



Review of EPA: Nanomaterial Case Studies Workshop

(Raleigh NC, Sept. 29-30)

Developing a comprehensive environmental assessment research strategy for nanoscale titanium dioxide

Overview presentation for the NNI workshop on
Nanomaterials and the Environment & Instrumentation,
Metrology and Analytical Methods

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Charge:

- What research or information is most needed in order to conduct a comprehensive environmental assessment of nano-TiO₂?

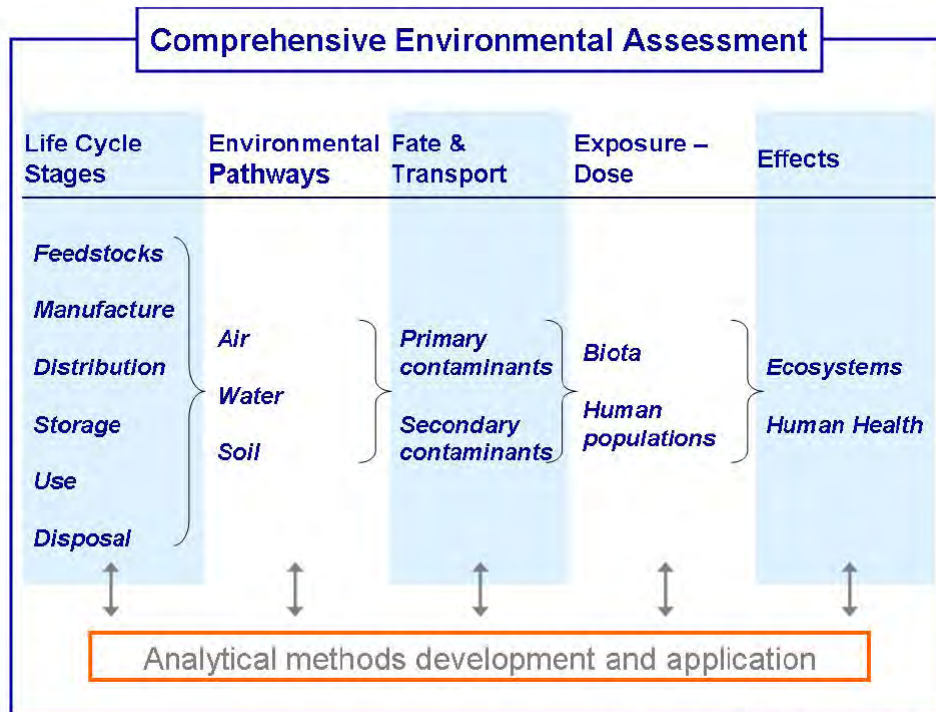


Background:

- TiO₂ case study is available online at EPA website
 - Nanomaterial Case Studies: Nanoscale Titanium Dioxide
- Participants: ~50
 - 1/3 industry / private sector
 - 1/4 government
 - 1/4 academic
 - 1/6 other (NGO, journalists)

Goal:

- Identify and prioritize research needs
 - Democratic method to equally weigh participant input



Source: Adapted from Davis and Thomas (2006) and Davis (2007).

- Focused discussion on (2) example applications
 - TiO₂ used in water treatment
 - TiO₂ as an active ingredient in topical sunscreen



Methods:

- Pre-review of case study by participants and ranking of research needs
- Prioritization through group technique emphasizing equal participant input
- Multiple voting rounds



Outcome:

1. Methods / reference samples
 - to characterize particles and asses exposure & toxicity
2. Exposure methods
 - Air, food, water
3. Life cycle properties
 - Manufacture, particle changes, fate & transport, use, storage, release
4. Exposure sources
5. Phys/chem properties
 - Characterization, surface coatings, aggregation
6. Environmental distribution
 - (background, current and future levels, across environment & biota)
7. Long term exposure effects
 - (ecological & human)
8. Effects
 - (mechanism of action, biological responses)



Future steps:

- Review by EPA Board of Scientific Counselors
- March 2010, final version of case study document published



Overlap:

- 6 participants here as NNI experts or moderators
- Numerous participants in audience
- Broad research needs identified in TiO₂ workshop are applicable to the NNI strategy for all nanomaterials