Summer Internship Positions in NCEE for 2004

The following information describes information from NCEE on new summer internships for economists, and environmental policy and risk scientists for the coming 2004 Summer schedule. More information on these internships can be found at our website http://yosemite.epa.gov/ee/epa/eed.nsf/Webpages/SummerInternships.html

Deadline for submitting application materials is March 15, 2004. Please see each individual Project Description for information on who is handling application submissions. For general information, please contact Brett Snyder, 202-566-2261, snyder.brett@epa.gov

New 2004 Summer Intern Positions for Economists and Policy Analysts

Project Proposal # 2004-1: Assessing the Technical Feasibility of Incentive-Based Mobile Source Emission Control Strategies

Description: This project will determine if monitoring costs for mobile source pollutant emissions are low enough to make incentive-based control strategies viable. Historically, prohibitively high monitoring and enforcement costs have precluded the use of effluent fees or other innovative approaches for mobile sources of air pollution. Recent technological innovations have allowed automobile insurance to be sold on a per mile basis. Some highly congested urban areas have used electronic means to assess time- and location-specific congestion fees. This project will evaluate the potential of currently available technologies to facilitate cost-effective control of mobile source emissions.

Mobile sources are important contributors of pollutant emissions that directly or indirectly result in unhealthy ambient concentrations of tropospheric ozone ("smog") and fine particulate matter. Mobile sources' emissions intensity (pollutant mass per mile traveled) has fallen dramatically over time, but many parts of the country continue to violate Clean Air Act standards. Many of the remaining instances of unhealthy ambient air quality are spatially and temporally isolated, which could increase the relative cost-effectiveness of properly targeted pollution control strategies. While the desirability of emission reductions on "bad air days" has long been recognized, the inability to monitor and enforce episodic controls has severely limited their adoption and use. This project will attempt to determine if innovative approaches to mobile source controls are now economically and technically feasible.

This project will result in:

- a brief survey of current congestion fees, road use charges, pay-as-you-drive insurance programs and other means of assessing fees of motorists that vary with time and/or place

- a detailed analysis of the technologies used to monitor and enforce variable pricing of road use and automobile insurance, including an assessment of those technologies' costs and reliability

- an assessment of the applicability of those technologies for monitoring emissions of mobile source criteria air pollutants.

In addition to having a background in economics, science or engineering, the ideal candidate for this project is:

- able to collect and synthesize information with minimal supervision;
- intellectually curious and highly analytical in his/her thinking;
- an excellent writer; and
- able to use computer software such as MSWord and Excel.

The intern selected for this project will also be afforded the opportunity to pursue independent research while at the EPA, and can expect to devote approximately 20% of his/her time to independent research related to the environment. The length of this internship is flexible but is expected to last at least two months. The intern will work in EPA's Headquarters in Washington, D.C.

Point of Contact, Project #2004-1: For more information, please contact Peter Nagelhout (202 566-2313) or nagelhout.peter@epa.gov .

Project Proposal #2004-2: Assessing the ecological benefits of environmental policies

Description: The EPA's National Center for Environmental Economics (NCEE) conducts research on relationships between the economy, environmental health, and environmental pollution control, and provides technical assistance to other offices within the Agency on best practices for benefit-cost analysis and related regulatory impact assessments.

NCEE seeks a summer intern to assist staff with ongoing research related to ecological benefits assessment. Along with several other EPA offices and programs, NCEE is developing an Ecological Benefits Assessment Strategic Plan, which will lay the groundwork for EPA to improve its ability to value the ecological effects of its regulatory actions. The intern will work on one or more follow-up activities related to ecological benefits assessment, which may include:

- Supporting the design of a stated preference survey on the value of ecological improvements, including a review of the related ecological valuation literature and the development of protocol for focus group discussions;
- Surveying the ecological and economic literature related to ecological benefits to contribute to a database of information resources for use by EPA analysts; and

- Cataloguing the ecological models that are or could be used by EPA and other federal agencies in ecological benefits assessments.

The intern should have some familiarity with valuation and survey methods, and be able to work both independently and on a team. Background or interest in ecology or the valuation of ecosystem services a plus. The intern should also have experience working with computer software such as Microsoft Excel and Microsoft Access. The intern will also be afforded the opportunity to pursue independent research while at the EPA, and can expect to devote approximately 20% of their time to independent research related to the environment. The length of this internship is flexible but expected to last at least two months. Candidates must be a U.S. citizen student, either currently enrolled or enrolled in the Fall 2004 semester. The intern would work at the EPA HQ in Washington, DC.

Point of Contact, Project #2004-2: For more information, please contact Steve Newbold (202-566-2293 or newbold.steve@epa.gov).

Project Proposal #2004-3: Determining the Statutory Boundaries of Benefit-Cost and Cost-Effectiveness Analysis in Environmental Policy

Description: The EPA's National Center for Environmental Economics and the Office of Regulatory Policy and Management seeks a joint summer intern to review the statutory boundaries of benefit-cost analysis, cost-effectiveness analysis, and other economic techniques under various environmental programs. This effort will primarily involve reviewing environmental statutes and pertinent implementing regulations, and coordinating information from other EPA program offices. The end result of the internship should be: (1) a document and table evaluating whether or not benefit-cost analysis, cost-effectiveness analysis, and other economic techniques are required, discretionary, or forbidden under each environmental statute; and (2) a document highlighting the major differences in how EPA programs interpret their discretionary duty to conduct such analyses and techniques.

The internship position involves:
- Collecting the statutes under which EPA has authority to set regulation
- Reviewing statutes and pertinent regulations for areas requiring economic analysis
- Coordinating with EPA program offices to determine their interpretation of each statute and pertinent implementing regulation
- Searching for additional contacts and information (e.g., court cases that consider judicial review of Agency policy analysis, articles, etc.)
- Developing a classification scheme to summarize the range of statutory boundaries
- Creating a table to summarize the boundaries
- Writing a document detailing the statutory boundaries
- Writing a document highlighting major differences in discretionary interpretation to conduct analyses by the Agency

The ideal candidate will have knowledge and/or experience in both the legal field and economic analysis, and be familiar with the US EPA and environmental policy making. The length of this internship is negotiable but must exceed two months. Candidates must be a U.S. citizen student, either currently enrolled or enrolled in the Fall 2004 semester. The intern will work at the EPA HQ in Washington, DC.

Points of Contact, Project #2004-3: For more information, please contact Charles Griffiths (202-566-2288, griffiths.charles@epa.gov), or Lesley Schaaff (202-564-6567, schaaff.lesley@epa.gov).

Project Proposal #2004-4: Exploration of the Potential for Energy Conservation to Lessen the Risks Posed by Climate Change

Description: The potential for increasing the overall energy efficiency of the US economy has been recognized for decades in a wide range of academic, public-, and private-sector studies and reports. The same wealth of analysis is available for most of the major energy consuming countries of the world. Vigorous research and technology development efforts are underway to permit a greater level of goods and services to be provided with much less energy use. When broadly incorporated into the world's energy economy, such technologies can provide many environmental benefits including reducing the release of greenhouse gases (GHGs).

According to the National Academy of Sciences (NAS), the Earth's surface temperature has risen by about 1 degree Fahrenheit in the past century, with accelerated warming during the past two decades. Human activities have altered the chemical composition of the atmosphere through the buildup of GHGs – primarily carbon dioxide, methane, and nitrous oxide. The heat-trapping property of these gases is well established although uncertainties exist about exactly how earth's climate responds to them. (See the Intergovernmental Panel on Climate Change (IPCC) web site for the details: www.ipcc.ch ; another information sources is the Pew Center for Global Climate Change: www.pewclimate.org)

EPA has long had an extensive set of programs and projects aimed at addressing the potential benefits offered by energy conservation. (See, for instance, http://www.epa.gov/ebtpages/pollenergyenergyconservation.html and the associated links.)

Working with EPA scientists & economists, the intern will explore the economic and environmental significance of a couple of areas of interest. The project will involve three basic elements:

- Reviewing and briefly summarizing the basic information on global energy use and the range of global energy scenarios currently under consideration and their GHG implications. [The idea is to first establish a good grounding in the big picture.]

- Researching and summarizing either: (A) What is known about the energy system of one of the less-studied major energy-using countries and the technical and economic potential to increase its overall energy efficiency and reduce GHG emissions; or (B) The status and potential of a particular technology of significance for future energy efficiency/conservation advances. While the particular technology will depend on the interests and technical background of the intern, such technologies include: (1) Advanced wind turbines; (2) Fuel cells; (3) High–temperature superconducting cables, motors and generators; and (4) Solid-state lighting systems. (See, for example: http://www.eere.energy.gov , http://www.energystar.gov

- Incorporating the above efforts into a written report and an oral presentation to EPA staff and interns.

The intern will also be afforded an opportunity to pursue independent research while at EPA, and can expect to be able to devote approximately 20% of the time to independent research related to the environment. The ideal intern would possess a good understanding of environmental science and economics, as well as being comfortable doing research by phone and the internet. The intern should also enjoy talking to people and asking questions.

The length of this internship is flexible but is expected to last at least two months. The intern would work at the EPA HQ in Washington, D.C. Some graduate level training in environmental science or environmental economics is preferred but not required. Candidates must be a U.S. citizen student, either currently enrolled or enrolled in the Fall 2004 semester.

Points of Contact, Project #2004-4: For more information, please contact John Davidson (202) 566-2305, davidson.john@epa.gov .

Project Proposal #2004-5: Estimating Preferences for Risk Reductions (NOTE: Position posted on website, but position filled.)

Project Proposal #2004-6: Modeling Relationships between Land Use and Bird Diversity and Abundances

Description: The EPA's National Center for Environmental Economics (NCEE) conducts research on relationships between the economy, environmental health, and environmental pollution control, and provides technical assistance to other offices within the Agency on best practices for benefit-cost analysis and related regulatory impact assessments.

NCEE seeks a summer intern to assist staff with ongoing research to model the relationships between land use and bird diversity and abundances. This research is related to EPA's continuing efforts to improve its ability to value the ecological effects of its actions in regulatory assessments. The intern's principal tasks will include:

- Surveying past and current ecological research on bird-habitat relationships, focusing on models that could be used to predict changes in bird diversity and abundances over space and time in response to changing land use conditions or human activities;
- Compiling and linking large scale, long term bird abundance and diversity data (including data from the North American Breeding Bird Survey and possibility the Christmas Bird Counts), land use data, and weather data;
- Preparing data for, and possibly conducting, statistical analyses.

The first task will involve reviewing the relevant ecological literature, and possibly contacting researchers in academia, government agencies, and other organizations who are conducting ongoing research in this area. The intern should have a solid background in ecology or biology, with background in avian ecology or ecological modeling a plus. The intern should also have some experience working with large datasets (experience with Microsoft Access a plus) and GIS (ArcView or ArcGIS at least, ArcInfo a plus).

The intern will also be afforded the opportunity to pursue independent research while at the EPA, and can expect to devote approximately 20% of their time to independent research related to the environment. The length of this internship is flexible but expected to last two to three months. Candidates must be a U.S. citizen student, either currently enrolled or enrolled in the Fall 2004 semester. The intern would work at the EPA headquarters in Washington, DC.

Point of Contact, Project #2004-6: For more information, please contact Steve Newbold at 202-566-2293 or newbold.steve@epa.gov

Project Proposal #2004-7: Data Collection on U.S. Electric Utilities

Description: NCEE seeks an intern to create a panel data set on U.S. electric utility plants from two forms: FERC Form No. 1 Annual Report of Major Electric Utilities, Licensees and Others and the Energy Information Administration Form EIA-767. This effort will primarily include data collection at the Public Reference Room in the Federal Energy Regulatory Commission and downloading data from an online database. Data will be collected on coal-fired units in addition to natural-gas-fired and combined-cycle units. Net generation, labor, and capital are the types of data that will be collected.

The internship position involves:

C Locating FERC Form No. 1 and EIA-767 for electric utility plants for various years.

C Understanding the list of schedules reported in FERC Form No. 1 and EIA-767.

C Extracting plant-level data for electric utilities from both an online database and from catalogued annual reports.

- Merging the plant-level data with other data sets.

- Searching for additional information that could be useful to assess the electric utility industry

The ideal intern would have experience working with data storage software (e.g., Microsoft Excel or Microsoft Access), and have experience with some type of statistical software (e.g., such as STATA or SAS).

The intern will also be afforded the opportunity to pursue independent research while at the EPA, and can expect to devote approximately 10%-20% of their time to independent research related to the environment. The length of this internship is flexible but expected to last at least two months. The intern would work at the EPA HQ in Washington, DC.

Point of Contact, Project #2004-7: For more information, please contact Cynthia Morgan 202-566-2296, morgan.cynthia@epa.gov

Project Proposal # 2004-8: The Economic and Environmental Impacts of a Fuel Cell Based Energy Economy

Description: NCEE's Innovations and Emerging Challenges Division (IECD) expects to begin exploring several new issues this year. High on our list is the question of what economic and environmental impacts would result from a shift toward a fuel cell based economy. Given the possibility that fuel cells will become a significant source of energy, it is important to anticipate the economic, environmental, and regulatory issues that might arise. Depending on where IECD is in selecting and exploring this or other rapidly evolving technology issue areas when the selected student joins us, this project could involve:

- a literature search to determine what analyses have been done to date,
- the assessment likely economic impacts, and/or
- an assessment/modeling of possible environmental impacts and identification of potential regulatory issues.

In addition to having a background in economics, science or engineering, the ideal candidate for this project will be a graduate student:

- able to collect and synthesize information with minimal supervision;
- intellectually curious and highly analytical in his/her thinking;
- an excellent writer; and
- be able to use computer software such as MSWord and Excel.

The intern selected for this project will also be afforded the opportunity to pursue independent research while at the EPA, and can expect to devote approximately 20% of his/her time to independent research related to other innovations and emerging challenges in the environment. The length of this internship is flexible but is expected to last at least two months. The intern will

work in EPA's Headquarters in Washington, D.C.

Point of Contact, Project #2004-8: For more information, please contact Barry Korb (202 566-2307) or korb.barry@epa.gov .

Project Proposal # 2004-9: The Economic and Environmental Impacts of the Baby Boomers Retirement Years

Description: NCEE's Innovations and Emerging Challenges Division (IECD) expects to begin exploring several new issues this year. High on our list is the question of what economic and environmental impacts the baby boomers will generate during their retirement years. Given their large numbers, the actions they take with respect to where they choose to live, what they choose to buy, whether they continue to work or draw down their investments, etc will have significant economic and hence environmental impacts. Depending on where IECD is on selecting and exploring this and other emerging trends and policy innovations when the selected student joins us, this project could involve:

- a literature search to determine what analyses have been done to date,
- the assessment or modeling of likely economic impacts, and or
- an assessment of the environmental impacts and hence regulatory issues that might result.

In addition to having a background in economics, the ideal candidate for this project will be a graduate student:

- able to collect and synthesize information with minimal supervision;
- intellectually curious and highly analytical in his/her thinking;
- an excellent writer; and
- be able to use computer software such as MSWord and Excel.

The intern selected for this project will also be afforded the opportunity to pursue independent research while at the EPA, and can expect to devote approximately 20% of his/her time to independent research related to emerging trends and their impact on the environment. The length of this internship is flexible but is expected to last at least two months. The intern will work in EPA's Headquarters in Washington, D.C.

Point of Contact, Project #2004-9: For more information, please contact Barry Korb (202 566-2307) or korb.barry@epa.gov .

New 2004 Summer Intern Positions in Public Health Sciences

A paid summer internship is available for a highly motivated, hard-working individual who is working on a Masters or Ph.D. in a health-related field, such as epidemiology, toxicology, or risk assessment, with environmental, natural resource, or related economic research experience.

The internship is with the Public Health and Environmental Policy Team, within National Center for Environmental Economics at the U.S. Environmental Protection Agency in Washington, D.C. or San Francisco, California. Our office conducts original research in environmental health issues that helps to inform policy development at EPA. There will be numerous opportunities to interact with a variety of audiences on both science and policy issues.

Areas of research may include, but are not limited to: epidemiology, risk assessment, applied toxicology, environmental health policy, exposure analysis, environmental health economics, and application of environmental health issues to policy development. Examples of our recent work include: *America's Children and the Environment,* EPA's report on indicators of children's environmental health; epidemiological studies of air pollution and human health effects; a national evaluation of public health risks from ambient air toxics; and analyses of exposures to pesticides. Our work has been published in journals such as *The Lancet, Environmental Health Perspectives, Risk Analysis,* and *Environmental Research.*

We have several different projects that the intern will be able to choose from in the fields of risk analysis, epidemiology and/or policy analysis. Example projects are described below. In addition, the intern will have the opportunity to pursue independent research for approximately 20% of their time.

Project #2004-10 Epidemiology - Integrating data on health outcomes and environmental exposures

We currently have several projects looking at the potential impacts of air pollution on health. One project focuses on the relationship between air pollution and birth outcomes (preterm birth, low birth weight and infant mortality). Other projects are also available. The intern will participate in assembling the data and conducting the analysis. The intern will need to have strong computer skills, including database development, and some experience with SAS. In addition, the intern should have some knowledge of statistical analysis. This work should result in a scientific publication.

Project #2004-11 Research on health risks of air pollution

Currently, there is limited ability to quantify the potential health risks, other than cancer, from exposures to hazardous air pollutants (also known as air toxics). This project is part of a larger initiative to develop methods for estimating health risks to chemicals that cause effects other

than cancer. The intern will work with data on a few select chemicals to evaluate their potential human toxicity, work with existing methods for cancer risk assessment to apply to risk assessment for other health effects, and evaluate the potential health risks from exposure to air toxics. This project will require quantitative analysis, review of toxicological literature, some knowledge of risk assessment, and some computer skills. This research is expected to lead to scientific publication.

Project #2004-12 Research on database inadequacies in risk assessments

In chemical risk assessments for human health effects other than cancer, EPA frequently applies an adjustment factor to account for database inadequacies, such as a lack of developmental and reproductive testing. However, we have little information about whether this factor is adequate to account for missing information that, if available, might lower risk estimates. This project will involve research to identify specific database uncertainties accounted for by the database uncertainty factor in current risk assessments, and to assess the appropriateness of the current factor. Some of the expected results include identification of the data gaps or uncertainties that are typically associated with the database uncertainty factor, and determinants of the magnitude of the database uncertainty factor. We expect this work to lead to scientific publication.

Project #2004-13 Review of point-of-sales data for permethrin pesticide products for home/garden use

Pyrethroids are an important class of broad-spectrum insecticides. Recently imposed use and sale restrictions on other pesticides, and other considerations such as relative safety, have resulted in increased use of pyrethroids in the United States. Few studies have attempted to characterize exposure to pyrethroids, particularly exposure that results from application in the home and other indoor settings. The focus of this research is to extract and summarize data from a new pilot EPA database on sales of permethrin (a pyrethroid) pesticide products from home/garden improvement, hardware and mass merchant stores across the U.S. In addition, the intern would identify, collate and summarize exposure and toxicological literature on pyrethroids (permethrin specifically). An important expectation of this research is identification of data gaps in exposure characterization for pyrethroids. This research is proposed to result in publication of a paper on point-of-sales data as a novel source of exposure/use information.

Project #2004-14 Assessment of the linearity assumption in cancer dose-response assessment

The EPA derives estimates of the potency of suspected chemical carcinogens using a default assumption of low-dose linearity with no threshold. Often the cancer potency is based on animal data and is estimated as the upper bound of the best fit to the animal data. Cancer potency estimates are frequently criticized as being too conservative and an “overestimate” of true risk

because of the assumption of linearity (no safe exposure) when extrapolating from high doses to low doses, and because they are "upper bound" estimates. This study will review the current literature on whether linear cancer potency estimates provide an over- or underestimate. It will evaluate data for a set of chemicals to assess differences in risk estimates for linear vs. sub-linear assumptions of potency extrapolation, to compare best estimates to upper bound estimates, and to compare potency estimates based on animal studies to those from human studies. This project will require some statistical ability (knowledge of regression models) and some knowledge of risk assessment. This research is expected to lead to scientific publication.

Qualifications and Application

Applicants should be computer-literate and able to work with spreadsheets (Excel) and large databases (Access). Familiarity with statistical and mapping software is helpful. The intern should have some previous statistical analysis experience and familiarity with risk assessment and/or epidemiology. Strong written and oral communication skills are also required.

Point of Contact, Projects #2004-10 to 14: To apply for listed NCEE Public Health Sciences summer internship positions, please provide a resume or CV, names of three references, and a short writing sample. Please submit your materials to Daniel Axelrad by email (axelrad.daniel@epa.gov). Only U.S. citizens may apply. Applicants should be enrolled in a Masters or Doctoral program for Fall 2004. Applications submitted by March 15, 2004 will receive priority consideration.