What could a “Nanoparticle” be?

Particle Categories
Classes of engineered nanoparticles

A. Spherical homogeneous
B. Fibrous homogeneous
C. Non-spherical homogeneous
D. Agglomerate homogeneous
E. Heterogeneous concentric
F. Heterogeneous distributed
G. Heterogeneous agglomerate
H. Active particle
I. Multifunctional particle

Dr. Andrew Maynard: Woodrow Wilson International Center for Scholars
Transport

Research Laboratories
- Academic
- Commercial
  - Warehousing/Maintenance
  - Waste Handling

Start Up/Scale Up Operations
- Transport
- Warehousing/Maintenance

Manufacturing/Production
- Warehousing/Maintenance
- Transport
- Waste Handling

Incorporation in Products
- Maintenance of Products
- Manipulation of Products
- Application of Products - Medical Delivery

Disposal / End of Life
- Recycling
Parameters That Could Affect Nanoparticle Toxicity

- Size
- Shape
- Composition
- Solubility
- Crystalline structure
- Charge
- Surface characteristic
- Attached functional groups
- Agglomeration
- Impurities
### Views Toward Engineered Nanoparticles

<table>
<thead>
<tr>
<th>Time</th>
<th>Hazard classification</th>
<th>Type of action</th>
</tr>
</thead>
<tbody>
<tr>
<td>Present</td>
<td>“As if”</td>
<td>Precautionary</td>
</tr>
<tr>
<td>Near future</td>
<td>“Likely to be”</td>
<td>Due diligence</td>
</tr>
<tr>
<td>Farther future</td>
<td>“Is”</td>
<td>Institutionalized</td>
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