acting to reduce potential harm when there are reasonable grounds for concern.



Regulating "Unknown Unknowns"

EEA experts recommends looking out for warnings e.g.:

- Novelty
- Persistency
- Readily dispersed
- Bioaccumulative
- Potentially irreversible action

How do these compare to NMs?



Regulating "Unknown Unknowns"

Comparison for EEA's "warning signs" and nanomaterials

	NM	CNT	C60	Ag	TiO2
• Novelty	✓	✓	✓	✓	✓
• Persistency	✓/÷	✓	✓	✓	✓
• Readily dispersed	✓/÷	÷	÷	✓	✓
• Bioaccumulative	✓/÷	✓	✓	✓	✓
• Potentially irreversible action	✓/÷	✓	✓	✓	✓

Depends on surface chemistry and surface charge



When enough is enough

- + 20 years since first evidence of harm
- Yet many governments still call for more information as a substitute for action: “paralysis of analysis”

Statements

- “risk research jeopardises innovation”
- “regulation is bad for business”



The Danish Ecological Council calls for action..

- Act on early warnings
 - precautionary principle!
- Restrict dispersive uses
- All nanomaterials commercialized shall be tested properly in regard to human and environmental risks





THE ECOLOGICAL COUNCIL

Tomorrow's environment is created today