

Reaching Out to New York Neighborhoods

As a means of accomplishing its mission of studying how environmental agents affect human health, the NIEHS sponsors a program of center core grants designed to support centralized resources and facilities shared by investigators with existing research grants. The purpose of these center grants is to promote a multidisciplinary approach to environmental health sciences, bringing together scientists from a variety of fields to address environmental health problems from different perspectives and thus enhance the research endeavor. These centers are categorized into environmental health sciences centers, marine and freshwater biomedical sciences centers, and developmental centers.

Each center supports a community outreach and education program (COEP) to serve as a conduit between center investigators and community members. Liam O'Fallon, the NIEHS coordinator for the center COEPs, says, "The goal of these programs is to convey information from each center's research findings to the surrounding community in a culturally relevant manner so as to improve understanding and awareness of environmental health concepts and issues." The COEPs help to translate research results in the environmental health sciences into practical applications to improve public health by facilitating communication between university researchers and communities.

Communication between community leaders and academic scientists is the key to addressing the two main objectives of the COEPs: to increase community participation in the research process, and to increase outreach and educational activities that enhance the community's understanding of environmental health sciences. This objective comes to life at New York's Center for Environmental Health in Northern Manhattan at the Joseph L. Mailman School of Public Health (a part of Columbia University). Center director Joseph H. Graziano describes the general philosophy of the center: "Some

portion of the research portfolio of the center must be directly responsive to the concerns of the community—that research must involve the community from inception to completion. At the same time, effective disease prevention can only occur when research results are effectively communicated to the communities who are at risk." This philosophy is the overriding principle that guides the COEP activities at the Columbia center.

The COEP itself is directed by Mary Northridge, an assistant professor in the Division of Epidemiology and Environmental Health Sciences at the Mailman School of Public Health. In her view, COEP activities are the basis for conducting research that is both scientifically valid and socially relevant. Furthermore, she says that "science is fundamentally strengthened by the integration of the COEP into the center's research culture and practice."



Research for the people. Controversy over the siting of the Water Pollution Control Plant in West Harlem (pictured above in the background) helped bring notice to the disproportionate share of noxious facilities located in or near poor communities. Such disparities in siting and the resulting environmental and health threats are what the Center for Environmental Health in Northern Manhattan is working to address.

A Community Gets Involved

The Columbia center is located within the West Harlem and Washington Heights neighborhoods of northern Manhattan. The largely African-American and Dominican communities in these neighborhoods are characterized by a rich history of cultural and racial diversity. This vibrant community has also experienced environmental justice problems and health disparities. For example, researchers have found that asthma hospitalizations here are among the highest in the nation, and are much higher in poorer neighborhoods of New York City than in more affluent sections. A report published in the June 1999 issue of the *Journal of Asthma* found that the rate of asthma hospitalizations in West Harlem was 135.18 per 10,000 residents, and the rate in Washington Heights ranged from 47.02 to 73.23 per 10,000 residents, compared to an average rate for New York City of 46.26 per 10,000 residents. Lack of access to quality preventive health care and poor housing conditions may be among factors that contribute to the high hospitalization rates in these minority and poor neighborhoods.

René Perez

At the core of the Columbia COEP is a partnership that has grown between center researchers and community leaders, in particular with West Harlem Environmental Action (WE ACT). WE ACT, a community-based organization, was founded in 1988 as part of ongoing community struggles around the poor management of the North River Sewage Treatment Plant and the construction of the sixth diesel bus depot in Harlem. Since then, WE ACT has been tireless in its efforts to address issues of environmental justice in the community. WE ACT's mission is to inform, educate, train, and mobilize the residents of northern Manhattan on issues that affect their quality of life, such as air, water, and indoor pollution; land use and open space; waterfront development and usage; sanitation; transportation; regulatory enforcement; and citizen participation in public policy making.

These efforts by WE ACT have been well supported by the NIEHS through the successful submission of several grants. Under one of these grants, WE ACT trained 49 community leaders on environmental health

issues. The NIEHS currently funds WE ACT through its Environmental Justice: Partnerships for Communication program to disseminate environmental justice research findings to scientists, health care providers, and communities; to expand the community environmental health training program for physicians and advocates; and to manage a mentoring program by Columbia researchers for youths living in northern Manhattan. For these and other projects, WE ACT partners with Columbia University researchers, an effort facilitated by the center's COEP. As Peggy Shepard, the cofounder of WE ACT, puts it, "The Columbia center has been a valuable ally by engaging the community as an equal partner in conducting environmental health research. Community residents have played a key role in helping to frame research questions relevant to local concerns."

A Partnership at Work: Community-Based Participatory Research

COEP efforts at the Columbia Environmental Health Sciences Center have not only contributed to outreach and education activities but also have led to productive community-based research efforts, which are then organized and conducted within the center's various research cores. For example, WE ACT and Columbia center researchers collaborated on a pilot study that examined how air pollution from buses and trucks in West Harlem may be adversely affecting the respiratory health of adolescents who attend school in this community. The partnership obtained data on concentrations of urinary 1-hydroxypyrene (a measure of exposure to polycyclic aromatic hydrocarbons, a component of diesel exhaust) and respiratory and asthma symptoms from seventh-grade students from both an exposed school in West Harlem and a nonexposed school from a sociodemographically similar neighborhood in Central Harlem. Results from this study were published in the July 1999 issue of the *American Journal of Public Health* in a report coauthored by Columbia scientists and members of WE ACT.

The results suggest that adolescents in Harlem are exposed to significant amounts of diesel exhaust, which may produce or exacerbate respiratory symptoms such as asthma. Furthermore, a substantial number of youths who reported a negative history of asthma may still have asymptomatic lung dysfunction of a magnitude that warrants medical evaluation. This is important, because it might indicate that a significant number of children living in the neighborhood may be at risk for developing asthma. In addition to the important research



Community breathes life into studies. Patrick Kinney performs spirometry as part of the assessment of lung function during the study on the effects of diesel exhaust on the respiratory health of West Harlem adolescents.

findings of the study, the youths who were involved in the study learned valuable lessons about environmental health, environmental justice in their communities, and community leadership skills.

The report also exemplifies the value of community-based research in empowering communities to improve their own environmental health conditions. Northridge explains, "Making links between the research findings and the needed policy actions is a key role of the COEP." In addition to providing input on areas of research interest, integrated community participation enhances the possibility that research findings will be used to address practical issues in environmental health. In the case of the WE ACT–Columbia study on diesel exposure in West Harlem children, the results are being used by community leaders throughout Harlem to combat the proliferation of diesel traffic in their communities.

The diesel exposure study further illustrates that collaborations between community leaders and center faculty can produce scientifically sound research that can serve to advance the environmental health sciences while being relevant to community needs and concerns. As Northridge states, "Our high community response rates, culturally sensitive protocols, and cautious interpretation of data are the direct result of our close collaborations with community residents in the design, conduct, and dissemination of our research findings."

Other projects supported by the community–university partnership and facilitated by the COEP include a four-year NIEHS-funded intervention project that aims to characterize the profile of allergen exposures inside 80 Washington Heights apartments and 20 South Bronx apartments in which one or more allergic or asthmatic individuals reside, and to simul-

taneously assess exposures to potential covariates or confounders, including tobacco smoke. This project, supported by the Community-Based Prevention/Intervention Research program at the NIEHS, aims to elucidate the exposures that are important in the production of asthma. It will also test the effectiveness of intervention strategies intended to alleviate the burden of this disease.

Members of the COEP and their community partners recounted their experiences with collaboration in an article published in the January 2000 issue of the *Journal of Public Health Management and Practice*. The article outlines the principles that have helped them accomplish a productive partnership. In their words, a central reason for the sustained partnership between WE ACT and Columbia University is "the investment from the beginning in developing staff capacity and resources at WE ACT and having WE ACT staff assume the lead on the outreach and education initiatives." Columbia researchers also believe that the partnership has directly led to improved participation and followup rates of residents participating in the research studies that are collaboratively supported by WE ACT and the COEP. Graziano says, "Our COEP has been of enormous benefit to the public health scientists who are conducting research in the streets, in the homes, in the schools, and in the clinics of these communities."

It is anticipated that the Columbia–WE ACT partnership will continue on many more COEP and community-based research projects. Swati Prakash, environmental health director of WE ACT, explains that "the durability of our partnership with the Columbia center has allowed us to effectively evaluate what we need to do—data gaps we need to identify and fill—to improve environmental health and reduce environmental exposures among residents in northern Manhattan." Allen Dearth, program administrator of the NIEHS core center program, states, "The Columbia–WE ACT partnership provides a commendable illustration of how scientists and community members can work together successfully. Their efforts have resulted in credible scientific studies while simultaneously addressing community concerns. They have been able to leverage NIEHS support to generate a stable funding base that enables them to conduct relevant work that significantly enhances public health outcomes in at-risk neighborhoods." Their continued work in this area is exemplary of community–scientist partnerships developed and promoted by NIEHS core center COEPs around the nation. —Luz Claudio