

State of California  
AIR RESOURCES BOARD

RESEARCH PROPOSAL

Resolution 05-42

September 15, 2005

Agenda Item No.: 05-8-2

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 2590-249, entitled "Survey of the Use of Ozone-generating Air Cleaners by the California Public," has been submitted by the University of California, Berkeley; and

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

WHEREAS, the Air Resources Board will fund this proposal for a total amount not to exceed \$100,000; and

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

Proposal Number 2590-249 entitled "Survey of the Use of Ozone-generating Air Cleaners by the California Public", submitted by the University of California, Berkeley, for a total amount not to exceed \$100,000.

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 2590-249 entitled "Survey of the Use of Ozone-generating Air Cleaners by the California Public", submitted by the University of California, Berkeley, for a total amount not to exceed \$100,000.

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 \$100,000.

I hereby certify that the above is a true and correct copy of Resolution 05-42, as adopted by the Air Resources Board.

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Lori Andreoni, Clerk of the Board

## **ATTACHMENT A**

### **“Survey of the Use of Ozone-generating Air Cleaners by the California Public”**

#### **Background**

Electronic air cleaners that emit ozone either purposefully (ozone generators) or as a by-product of their particle removal process (ionizers or electrostatic precipitators) are being marketed aggressively with claims that the devices can remove many types of indoor air pollutants. However, rather than cleaning the air, operation of ozone-generators (and other air cleaners where ozone is a by-product) can result in unhealthy indoor ozone concentrations, in some cases several times greater than the 8-hour and 1-hour California ambient air quality health standards of 70 and 90 parts per billion. Ozone can cause chest pain, coughing, and shortness of breath, and can compromise the ability of the body to fight respiratory infections. Much of the marketing of ozone generators is aimed at the elderly and allergy and asthma sufferers, who may be more susceptible to the adverse effects of ozone.

Despite the claims of manufacturers and distributors, independent studies show that ozone generators do not remove indoor pollutants, nor do they eliminate airborne microbes. Rather, in addition to high levels of ozone, they can lead to a significant increase in indoor levels of formaldehyde and other aldehydes, as well as other pollutants, through reaction with other chemicals present indoors. Some of these reaction products are listed as toxic air contaminants, and can irritate the mucous membranes and respiratory tract or cause other health problems.

Unfortunately, little sales data exists on ozone generators, because most sales do not occur through retail establishments and manufacturers do not report sales information. Thus, the extent of use of these devices and the scope of the potential impacts in California are not clear, although the amount of advertising indicates it may be substantial.

#### **Objective**

The Survey Research Center at the University of California at Berkeley (UCB) will conduct a survey of California households to obtain sales and use data and other useful information. The data will be used to:

- (1) Determine the extent of the use of different types of air cleaners, especially ozone-generating models, in California homes;
- (2) Determine the reasons for their purchase;
- (3) Determine the frequency and duration of their use;
- (4) Obtain other information needed to assess the potential impact of these appliances on public health.

#### **Methods**

A representative telephone survey of approximately 1,800 California households will be conducted to determine the extent to which residents have purchased and use indoor air

cleaners, especially ozone-generating models. The survey questionnaire will be developed and pre-tested before data collection begins. Respondents throughout California will be called on the telephone using established random digit dialing techniques.

**Expected Results**

The survey is expected to determine the prevalence of ownership and use of ozone-generating devices; as well as other air cleaner models such as electrostatic precipitation and filter-based models.

The results will also include reasons for purchasing an air cleaning device; if purchased, how often and how long the device is used; and finally, key demographic questions such as age, income, home ownership, location of the household in an urban or rural area, and whether or the any household member has health issues such as allergies or respiratory ailments.

**Significance to the Board**

Although ozone generators can produce harmful levels of ozone, no state or federal agency has clear regulatory authority to limit indoor ozone emissions from air cleaners. Reliable data are not available on the actual purchase and use of ozone-generating air cleaners in California, nor is it known whether most purchasers are aware of the potential harm to health the ozone emissions may cause. Without reliable data on the extent of use of these ozone generators by Californians, it is difficult to estimate the extent of their potential impact on public health and to identify the most effective risk reduction approach. The results of this project will provide information that can be used in responding to the health threat posed by these devices.

**Contractor:**

University of California, Berkeley, California

**Contract Period:**

18 months

**Principal Investigator (PI):**

Thomas Piazza, Ph.D.

**Contract Amount:**

\$100,000

**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:**

The UCB Survey Research Center conducted two activity pattern surveys of California adults and children for the Air Resources Board in the past (“Study of Children’s Activity Patterns,” ARB Contract No. A733-149, 1991; “Activity Patterns of California Residents,” ARB Contract No. A6-177-33, 1991). Dr. Thomas Piazza was the project statistician for both of those projects. The Survey Research Center also is currently conducting a mail survey of residents of newly constructed homes in California, with Dr. Piazza as the Principal Investigator and the same team of Center staff that is proposed for this project. Air Resources Board staff have been very pleased with both their past and current work for the Board.

**Prior Research Division Funding to UCB:**

Year	2005	2004	2003
Funding	\$143,975	\$922,057	\$725,244

# BUDGET SUMMARY

University of California, Berkeley

“Survey of the Use of Ozone-generating Air Cleaners  
by the California Public”

## **DIRECT COSTS AND BENEFITS**

1.	Labor and Employee Fringe Benefits	\$ 67,333	
2.	Subcontractors	\$ 0	
3.	Equipment	\$ 0	
4.	Travel and Subsistence	\$ 200	
5.	Electronic Data Processing	\$ 3,683	
6.	Reproduction/Publication	\$ 850	
7.	Mail and Phone	\$ 6,427	
8.	Supplies	\$ 1,130	
9.	Analyses	\$ 0	
10.	Miscellaneous	<u>\$12,415<sup>1</sup></u>	
	Total Direct Costs		\$92,038

## **INDIRECT COSTS**

1.	Overhead	\$ 7,962	
2.	General and Administrative Expenses	\$ 0	
3.	Other Indirect Costs	\$ 0	
4.	Fee or Profit	<u>\$ 0</u>	
	Total Indirect Costs		<u>\$7,962</u>

## **TOTAL PROJECT COSTS**

**\$100,000**

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<sup>1</sup> Miscellaneous item is for rental of the Telephone Interviewing Facility. This is based on the normal rate charged to all projects for use of the facility.