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Interview with Lucas Neas

In this interview, EPA's Indoor Environments Division Communication Specialist Kelly Hunt talks with Lucas Neas, a health scientist from EPA's National Health and Environmental Effects Research Laboratory.

KH = Kelly Hunt (EPA, Communications Specialist)

LN = Lucas Neas (EPA, National Health and Environmental Effects Research Laboratory)

KH: Hello and welcome to the asthma edition of Science Notebook. I'm Kelly Hunt from EPA's Indoor Environments Division. Today, I have the pleasure to be speaking with Lucas Neas, a health scientist from EPA's National Health and Environmental Effects Research Laboratory on his work addressing disparities in asthma. An accomplished author on epidemiology, Lucas's work has focused on the impact of environmental factors on children's lung function, biomarkers associated with subtypes of childhood asthma, traffic related air pollution effects on children's respiratory health, and the adverse health impact of home dampness on lung function of children. Glad to have you here, Lucas.

LN: It's good to be here.

KH: Let's start with the basic overview. What is the Inner City Asthma Study and why is it important?

LN: The main Inner City Asthma Study was a major intervention study, funded by the National Institute of Allergy and Infectious Diseases, to evaluate the health benefits of feasible changes in the home environment of inner city children with moderate to severe asthma. These feasible changes involved education and remediation of indoor exposures, including cockroaches, dust mites, environmental tobacco smoke, mold, furry pets and rodents. The much more modest air pollution component of the Inner City Asthma Study, which was funded by EPA, leveraged the main study to add additional information on ambient air quality.

KH: When and where did this study take place?

LN: The study was conducted in seven metropolitan inner city areas: Boston, the Bronx, Chicago, Dallas, Manhattan, Seattle and Tucson, between August of 1998 and August of 2001. The study targeted urban Census tracts with at least 20 percent of the households below the federal poverty guidelines.

KH: And who participated in the study, and how long were they in the study?

LN: The study enrolled 937 children aged five to 12 years, who had a positive skin test for allergies and at least one hospitalization or two emergency department visits in the six months prior to enrollment along with their caregivers. These children were divided into 13 panels that rotated through the study every six months. For two weeks, each child in a panel performed twice daily lung function measurements, along with a respiratory symptom diary. The rotating panels ensured the health data was available through a 24 month follow up period for comparison with central site measurements of ambient air pollutants in each community.

KH: And what was your involvement in the study, and who else was involved?

LN: I was involved in the conception and design of this cooperative air pollution study, as well as in the analysis of the data and the preparation of the manuscript. I also served as the EPA project officer for the interagency agreement with the National Institute of Allergy and Infectious Diseases. EPA's Aerometric Information Retrieval System supplied the ambient air quality data for the study. This work was really a collaborative effort with academic investigators from the main study including George O'Connor, Meyer Kattan, and Mort Lippmann, and statisticians Herman Mitchell and Ben Vaughn from the Data Center at Rowe Incorporated.

KH: I'd like to know a little bit about the study's origin. How did the air pollution component of ICAS get its start?

LN: Along with several of the investigators, I had experience with the previous National Cooperative Inner City Asthma Study while I was on the faculty at the Harvard School of Public Health. One of my students, Kathleen Mortimer, for her doctoral thesis conducted a similar analysis of diary and lung function data from that earlier study. Then, when I came to EPA in 1998, was given the opportunity to add an air pollution component to the new Inner City Asthma Study. Based on my previous experience, I immediately recognized the value of leveraging a much larger study of household interventions by incorporating ambient air quality measurements.

KH: So, how has the ICAS impacted asthma?

LN: The main household interventions studies successfully identified certain feasible interventions in the household environment. They could really improve the daily lives of inner city children with asthma. These indoor interventions will remain a focus in continuing research funded by the National Institute of Allergy and Infectious Diseases. The air pollution component will make a scientific contribution to the resolution of uncertainties underlying the current air quality standards as part of EPA's integrated science assessments for criteria air pollutants.

KH: So, Lucas, what is the next step?

LN: Well, we've already begun with several follow-on research projects. For childhood asthma, we've already completed the Detroit Children's Health Study, a cross-sectional analysis of the prevalence of asthma in reduced lung function in the Detroit metropolitan area. This trans-disciplinary research project was focused on the role of neighborhood differences in local air pollutions, particularly traffic related air pollutants, on the development of asthma among school-aged children. Over the next two years, ORD scientists will also work with the University of Michigan on a cooperative research project to assess the role of traffic related air pollutants and the daily variation of asthma symptoms and lung function among panels of asthmatic children living in neighborhoods with different levels of traffic.

KH: What do you hope will come of all this work?

LN: ORD hopes to make a major scientific contribution to the resolution of uncertainties underlying the current air quality standards, and to provide useful public health information on adverse effects of real world exposures to traffic related air pollutants.

KH: Thank you, Lucas, for taking time out of your busy schedule to speak with me today on your work addressing disparities in asthma. To learn more about asthma, check out the rest of the asthma edition of Science Notebook or visit EPA's asthma website at epa.gov/asthma.