Nanotechnology and water: an overview

Thembela Hillie\textsuperscript{1} and Mbhuti Hlophe\textsuperscript{2}

\textsuperscript{1} NCNSM CSIR, South Africa
\textsuperscript{2} University of North West, South Africa

Emerging technologies/Emerging economies 4-6 November 2009
Outline

• Introduce nanotech in water

• Risks

• Community involvement

• Technology transfer

• Sustainability
Nanotechnologies in water

• Nanofiltration
• Desalination
• Nanoparticles for the Catalytic Degradation of Water Pollutants
• Magnetic Nanoparticles for Water Treatment and Remediation
• Nanosensors for Detection of Contaminants and Pathogens
• Others- Nanosponges
  • http://www.merid.org/nano/watertechpaper
  • http://www.merid.org/ndn
Risks

• Shared knowledge

• Responsible nanotechnology research

• International Standards

• Global Governance
  • Policy brief by International risk governance council on application in food and cosmetics
Community

Poor depend on water in 3 main ways

• Water as an Input into Production and Livelihoods

• Role of Ecosystems in Supporting Livelihoods of the Poor

• Water for Health and Hygiene
Community Uptake, South Africa-NNS

- Community need for technology
- Education
- Community involvement
- Local capacity
Technology transfer

- **Technology**
  - Collateral Infrastructure

- **Adoption**
  - Market

- **Adaptation**
  - Local capacity
Sustainability

**Desired impact**

- *Economic* - growth, efficiency, stability
- *Social* - Empowerment, inclusion, governance
- *Environment* - resilience, natural resources, pollution

Munasinghe [1992], Rio Earth Summit

- **Technical expertise**
  - Higher learning Institutions
  - Local capacity

- **Strategic Partnerships**
  - Communities/public/private
  - Infrastructure
High nitrate ion concentration; Relatively high population density; Groundwater the sole source of water; Security considerations for water treatment plant.
Thank you!