



# Chemical Information Call-in Candidate: Nano Silver

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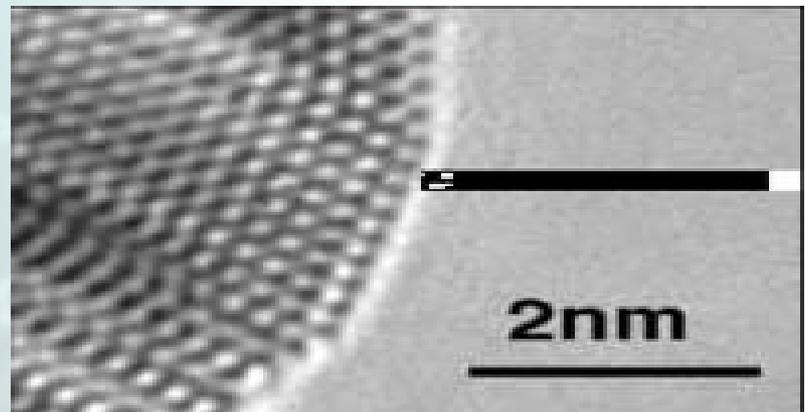
*September 22, 2010*  
*San Francisco, California*

# ***OVERVIEW:***

## ***Nano Silver (n-Ag)***

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- **Why?**
  - Expanding Production and Applications
  - Health and Environmental Concerns
- **What Information Gaps?**
  - Toxicity, Environmental Fate
  - Analytical Methods
- **Who?**
  - Researchers
  - Producers



# n-Ag Applications

- CONSUMER PRODUCTS
- AGRICULTURAL PESTICIDES
- ANTIMICROBIAL AGENT  
(Ag as Ag<sup>+</sup> oxidation on particle surface)

face masks, wet wipes detergents, food storage containers washing machine, cell phones



- MEDICAL PRODUCTS  
Coating for contact lenses  
Wound care-dressing
- CONSUMER APPLICATIONS  
Drinking water filters  
Swimming pool treatment



# n-Ag Production

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## *California*

**Small scale**

## *Global*

**National:**

**50-100 tons/year**

**International**

- Israel: 12 tons/year
- China: 50 tons/year

## *California Vendors*

- **Nano Composix**  
Research and development of nano particles, plates
- **Cambrios Technologies**  
Wires encapsulated in coating materials for computer touch screens
- **Seashell Technology**  
40-100 nm particles for labeling imaging applications
- **Sun Innovations**  
Import from China; as colloids
- **Stanford Materials**
- **MTI Corporation**

# n-Ag: Human Health and Environmental Concerns

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## *Toxicity studies*

As indicated in experimental studies, n-Ag with

- **Particle size of 1-100 nm may be a neurotoxin and may**
- **Inhibit DNA synthesis and degrade protein function**
- **Possible human disease related to inhalation and ingestion\***

*(\*EPA report- State of Science Literature Review: Everything Nanosilver and more, August 2010)*

## *Wastewater treatment system concerns:*

- **Free Ag<sup>+</sup> is toxic to microorganisms, including bacteria**
- **Experts raise questions about possible effects on treatment systems**
- **Increased use of n-Ag could affect water quality from treatment plants**

# Why is DTSC interested

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- **Health effects of n-Ag in consumer products-unknown**
- **No Analytical tool/ method for n-Ag in environmental sample**
- **Fate, transport and toxicity research in progress- no confirmed data**



# DTSC partnerships

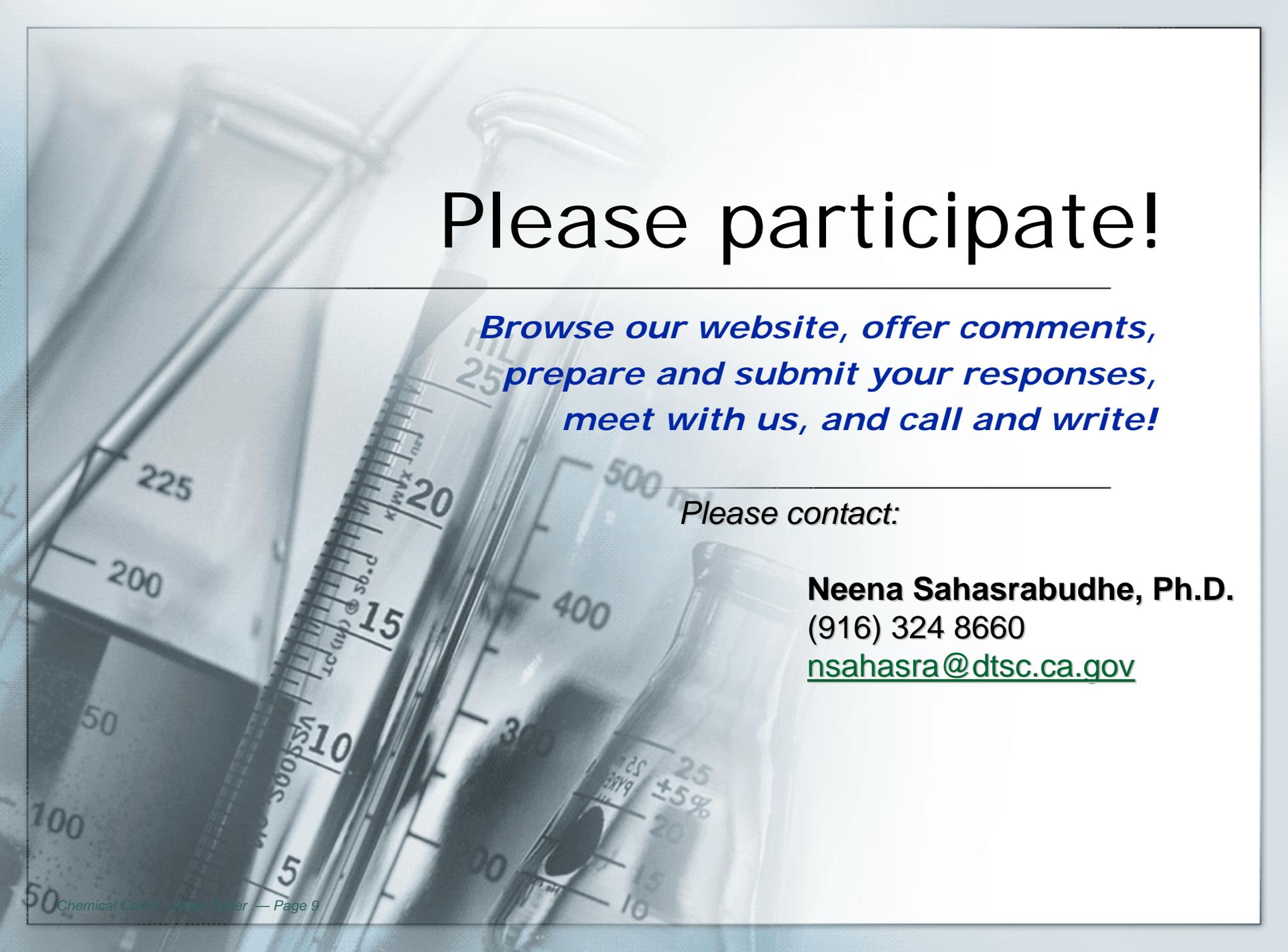
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- **Partnership with Department of Pesticide Regulation (DPR-CAL EPA)**
- **Work closely with US EPA National Exposure Research Laboratory (NERL)**
- **Work with Academia Environmental & Molecular Toxicology, Oregon State University**

# Possible Questions for Call-in

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- **What is the chemical composition of your nanosilver material?**
  - **What is particle size of your nanosilver material used?**
  - **What is the concentration of nanosilver used in your material?**
  - **What are the instrumental techniques used to characterize your nanosilver material?**
- **What are the analytical methods used in your nanosilver material?**
- **How do you measure and monitor fate and transport after useful life of your nanosilver material?**
- **How do you detect, measure and monitor releases during facility operations?**



# Please participate!

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*Browse our website, offer comments,  
prepare and submit your responses,  
meet with us, and call and write!*

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