

**DEPARTMENT OF HEALTH AND HUMAN SERVICES  
NATIONAL INSTITUTES OF HEALTH  
NATIONAL INSTITUTE OF ENVIRONMENTAL HEALTH SCIENCES**

**MINUTES OF THE NATIONAL ADVISORY ENVIRONMENTAL HEALTH SCIENCES  
COUNCIL**

**June 1, 2006**

The National Advisory Environmental Health Sciences Council was convened for its one hundred eighteenth regular meeting on June 1, 2006 at 8:00 a.m. in the Rail Building, Rodbell Auditorium, National Institute of Environmental Health Sciences, Research Triangle Park, NC. Dr. David Schwartz presided as Chair.

The meeting was open to the public on June 1, 2006 from 8:00 a.m. to 1:00 p.m. In accordance with the provisions of Public Law 92-463 the meeting was closed to the public from 1:30 p.m. to 4:30 p.m. for consideration of grant applications. Notice of the meeting was published in the *Federal Register*.

**Members Present**

Teresa Bowers, Ph.D.  
Kathleen Dixon, Ph.D.  
Elaine Faustman, Ph.D.  
Daniel Liebler, Ph.D.

David Losee, J.D.  
Peter Spencer, Ph.D.  
Frank Talamantes, Ph.D.  
Peter Thome, Ph.D.

**Members Absent**

Douglas Benevento, J.D.  
Bruce Freeman, Ph.D.  
Lisa Greenhill, MPA  
Martin Philbert, Ph.D.

**Ad Hoc Members Present**

David Christiani, M.D.  
John Essigmann, Ph.D.  
AltafWani, Ph.D.

**Ex Officio Members Present**

COL James S. Neville

**Ex Officio Members Absent**

**Liaison Members Present**

M. Olivia Harris - Alternate, National Center for Environmental Health, ATSDR, CDC  
George Cochran, Ph.D., Society of Toxicology  
Jennifer Sass, Ph.D., NIEHS Public Interest Liaison Group

**Liaison Members Absent**

Michael Galvin, Ph.D., National Institute for Occupational Safety and Health

**NIEHS Staff**

Kathy Ahlmark  
Janice B. Allen, Ph.D.  
Beth Anderson  
David Balshaw, Ph.D.  
Martha Barnes  
Linda Bass, Ph.D.  
Sharon Beard  
Lutz Birnbaumer, Ph.D.  
Christine Bruske  
Gwen Collman, Ph.D.  
Dorothy Duke  
Sally Eckert-Tilotta, Ph.D.  
Richard Freed  
Kimberly Gray, Ph.D.  
Melissa Gentry  
Tommy Hardee  
Jerrold Heindel, PhD  
Michael Humble, Ph.D.  
Ethel Jackson, D.D.S.  
Laurie Johnson  
Marian Johnson-Thompson, Ph.D.  
Annette Kirshner, Ph.D.  
Vanessa Knight  
Dennis Lang, Ph.D.  
Cindy Lawler, Ph.D.  
Michael Loewe  
Robin Mackar  
William Martin, M.D.  
Carolyn Mason

J. Patrick Mastin, Ph.D.  
Elizabeth Maull, Ph.D.  
Kimberly McAllister, Ph.D.  
Rose Anne McGee  
Elizabeth McNair  
Pamela Moore  
Teresa Nesbitt, DVM, Ph.D.  
Sheila Newton, Ph.D.  
Liam O'Fallon  
Michelle Owens  
Jerry Phelps  
Christopher Portier, Ph.D.  
Leslie Reinlib, Ph.D.  
Margarita Roque  
Anne P. Sassaman, Ph.D.  
John Schelp  
Daniel Shaughnessy, Ph.D.  
Carol Shreffler, Ph.D.  
Barbara Shane, Ph.D.  
William Suk, Ph.D.  
Anne Thompson  
Claudia Thompson, Ph.D.  
Patricia Thompson  
Sally Tinkle, Ph.D.  
Frederick Tyson, Ph.D.  
Bennett Van Houten, Ph.D.  
Brenda Weis, Ph.D.  
Samuel Wilson, M.D.  
Leroy Worth Jr., Ph.D.

**Other Federal Staff**

Marc S. Hollander, NASA  
Nigel Fields EPA/ORD

**Members of Public Present**

Heather Henry, Ph.D. University of Cincinnati  
Floyd Salteaux, M.D., Merck Childhood Asthma Network (Teleconference)  
Bobbie Peterson, RTI International  
Margo Smith, Constellate Health Sciences  
Pamela Schwingl, Social and Scientific Systems, Inc.

**I. CALL TO ORDER AND OPENING REMARKS**

Dr. David Schwartz called the one hundred eighteenth regular meeting of the National Advisory Environmental Health Sciences Council to order. Dr. Schwartz, in his opening remarks, thanked Council for their input and comments which are important in guiding the changes the Institute is putting forth. He noted that Dr. Zerhouni would be giving a presentation to Council on the scientific direction of NIH. He acknowledged and welcomed the new liaison members to Council. He acknowledged the presence of three ad hoc Council members and mentioned that

the Council slate was at the Office of the Secretary, DHHS and was going through the approval process. He then had the Council members, NIEHS staff and guests introduce themselves.

Dr. Anne Sassaman brought to the attention of Council that Ms. Michelle Owens was available to assist them on any administrative matters. She also reminded Council members to sign their Conflict of Interest forms and to complete their travel vouchers expeditiously. Ms. Michelle Owens thanked Council for their patience and cooperation in dealing with new travel procedures.

## **II. REVIEW OF CONFIDENTIALITY AND CONFLICT OF INTEREST PROCEDURES**

Dr. Schwartz discussed with Council confidentiality and conflict of interest procedures and then read the requirements of the Government in the Sunshine Act and the Federal Advisory Committee Acts. All aspects of the meeting were open to the public except those concerned with review, discussion and evaluation of grant applications and related information.

## **III. CONSIDERATION OF MEETING MINUTES**

The minutes of the February 16-17, 2006 meeting were approved as written.

## **IV. FUTURE COUNCIL MEETING DATES**

The following dates were confirmed:

September 18-19, 2006	NIEHS	Monday - Tuesday
February 15-16, 2007	NIEHS	Thursday - Friday
May 30-31, 2007	NIEHS	Wednesday - Thursday
September 17-18, 2007	NIEHS	Monday - Tuesday

## **V. REPORT OF THE DIRECTOR, NIEHS - Dr. Schwartz**

Dr. Schwartz began his presentation by informing Council that he would be discussing two areas: 1) the state of the budget and how the budget influences funding decisions, and 2) the Strategic Plan and how it will guide the scientific initiatives.

He updated Council on the FY 2007 requested President's budget, which is a flat budget for NIH. He pointed out that if the budget remains at the President's requested level, NIEHS will have a 6% budget decrease. To counterbalance, the Genes and Environment Initiative (GeI) appropriation to NIEHS will increase the overall budget by 1.3%. The Superfund budget, which is a separate appropriation, has been increased slightly for FY 2007. These budgets are subject to vote and approval by Congress. Passage of the appropriation bills before October is unlikely and the Institute would work under a continuing resolution until the budget is approved.

Dr. Schwartz then discussed two issues related to the NIEHS budget; the Centers Programs and R01 funding. At present, 20%-25% of the extramural funding goes to Center support. This represents approximately \$30 million dollars per year for infrastructure and pilot project support. He asked Council to consider this expenditure in the context of a limited budget and how it affects NIEHS's ability to introduce new scientific initiatives.

He updated Council on data for individual RPGs and R01 equivalents. The success rate is approximately 19%-20%. In comparison to other Institutes (13%-16%) the success rate for

NIEHS is higher. If the number of applications increase, it will be difficult to keep the success rate at around 20%. For that reason, more money would be needed in this budget category to keep a success rate that is competitive with other Institutes. He then pointed out that applications reviewed by SEPs do not receive a percentile rating and are funded as a separate cohort. He encouraged Council to bring applications that would help push the NIEHS mission forward to the attention of staff.

Dr. Schwartz then stressed that new opportunities will be in the area of integrative and clinical research. He noted that NIEHS has funded heavily in the area of DNA repair, and as a result of this investment, a variety of DNA repair enzymes have been discovered. The defect in the DNA repair enzymes has been linked to human diseases and is an excellent avenue to understand why certain individuals develop the disease and to focus treatment specifically in areas that take advantage of understanding the defect in the DNA repair enzymes. To understand the development of complex disease, genetic vulnerability and environmental exposures we need to have scientific challenges and opportunities in areas of acute and chronic lung diseases, neurodegenerative conditions, reproductive disorders, several types of cancers, metabolic disorders (obesity) and immune mediated diseases. This fits well with the Strategic Plan.

Dr. Schwartz pointed out NIEHS's funding priorities and emphasis. The highest priorities will be investigator-initiated research, training and career development, and integrated research. Lower priority will be given to programmatic research and infrastructure. These priorities should enable NIEHS to strategically attack the problem of complex human diseases.

Dr. Schwartz updated Council on the scientific initiatives and program development. The Office of Translational Research is under the leadership of Dr. William Martin. The scientific initiatives are designed to bring basic and applied scientists together to focus on environmental diseases; they are the Extramural DISCOVER Centers and Interdisciplinary R01s, and the Intramural Director's Challenge. The Intramural Clinical Research Unit gives NIEHS the unique opportunity to use environmental sciences to understand complex human diseases and to address critical training needs in environmental health sciences. The unit should be operational the winter of 2007.

Dr. Schwartz stressed the need to recruit and train the next generation of scientists. The following programs have been developed: a R25 training program that focuses on summer research training for high school and undergraduate students, a K12 training program that allows physician scientists to be supported as mentored trainees, as fellows, and have support as a K awardees, the K99/ROO program that brings individuals from mentored training to independent research, and the ONES program to support new R01 awardees and provide support for establishing a laboratory and career development activities during the first few years of support.

Dr. William Martin oversees the program in the area of Global Environmental Health. The first area of focus will be New Orleans; this is part of a public - private partnership that will be looking at respiratory hazards present in the community (mold and microbial contamination).

In order to understand how genes and the environment both interact to produce problems in human health and diseases we are developing initiatives that will hopefully give us better measures of exposures. To help us reach this goal the following have been done or will be done: February 2006 the GEI Trans-NIH meetings, May 2006 the Exposure Biology Workshop, September 2006 the Environmental Airway Disease Project, and 2007-2009 initiate RFAs and RFPs. Starting in 2008, we hope to apply these measures of exposure to case-control studies

in population studies as a way of looking at genes-and-environment variable in terms of the development of diseases.

Dr. Schwartz concluded his presentation by stating what the Institute hopes to accomplish over the next five years in terms of programmatic and scientific development and scientific impact. There are three large areas. The first is in the area of exposure science. It proposes to develop sensors and biomarkers that allow some precision in environmental measurements that allows us to look at environmental exposures as they relate to the development and risk of developing disease. The second area is the use of gene environment interaction to understand complex diseases, and the third area is global environmental health. In accomplishing these goals we will use the initiatives within the Strategic Plan.

Dr. Schwartz asked Council to address during their discussion whether these are appropriate areas of focus, and any concerns they might have.

### **Council Response and Discussion**

Council discussion centered on the need to recruit more physician scientists. They noted that the pool of physician scientists is very small and there is an absence of environmental health focus in the medical curriculum. It might be a stimulus if an academic award were made available for curriculum development. They agreed with the areas of programmatic and scientific development that were presented to Council.

### **VI. Strategic Plan Roll-Out and Follow-up - Ms. Bruske Flowers**

Ms. Flowers presented to Council an update on the dissemination of the Strategic Plan. She noted that the "roll out" of the plan began May 1, 2006 using the following methods of dissemination: published as a supplement to the May 2006 Environmental Health Perspectives Journal, posted to the NIEHS Web Site, electronic and hard copy distribution, and various science magazines and newsletters. Dr. Schwartz and others in leadership will present the plan at the following venues during 2006-2007: May 24, 2006 at the University of Southern California; June 1, 2006, conference calls with the Public Interest Liaison Group; June 2, 2006, NIEHS Advisory Committee; June 19, 2006, Institute of Medicine Roundtable on Environmental Health Sciences, and March 25, 2007 SOT Annual Meeting. Ms. Flowers pointed out that they have contacted a number of universities to give Dr. Schwartz and others in leadership the opportunity to talk about the plan and some of the new initiatives. She concluded her presentation by bringing to the attention of Council that News Highlights of interest are located in their Council Books and will be distributed to them at each subsequent Council meeting.

### **Council Response and Discussion**

Council remarked that the method of dissemination of the Strategic Plan was appropriate. However, they pointed out that it will take time and effort to reach people in the scientific community who normally are not NIEHS grantees.

## **VII. Update of the Gene Environment Initiative (GEI) - Dr. Weis**

Dr. Weis began her presentation by informing Council that she would be giving them a short overview on the GEI Sub-Committees (Exposure Biology Program and Whole Genome Association Studies); information on the Environmental Airway Disease Project that was launched in 2006; and a short recap of the NIH Exposure Biology Workshop that occurred in May 2006,

She noted that the Exposure Biology Program will develop new technology in biomarkers for exposures and the Whole Genome Association Studies will identify genetic variants. By developing these complimentary data sets researchers can better look at gene environment interactions in complex human diseases.

She informed Council that the Environmental Airway Disease Project is the first project to be launched in the Exposure Biology Program. The goal is to further understand the genetic environmental contributions to human airway disease, specifically, asthma, Chronic Obstructive Pulmonary Disease (COPD) and bronchitis. This will be done through the development of better methods to measure exposure to use in the construct of population or epidemiology studies.

Dr. Weis concluded her presentation with a few highlights from the NIH Exposure Biology Workshop held in Greensboro, NC, May 2006. The meeting was hosted by NIEHS and NGR1. Gleaned from the meeting is that sensor technology is available and can be adapted for exposure science. The technology developed will need to be portable, quantitative and provide rapid response. It was stressed at the meeting that exposure goals need to be clearly defined so that technologists can develop an end product that will enable researchers to obtain reliable data.

### **Council Response and Discussion**

Discussion centered on how this program will deal with the issue of complexity, both of multiple exposures from mixtures and that of a disease which is actually a number of different diseases under one moniker. With regards to complex diseases, it will be important to articulate clearly the disease endpoints that are of interest and carefully define the phenotypes. A panel of markers, developed and identified across a variety of parameters, may be mapped onto the known biological responses and subsequently onto the unknown biology. The aim is to try to identify those "choke points:" those points at which one or two signaling peptides are critically important to the stimulation of a phosphorylation cascade on reception of signals from co-receptors. Development is proposed for some sophisticated markers of phosphorylation of these peptides that are more important than the numerous other peptides which are phosphorylated during a biological response.

Multiple exposures or multiple agents is a very difficult problem; however, this complexity will be dealt with in an additive rather than a combinatorial manner to try to simplify the issue.

## **VIII. The State of NIH - Videoconference - Dr. Zerhouni**

Dr. Zerhouni thanked Council members for their service and then began his presentation on the myths and realities of the NIH budget. He stressed that these are challenging times and some

of the factors that affect the NIH budget are the federal trade deficits, defense and homeland security needs, Katrina, Pandemic flu, post-doubling effect, physical sciences focus and the biomedical research inflation index. He pointed out that the main concerns of scientists are funding and the success rate. The extramural community has speculated that NIH is placing more emphasis on applied as opposed to basic science; NIH is shifting toward large solicited RFAs at the expense of investigator-initiated research, and the Roadmap is engulfing the budget. He noted, in reality basic science expenditures are usually higher than the applied science, except in 2003 when 1.8 billion dollars was spent on NIH's biodefense requirements (construction). Unsolicited grants far outnumber solicited grants even with the doubling of the budget in 1999. The NIH Roadmap is only 0.8% of the NIH budget the remaining 99.2% is for non-Roadmap initiatives. He pointed out that these are the facts and figures, and asked how do we proceed, what are the fundamental strategies and the vision for the future in terms of managing NIH?

Dr. Zerhouni concluded his presentation by stressing, in difficult times it is important to protect the fundamental core values of the institution which is knowledge generation and discovery, through adaptive strategies and a vision for the future. This encompasses knowing the facts, increasing the number of competing grants, supporting new investigators and increasing communication about the positive impact of NIH at the local, regional, and national levels. Lastly, the NIH vision of the future is dependent on how NIH will address national problems in times of acute competing needs and a tight budget.

### **Council Response and Discussion**

Council thanked Dr. Zerhouni for his informative presentation. The main topics of discussion were: 1) the visibility of NIH-it appears that all the research is coming from academic institutions, because of the lack of identifying NIH as the funding agency; 2) the high cost of conducting clinical research in the United States; and 3) the issues of doing research where private data can accumulate without identifiers.

### **IX. Program Report: Children's Environmental Health Centers - Dr. Gray**

Dr. Gray informed Council that she would be presenting an update on the progress of the Children's Environmental Health and Disease Prevention Centers which will consist of the following areas: program goals, Center structure, scope of the science, highlights of the Centers and future plans.

In response to an executive order to protect children from environmental health risk, US EPA and NIEHS developed a partnership to address the executive order. Program goals were developed to provide multidisciplinary interactions between basic scientists, clinicians, and behavioral scientists; to establish a coordinated program to accelerate translation of basic research findings into clinical or intervention strategies; as well as to establish a national network that enhances communication, innovation and research excellence in children's environmental health. She noted that today there are 11 Centers, and populations under study are from rural, agricultural and urban areas. They are ethnically diverse, and consist of pregnant mothers, infants, children and families at risk. Each Center is composed of three research projects, an administrative and facility core, a new investigator component, and a community outreach and translational core. Areas that are being studied are asthma as it relates to air pollution, genetic polymorphisms and allergen exposures; and autism risks from genes and the environment (chemicals/exposures, vaccine antigens and infectious agents, and genes regulating the immune function). The highlights and research findings of the Center are

disseminated through the community Outreach and Translational Core to public interest liaison and advocacy groups, policy makers, professional organizations, and pediatric clinicians.

Dr. Gray concluded her talk by presenting future plans, which include a winter/spring NIEHS Children's Environmental Health Summit and continued coordinated collaborations with NIEHS intramural, US EPA scientists, and the Pediatric Environmental Health Specialty Units. They plan to participate in the following national and international meetings: the International Society of Environmental Epidemiology in 2006, Pediatric Academic Society in 2007, and the International Society of Exposure Assessment in 2007. An important goal is to develop a collaborative data-sharing plan for the Children's Environmental Health Centers.

### **Council Response and Discussion**

Dr. Faustman made a brief comment stating it has been very exciting to have the ability to look at exposures, gene environment, basic mechanism and animal models; to transfer that knowledge to the clinic, and in turn to do clinical and community intervention.

### **X. Portfolio Management - Program Project Grants - Drs. Sassaman and Van Houten**

Dr. Sassaman reported on the issues and concerns involved in managing the extramural portfolio in the coming year. She noted that the budget is expected to remain flat; however, with the launch of new programs and priorities, an increase in the number of applications is expected. She emphasized the need to focus on emerging priorities and areas of sciences noted in the Strategic Plan. Flexibility in the out years will be needed with the flattening of the budget if R01 funding is to be a priority.

One strategy being considered for managing the extramural portfolio is to decrease funding for large grants. These grants are in the research project grants (RPG) line, that part of the budget that also funds R01s. In order to do this in an economically responsible manner an analysis of current program project grant (P01) portfolio is underway.

Dr. Sassaman summarized what other Institutes and Centers (ICs) have done with the P01 mechanism and discussed the factors driving the apparent change in using the P01 mechanism.

The analysis of 18 P01 active grants in the portfolio revealed that we are spending an average cost of approximately 1.7 million dollars in total cost per P01 which is a 70% increase from 1998 to 2005; compared to a 52% increase by R01s.

Dr. Sassaman concluded her presentation by asking Council to consider the following interim policies: 1) one receipt and one funding decision date per year; 2) cap new P01s at 1 million dollars in direct cost and competing renewal applications at 1.5 million dollars direct cost with a 10% escalation on the last non-competing renewal (whichever is smaller); 3) limit the annual investment for P01s to 10% or less of the competing research dollars; 4) limit funding to two competitive cycles with one amended application or accept applications only in response to an RFA; or 5) discontinue the use of the P01 mechanism altogether.

Dr. Van Houten reported on the P01 portfolio analysis based on data collected on the number of applications and awards for the last 10 years, Additional current information collected by NIEHS staff and supplied by the P01 program directors was also given to Council to aid in their assessment.

The Council working group will be asked to respond to eight questions. 1) How does NIEHS compare to other ICs in the use of P01 s? 2) What type of scientific research problems best utilize the P01 mechanism? 3) Should P01s be used in areas of science not covered by the R01 mechanism? 4) What type of publication output should be expected of a POI? 5) What are the key outputs/outcomes created by a P01 other than publications? 6) What qualities distinguish a P01 from and R01? 7) Should Type 2 applications be held to a higher standard than Type 1 applications when reviewed? 8) Should we do anything differently?

Dr. Van Houten concluded his presentation by giving the timeline for the P01 analysis. Information gleaned from the presentation with the handouts, along with a report from the working group should give Council sufficient information to discuss and evaluate the P01s in September.

### **Council Response and Discussion**

Council thanked Drs. Sassaman and Van Houten for such an informative presentation. They saw the evaluation as important in light of the emerging programs and priorities in the Strategic Plan.

### **XI. Public - Private Partnerships - Drs. Martin and Malveaux**

Dr. Schwartz introduced Dr. William Martin, NIEHS and Dr. Floyd Malveaux, Merck Childhood Asthma Network (MCAN) who will be developing the private-public-partnership to support the New Orleans project.

Dr. Martin gave a brief overview on public-private partnerships at NIH. He noted that the Foundation for the National Institutes of Health (FNIH) can solicit, accept, invest and manage gifts to support the mission of NIH. He briefly described the history of how NIEHS and MCAN became involved in the post-Katrina hurricane environment. He also discussed how individuals affected by Katrina might be at risk for airway disease. Through a common interest, this partnership will develop an initiative that would evaluate Katrina's environmental impact, and aide in understanding the susceptibility of populations at risk, as well as offer remedies to diminish the impact,

Dr. Malveaux addressed Council by teleconference. He gave an overview of the structure, mission and vision of MCAN and listed their current activities. He displayed an organizational chart on how the FNIH fits into the NIEHS-MCAN partnership.

The specific objectives of the New Orleans Project will be to design, implement and evaluate a case management program to meet the needs of children with asthma in a community that has been severely disrupted by Katrina. The plans are to assess the environmental and psychosocial impact of Katrina on the children of New Orleans and examine the genetic and environmental risk factors for asthma and the gene-environment interactions.

Dr. Malveaux concluded that the New Orleans Project will give a better understanding on how environmental exposures can influence the development of disease, and in so doing initiate other public-private collaborations.

## **Council Response and Discussion**

Council applauded this public-private partnership venture as forward thinking. Discussion focused on the types of interventions that would be employed and if Mississippi would be part of this study. Council was informed that the interventions would consist of case management modeled after the asthma counselor model with a special focus on reducing the impact of the environmental hazards such as mold. At this time Mississippi is not included in the study.

Approval of the public-private partnership was contingent on the following: 1) the gift from MCAN to FNIH is slated specifically to support the New Orleans project; and 2) a community advisory board is added to the organizational chart. The details will be brought to the September Council.

Council approved the public-private partnership with one member opposing.

## **XII. Concept Clearance-Short Term Educational Experiences for Research (STEER) in the Environmental Health Sciences for Undergraduate and High School Students - Dr. Humble (See Attachment B)**

Dr. Humble presented to Council the Concept Clearance for STEER. He discussed the purpose and expected outcomes and highlighted the purpose of the program. Talented high school and undergraduates students will be recruited for the program. The grant mechanism to be used for this initiative is the R25 which encompasses educational programs. Applications will be received from November to December 2006 and will go to May Council 2007. Expected funding will be in summer 2007.

## **Council Response and Discussion**

Council expressed support for this initiative and commented that the program will get students involved early in environmental health sciences. Council unanimously approved the Concept Clearance for this initiative.

## **CLOSED PORTION OF THE MEETING**

This portion of the meeting was closed to the public in accordance with the determination that it was concerned with matters exempt from mandatory disclosure under Sections 552b(c)(4) and 552b(c)(6), Title 5, U.S. Code and Section 10(d) of the Federal Advisory Committee Act, as amended {5 U.S.C. Appendix 2).

The regulations concerning conflict of interest were reviewed. Council members were reminded that materials furnished for review purposes and discussion during the closed portions of the meeting are considered privileged information. All Council members present signed a statement certifying that they did not participate in the discussion of, or vote on, an application from any organization, institution, or any part of a university system, of which they are an employee, consultant, officer, director or trustee, or in which they have a financial interest. Institutions or organizations which have multi-campus institution waivers, or are specifically designated as separate organizations under 18 U.S.C. 208(a), are exempt from this provision.

## **XIII. CONSIDERATION OF APPLICATIONS**

The Council considered 341 applications requesting \$93,117,481 direct cost. The Council recommended 142 applications with the total direct cost of \$46,357,149. ADJOURNMENT OF THE NAEHS COUNCIL

The meeting was adjourned at 4.30 p.m. on June 1, 2006.

#### CERTIFICATION

I hereby certify that, to the best .of my knowledge, the foregoing minutes and attachments are accurate and complete.

David Schwartz, M.D.  
Chairperson  
National Advisory Environmental  
Health Sciences Council

Anne P. Sassaman, Ph.D.  
Executive Secretary National  
Advisory Environmental Health  
Sciences Council

#### Attachments:

- A. Council Roster
- B. Concept Clearance - Dr Humble

NATIONAL ADVISORY ENVIRONMENTAL HEALTH SCIENCES COUNCIL

May 30, 2006

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**NATIONAL ADVISORY ENVIRONMENTAL HEALTH SCIENCES COUNCIL**

May 30, 2006

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Branch

**NATIONAL ADVISORY ENVIRONMENTAL HEALTH SCIENCES COUNCIL**

June 1, 2006

Concept  
Clearance for

**Short Term Educational Experiences for Research (STEER) in the  
Environmental Health Sciences for Undergraduates and High School  
Students (R25)**

Background:

The National Institute of Environmental Health Sciences Strategic Plan describes the critical challenges facing the environmental health sciences and outlines seven strategic investments which will enable the NIEHS to have the greatest impact on preventing disease and improving human health. An essential element of the Strategic Plan is to recruit and train the next generation of environmental health scientists who will further the understanding of the impact of environmental exposures on human health.

NIEHS has a demonstrated a long-term commitment to the training and support of talented and creative new environmental health scientists. The NIEHS supports a number of training and fellowship programs for pre and postdoctoral training, and mentored career development awards for junior faculty development. Primary among these are the Ruth L. Kirschstein National Research Service Awards for pre and postdoctoral training, the Career Development Awards for clinically trained scientists (K08 and K23), and the Mentored Quantitative Research Career Development Awards to support the career development of scientists in quantitative and engineering backgrounds who wish to integrate their expertise with biomedicine. The NIEHS has recently established the Outstanding New Environmental Scientist (ONES) Award in an effort to promote career advancement of the best, highly creative and promising junior scientists who intend to make a long-term career commitment to research in the mainstream of the environmental health sciences.

An increasing concern of the NIEHS is the so-called "pipe-line" issue; that is, attracting talented high school students and science undergraduates to graduate research careers in the environmental health sciences. This issue is particularly critical for attracting students to research in the environmental health sciences since the relevant topics are rarely covered in the disciplinary undergraduate curricula. Many undergraduate curricula offer courses and programs in environmental studies, but these mainly cover ecology and the earth sciences, and offer little detail of human health impact following environmental exposure and mechanisms by which this occurs.

The educational research program described below is designed to attract talented high school students and undergraduates with scientific majors relevant to the environmental health sciences to graduate research careers in the environmental health sciences.

Research Goals and Scope:

The Strategic Plan states that "the NIEHS Will enhance opportunities for young, motivated high-school and undergraduate students to participate actively in research." A variety of strategies are being pursued to increase the visibility of the field of environmental health sciences and to create incentives for the recruitment of interested students at various points in the educational pipeline. The NIEHS Short Term Educational Experiences for Research (STEER) in the Environmental Health Sciences for Undergraduates and High School Students (R25) seeks to provide innovative research and educational opportunities in the environmental health sciences for high school students and college undergraduates.

Mechanism and Justification:

The R25 Short Term Educational Programs submitted in response to this announcement are expected to propose an organized program of research experiences with participating faculty, and a program of informational exchange designed to impart to participants an appreciation of research on the environmental impacts on human health. The focus of both the laboratory experience and the educational experiences/seminars should be on health outcomes related to environmental exposure, as they relate to human disease.

Each educational program may support up to eight high school and/or college undergraduates for full time summer employment. Student research projects supported by these education grants should have a defined focus in the environmental health sciences, and be responsive to the mission of the NIEHS, which is distinguished from that of other Institutes by its support of research programs seeking to understand how environmental exposures alter biologic processes and affect the risk of either disease development or the distribution of disease in populations. Applicant programs must have a sufficient base of environmental health related research to justify their proposed number of student participants.

The NIEHS must continue to pursue new avenues for attracting the brightest young students and scientists into our field in order to ensure that the full promise of environmental health research is met. We hope that by offering such an introduction to high school and science undergraduates through short term summer programs the NIEHS can both increase the number and elevate the credentials of the pool of applicants to graduate programs in the environmental health sciences.