

# THE NATIONAL ACADEMIES

*Advisers to the Nation on Science, Engineering, and Medicine*

Nuclear and Radiation Studies Board

## **Ninth Annual Gilbert W. Beebe Symposium Wednesday, December 1, 2010**

### **Scientific Advances in Radiobiology and Radiation Epidemiology, Implications for Radiation Exposure Regulations**

**September 17, 2010 Draft**

8:15 am **Welcome and introduction to the Ninth Annual Beebe Symposium (15 minutes)**

8:30 am **Background on radiation exposure in medical, occupational, and environment settings (20 minutes)**

8:50 am **Questions and discussion (10 minutes)**

#### **Session 1: Scientific Advances in Low-Dose Radiation Biology**

Topics: mechanisms of response at low doses, including adaptive response and homeostasis; linearity/non-linearity of response at low doses; role of genetics and epigenetics; measurement challenges at cellular and molecular levels. Response of animal organ systems to low dose/low dose rate radiation, early and late effects, cancer and non-cancer effects.

9:00 am **Speaker 1: Cellular (30 minutes)**  
**William F. Morgan, Pacific Northwest National Laboratory**

9:30 am **Speaker 2: Systems (30 minutes)**  
**Mary Helen Barcellos-Hoff, NYU Medical Center**

10:00 am **Questions/discussion (15 minutes)**

10:15 am **Break (20 minutes)**

#### **Session 2: Scientific Advances in Low-Dose Radiation Epidemiology**

Topics: Exposure measurement and modeling approaches; linearity/non-linearity in epidemiologic cohorts; gaps in knowledge and methodology

10:35 am **Speaker 1: RERF (30 minutes)**  
**Roy Shore, Radiation Effects Research Foundation**

11:05 am **Speaker 2: Other low-dose cohorts (30 minutes)**  
**Ethel Gilbert, National Cancer Institute**

11:35 am **Questions/discussion** (15 minutes)

**Session 3: Panel Discussion**

11:50 am **Discussion of key points from this morning's session to include how data from epidemiology and from radiobiology studies can synergize.** (Speakers will be the panelists) (25 minutes)

12:15 pm **Lunch** (3<sup>rd</sup> floor refectory)

**Session 4: Translating Radiation Biology and Epidemiology into Risk Estimates**

1:30 pm **Lose-dose risk estimation** (30 minutes)

**Julian Preston, Environmental Protection Agency**

2:00 pm **Current risk estimate in federal regulations:** (30 minutes)

**Speaker TBD**

2:30 pm **Questions/discussion** (15 minutes)

**Session 5: Using Low-Dose Radiation Biology and Epidemiology in Decision Making: Case Studies**

2:45 pm **Case Study 1: Setting a national action level for radon** (20 minutes)

**Paul Locke, Johns Hopkins School of Public Health**

3:05 pm **Questions/discussion** (10 minutes)

3:15 pm **Break** (20 minutes)

3:35 pm **Case Study 2: Establishing "Safe" or "Acceptable" levels for diagnostic radiation use (CT)** (20 minutes)

**David Hoel, Medical University of South Carolina**

3:55 pm **Questions/discussion** (10 minutes)

4:05 pm **Case Study 3: Setting radiation protection standards for civilian nuclear facilities** (20 minutes)

**Ralph Andersen, Nuclear Energy Institute**

4:25 pm **Questions/discussion**

**Session 6: Panel Discussion and Closing Remarks**

4:35 pm **Discussion of key points from this afternoon's sessions** (Speakers will be the panelists) (25 minutes)

5:00 pm **Closing remarks** (15 minutes)

5:15 pm **Adjourn**