State of California
AIR RESOURCES BOARD

RESEARCH PROPOSAL

Resolution 07-37

September 27, 2007

Agenda Item No.: 07-9-2

WHEREAS, the Air Resources Board has been directed to carry out an effective research program in conjunction with its efforts to combat air pollution, pursuant to Health and Safety Code sections 39700 through 39705;

WHEREAS, a research proposal, number 2637-257, entitled "Is Disparity in Asthma Among Californians due to Higher Pollutant Exposures, Greater Susceptibility, or Both?" has been submitted by the University of California, Los Angeles;

WHEREAS, the Research Division staff has reviewed and recommended this proposal for approval; and

WHEREAS, the Research Screening Committee has reviewed and recommends for funding:

> Proposal Number 2637-257, entitled "Is Disparity in Asthma Among Californians due to Higher Pollutant Exposures, Greater Susceptibility, or Both?" has been submitted by the University of California, Los Angeles, for a total amount not to exceed $299,794.

NOW, THEREFORE BE IT RESOLVED, that the Air Resources Board, pursuant to the authority granted by Health and Safety Code section 39703, hereby accepts the recommendation of the Research Screening Committee and approves the following:

> Proposal Number 2637-257, entitled "Is Disparity in Asthma Among Californians due to Higher Pollutant Exposures, Greater Susceptibility, or Both?" has been submitted by the University of California, Los Angeles, for a total amount not to exceed $299,794.

BE IT FURTHER RESOLVED, that the Executive Officer is hereby authorized to initiate administrative procedures and execute all necessary documents and contracts for the research effort proposed herein, and as described in Attachment A, in an amount not to exceed $299,794.

I hereby certify that the above is a true and correct copy of Resolution 07-37, as adopted by the Air Resources Board.

Lori Andreoni

Lori Andreoni, Clerk of the Board

ATTACHMENT A

"Is Disparity in Asthma Among Californians due to Higher Pollutant Exposures, Greater Susceptibility, or Both?"

Background
Despite major advances in the development of anti-inflammatory medications, uniquely sensitive populations such as children, the elderly, racial/ethnic minorities, and low-income Californians suffer disproportionately from asthma and asthma-like symptoms. The previous Center for Disease Control-funded study linking 2001 California Health Interview Survey (CHIS) and ambient air monitoring and traffic data in Los Angeles and San Diego counties found that individuals living near heavy traffic or in areas with high ozone and PM10 levels were more likely to report chronic severe asthma or acute asthma exacerbations. However, the sample size and data items were too limited in 2001 to perform meaningful sub-population analysis, e.g. impacts of race/ethnicity and related vulnerability factors on the pollutant. CHIS 2003 and subsequent surveys provide better information on residential location, housing conditions, indoor exposures, health behaviors, and asthma outcome measures. This will be the first study that will provide information on the effects of long-term air pollution exposure on chronic severe asthma and asthma-like symptoms in uniquely sensitive populations.

Objective
The objective of the study is to determine whether the disproportionate burden of asthma or asthma-like symptoms among low socio-economic status (SES) individuals is associated with greater pollutant exposures, greater vulnerabilities, or both.

Methods
The study proposes to link CHIS 2003 respondent residence locations data with measurement data for criteria air pollutants (O_3, PM10, PM2.5 and NO_2). The study population will be restricted to those who lived in the same address or community for at least 12 months prior to the interview date.

Investigators will examine annual average air pollutant concentrations from the nearest monitoring station or interpolated pollutant concentrations for a maximum of three monitoring stations within a specified radius (e.g., 50km), as well as exceedance frequencies (e.g., number of days or hours above a certain cut-off point, such as the California or federal air quality standards). This study will develop residential annual traffic density and distance to major roadways/freeway measures. The study will examine the interactions between exposure and vulnerability characteristics for all sub-populations characterized by age, gender, race/ethnicity, income and rural/urban residency that have higher exposures to a single pollutant or pollutant mixes or potentially greater vulnerability to these exposures. It will determine whether greater pollutant exposure or greater vulnerabilities among low SES individuals is associated with a disproportionate burden of asthma or asthma-like symptoms.

In addition, investigators will perform a sensitivity analysis on elderly respondents who may have less commuting time, for example, to see if there are effects from commutes.

The investigators will investigate the possible association between asthma prevalence and its occurrence in ethnic minorities. They will examine the effects of regional pollutants on the outcomes and will estimate confounder-adjusted exposure-response gradients for the mutually adjusted exposure metrics. They will also conduct a sub-sample analysis of the CHIS respondents who did not move from the study area, as there is a concern that people with asthma might move from high to low pollution areas.

The investigators will be unable to assess greater susceptibility to air pollution among sub-population related to unmeasured factors associated with low SES, such as exposure to mold, low birth-weight, maternal smoking during pregnancy and air-conditioning effects.

This study should only be interpreted as a cross sectional study. The outcomes are all measured as "during the past 12 months." If the asthma outcome occurred 11 and ¾ months prior to interview, the annual average of air pollutant concentration (O_3, PM10, PM2.5 and NO_2) for the 12 months prior to interview is not too useful.

The project will be carried out at the University of California, Los Angeles (UCLA) Center for Health Policy Research (CHPR). This study is based on existing data. So confidentiality of each respondent's information will be maintained according to standard research practice.

Expected Results
The proposed research will provide information on the effects of long-term air pollution exposure on chronic severe asthma and asthma-like symptoms in vulnerable populations, such as children, racial/ethnic minorities, the elderly and low-income Californians. The study will determine whether the disproportionate burden of asthma or asthma-like symptoms among low SES individuals is associated with greater pollutant exposures, greater vulnerabilities, or both.

Significance to the Board
An important and valuable aspect of the project is the investigation of the influence of socioeconomic and personal behaviors on asthma. This will address important factors, such as access to health care, compliance with health care treatment, indoor exposures, housing type, and other variables that could plausibly influence asthma outcomes. These SES factors can create a heightened level of sensitivity in these vulnerable groups that could contribute to an increased response to air pollution exposure that is greater than that seen in other members of the population. This increased sensitivity in these environmental justice communities needs to be addressed in the Board's air quality regulations. This study will also lay the ground work for future studies of the effect of air pollution on other diseases in vulnerable populations, such as diabetes and heart disease.

Contractor:
University of California, Los Angeles

Contract Period:
24 months

Principal Investigator (PI):
Dr. Ying-Ying Meng

Contract Amount:
$299,794

Basis for Indirect Cost Rate:
The State and the UC system have agreed to a ten percent indirect cost rate.

Past Experience with this Principal Investigator:
We have no experience working with the principal investigator Dr. Ying-Ying Meng. But we have good past working experience with the co-investigators, Dr. John Balmes, Dr. Beate Ritz, and Dr. Michelle Wilhelm.

Prior Research Division Funding to UCLA:

Year	2007	2006	2005
Funding	$60,469	$49,999	$166,964

BUDGET SUMMARY

University of California, Los Angeles

"Is disparity in asthma among Californians due to higher pollutant exposures, greater susceptibility, or both?"

DIRECT COSTS AND BENEFITS			
1.	Labor and Employee Fringe Benefits	$ 225,817	
2.	Subcontractors	$ 20,000	
3.	Equipment	$ 0	
4.	Travel and Subsistence	$ 3,000	
5.	Electronic Data Processing	$ 0	
6.	Reproduction/Publication	$ 2,676	
7.	Mail and Phone	$ 5,486	
8.	Supplies	$ 0	
9.	Analyses	$ 0	
10.	Miscellaneous	$ 19,117	
	Total Direct Costs		$276,096
INDIRECT COSTS			
1.	Overhead	$ 23,698	
2.	General and Administrative Expenses	$ 0	
3.	Other Indirect Costs	$ 0	
4.	Fee or Profit	$ 0	
	Total Indirect Costs		$23,698
TOTAL PROJECT COSTS			**$299,794**

Attachment B

SUBCONTRACTORS BUDGET SUMMARY

Subcontractor: University of California, San Fransisco

Description of subcontractor's responsibility: Dr. John Balmes will offer expertise on asthma-related health outcomes. He will also contribute to interpretation of results, manuscript and final report writing.

DIRECT COSTS AND BENEFITS			
1.	Labor and Employee Fringe Benefits	$ 18,182	
2.	Subcontractors	$ 0	
3.	Equipment	$ 0	
4.	Travel and Subsistence	$ 0	
5.	Electronic Data Processing	$ 0	
6.	Reproduction/Publication	$ 0	
7.	Mail and Phone	$ 0	
8.	Supplies	$ 0	
9.	Analyses	$ 0	
10.	Miscellaneous	$ 0	
	Total Direct Costs		$18,182
INDIRECT COSTS			
1.	Overhead	$ 1,818	
2.	General and Administrative Expenses	$ 0	
3.	Other Indirect Costs	$ 0	
4.	Fee or Profit	$ 0	
	Total Indirect Costs		$1,818
TOTAL PROJECT COSTS			**$20,000**