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NANOTECHNOLOGY RESEARCH PROGRAM

BUILDING A SCIENTIFIC FOUNDATION FOR SOUND ENVIRONMENTAL DECISIONS

Future Considerations for Nanotechnology EHS: *Informing Policy and Regulatory Decisions*

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Two Key Considerations

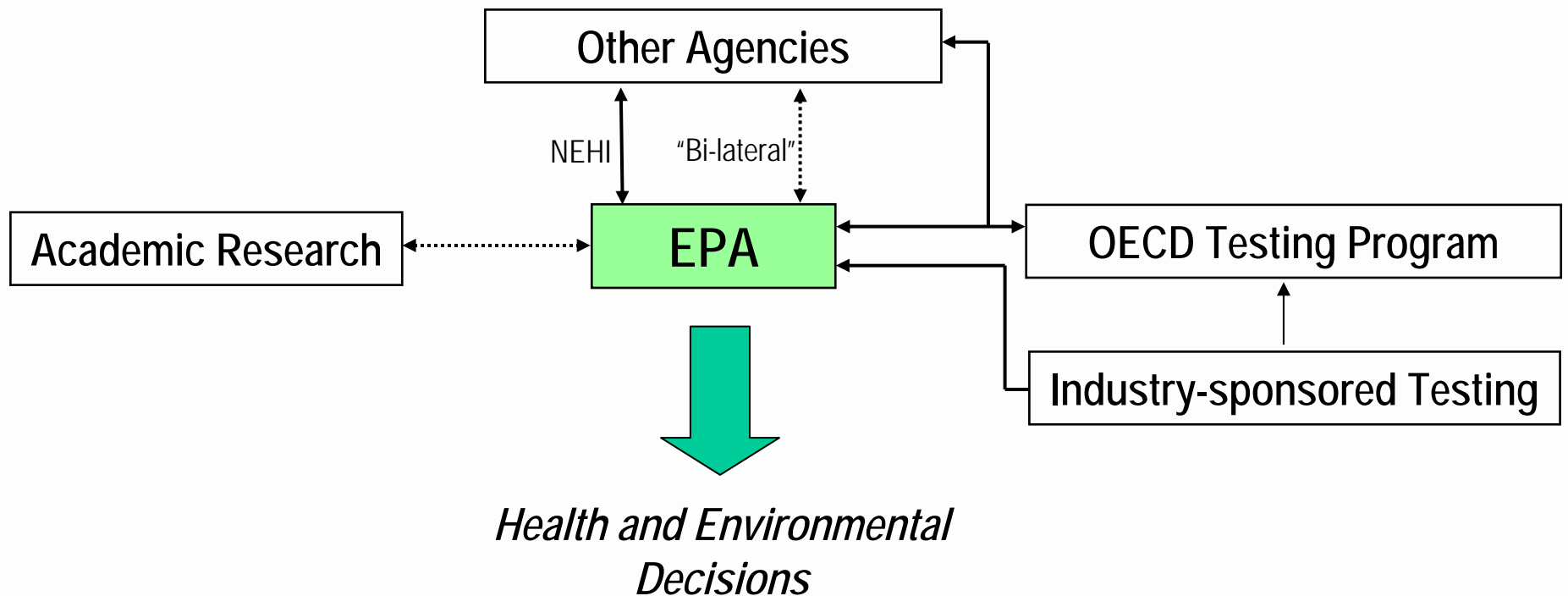
1. Be smart about the development and deployment of new technologies
 - Use green chemistry and other approaches to build safety and environmental protection into nanotechnology
 - Develop approaches for up-front evaluation of potential impacts throughout product life cycles.
 - Recognize that sustainability includes consideration of the inputs and emissions from making the material, not just the impacts of its use.
2. Remember that the choices we make determine whether and how new technologies emerge and develop—nothing is a predetermined given. How can methods and data inform such choices?



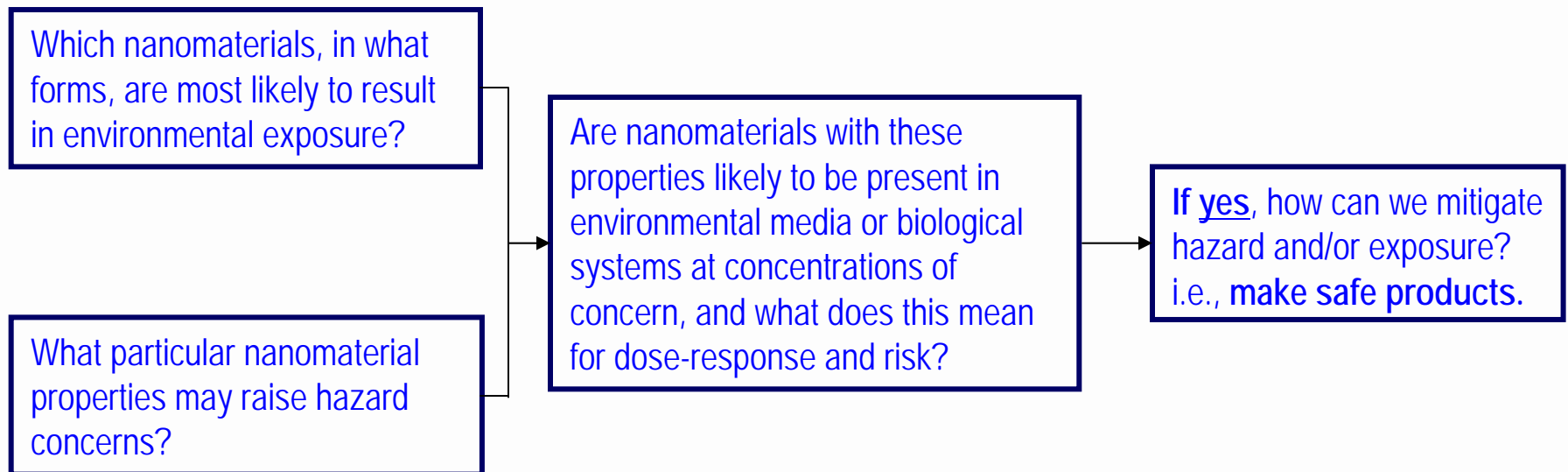
Why Those Two Things Are Important

- *Being smart.* Because after-the-fact consideration of safety, health, and environmental protection is no longer acceptable. Enough of making messes that others have to clean up.
- *Being open to possibilities.* Because not only should we think differently about how we approach technology, our greater control over material properties and processes means we *can* think differently about how to make technologies sustainable.

Context for Decision-Support Data Generation: An EPA-centric view



Key questions for developing regulatory science data





How EPA is Allocating Nano EHS Resources

- 50% Sources, Fate, Transport, and Exposure
- 30% Human Health and Ecological Effects
- 10% Risk Assessment Methods and Case Studies
- 10% Preventing and Mitigating Risks

Challenges:

Potential Release and Exposure: How much of what materials are/will be produced for what uses?

Properties: What properties make a material toxic, mobile, persistent, and bioavailable?



Partnerships are Key to Generating Necessary Data and Making Smart Policy Decisions

- **Industry.** Companies know their products, processes, and markets. Without compromising confidentiality and competitiveness, more material-, product-, and market-specific information is needed.
- **Academic Grants.** Society sanctions nano EHS research because it wants safe nanotechnology products and processes—all grantees receiving federal EHS funding should be focused on this goal.
- **International.** Governments are collaborating bilaterally and through the OECD; opportunities remain for greater academic and industry involvement.



Achieving Sustainable Nanotechnology: *Considerations for the Nano Business Community*

- EHS research partnerships are crucial—and possible.
- Striving for holistic, anticipatory technology evaluation benefits us all.
- Sustainability is a goal: Striving for it will be an incremental, iterative learning process.