

US EPA ARCHIVE DOCUMENT

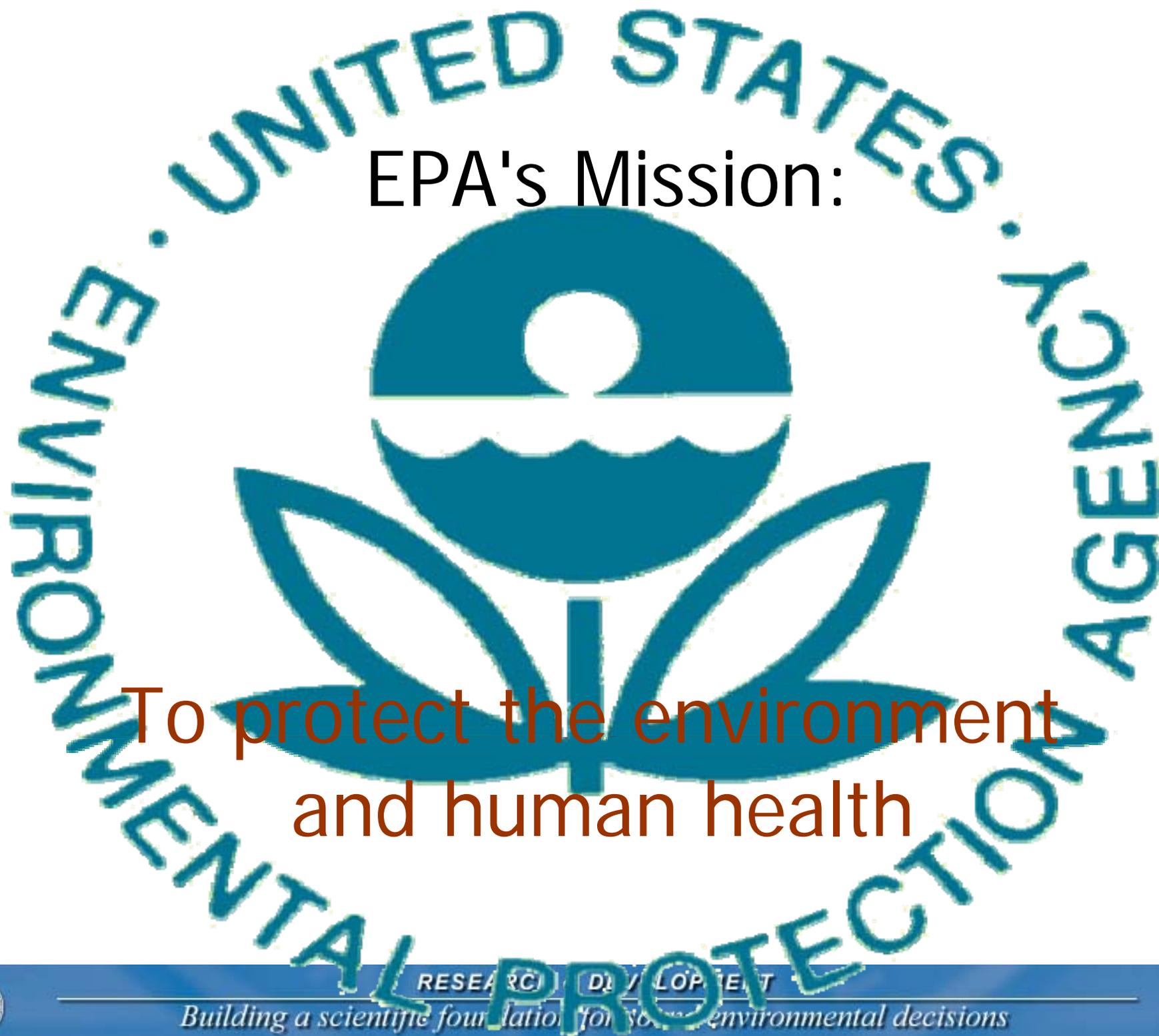
*Why this workshop; Why  
Nanotechnology at EPA*

Barbara Karn, PhD  
Office of Research and Development  
October 20, 2005  
Nanotechnology for Site Remediation  
Washington, DC

# Organizers

- EPA: Marti Otto, Mike Gill, Barbara Karn, Jon Josephs, Terry Burton, Madaleine Nawar, Nora Savage
- NCSE: David Blockstein
- NASA: Jackie Quinn
- NSF: Pat Brezonik, Cindy Ekstein
- Air Force: David Carrillo
- Dept. of Commerce: John Sargent
- Navy: Nancy Ruiz, Rebecca Biggers, Richard Mach
- SERDP: Scott Dockum
- DOE: Todd Anderson





EPA's Mission:

To protect the environment  
and human health



## 6 Thrusts for EPA Nano research program

- Build and sustain a community of researchers in nanotech and the environment-both applications and implications.

• Institutionalize nanotechnology within EPA's mission.

- Assure consideration of the environment and human health in government research programs related to nanotechnology

• Work with industry to assure environmentally responsible development of nanotechnology and products containing nanomaterials.

- Provide leadership in international activities involving environment and human health and nanotech.

Provide education and outreach to the public to promote understanding of nanotechnology with respect to environment and human health.



# Research Framework for Nano and the Environment

- Applications address existing environmental problems or prevent future problems

Green Energy	Treatment	Remediation	Sensors	Green Manufacturing
--------------	-----------	-------------	---------	---------------------

- **Implications** address the interactions of nanomaterials with the environment and any possible risks that may be posed by nanotechnology

Toxicology

Natural Nano Processes

Life Cycle Aspects

Fate/Transport & Transformation

Exposure/Bioavailability & Bioaccumulation



# *EPA Nanotechnology STAR Grants*

- 2001 Environmental Applications of Nanotechnology**
- 16 awards, \$5.6 million (sensors, catalysis, remediation)
- 2002 Environmental Applications/Implications of nanotechnology**
- 16 awards, \$5 million (sensors, catalysis, remediation and industrial ecology)
- 2003 Health and Environmental Effects of Manufactured Nanoparticles**
- Toxicity - 6 awards, \$2 million
  - Fate, transport and transformation - 5 awards, \$1.7 million
  - Exposure and Bioaccumulation - 1 award \$.35 million
- 2004 Environmental applications of nanotechnology, \$2 million (P2 - 1; sensors - 2; Remediation/treatment - 3)**
- 2005 Joint solicitation with NIOSH and NSF on health and environmental effects of nanoparticles, \$6.6 million (19 awards pending)**
- 2005 Joint solicitation with NIOSH, NSF & NIEHS on health and environmental effects of nanoparticles, \$8 million**



# EPA (NCER) Nanotechnology Activities

NNI, NSET  
NEHI, CBAN

Dec. 2003 Societal Implications II

## Environmental Applications

### 2001/2002 RFAs

Environmentally Benign  
Manufacturing and Processing;  
Remediation/Treatment;  
Sensors;  
Environmental Implications of  
Nanotechnology (LCA)

Wilson Center Meetings

## EPA NanoMeeters

SPC White Paper

## Implications

2004, 2005 GRO

## Applications and Implications

**2003 RFA-EPA**  
2004 RFA- EPA,  
NSF, NIOSH  
2005 RFA-EPA,  
NSF, NIOSH,  
NIEHS  
Environmental &  
Health effects of  
manufactured  
nanomaterials

**SBIR**  
Nanomaterials and  
Clean Technologies

Grantees' workshops  
2002, 2004, 2005

- ACS Symposia-2003,04,05
- Gordon Conference- 2006?
- Grand Challenges Workshop
- Interagency Environmental Conference
- Edited journals
- NanoRemediation workshop

## Building a Green Nanotech Community

RESEARCH & DEVELOPMENT

Building a scientific foundation for sound environmental decisions



**Call for Papers: Due Nov. 28**

## Nanotechnology and the Environment

A symposium sponsored by the Division of Industrial and Engineering Chemistry  
At the 231st American Chemical Society National Meeting

Atlanta, Georgia

March 26-30, 2006



- Overview of nanotechnology programs and issues
- Bio-inspired nanotechnology
- Nanocatalysts for more environmentally friendly processes
- Elements of risk assessment involving nanomaterials and nanoproducts
- Nanomaterials for use in energy applications
- Environmentally benign synthesis of nanomaterials
- Use of nanotechnology leading to cleaner production
- Industrial Ecology/LCA applied to nanotechnology
- Nanotechnology related to the hydrogen economy

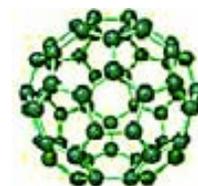
October 26 – 28, 2005

Nanotechnology and the Environment: Applications and Implications Progress Review  
Workshop III

The EPA Workshop, "Nanotechnology and the Environment: Applications and Implications Progress Review Workshop III," features presentations by EPA STAR grant researchers in nanotechnology and the environment. This year we welcome our Canadian colleagues working in nano and the environment.

The goal of the conference is to develop a community of scientists and engineers who maintain an understanding and appreciation for potential environmental implications and applications while doing their research in nanotechnology. The conference will serve as a stimulus for increased collaborations among the various researchers resulting in improved knowledge of the environmental aspects of nanotechnology. The conference is open to members of the academic, government, and industrial communities as well as the general public.

<http://www.scgcorp.com/2005nano/index.asp>



Materials  
Research  
Society  
Boston MA,  
Nov. 28-  
Dec. 2, 2005



RESEARCH & DEVELOPMENT

*Building a scientific foundation for sound environmental decisions*