

State of California  
Air Resources Board

**BOARD ITEM SUMMARY**

**ITEM # 20-11-1: Public Meeting to Consider Proposed Research Contract with the University of California, Berkeley, Titled "Total Exposure to Air Pollutants and Noise in Disadvantaged Communities"**

**STAFF RECOMMENDATION:**

The California Air Resources Board (CARB or Board) staff recommends that the Board approve funding of the proposed research contract with the University of California, Berkeley Titled "Total Exposures to Air Pollutants and Noise in Disadvantaged Communities."

Note: This item is listed on the agenda to comply with Board approval requirements in Government Code section 1091, since Board Member Balmes is affiliated with the proposed contractor, the University of California, Berkeley School of Public Health and the Center for Occupational and Environmental Health.

**DISCUSSION:**

There are very few studies which have specifically investigated how local factors such as daily activities, indoor air pollutant sources, housing conditions, outdoor air pollutant sources, and environmental stressors such as noise pollution can impact an individual's exposure to specific air pollutants in disadvantaged communities (DAC). This research will employ indoor and outdoor field studies along with personal monitoring conducted in DACs in the East Bay area of Northern California and in the Shafter and South-Central Fresno areas in the San Joaquin Valley to provide this information. The DACs for this study will be selected based on the potential for high pollutant exposures and a wide range of air pollutant sources and different types of residential spaces. Key questions to be addressed are:

- What are the top sources for air pollutant exposures for individuals in DACs?
- How much of an individual's exposure to particular air pollutants occurs indoors vs outdoors?
- Are there any determinants that affect pollutant levels and exposure (e.g., building characteristics, appliance types (natural gas vs. electric), and personal behaviors)?
- Are noise exposure levels associated with levels of exposures to specific air pollutants?

Exposure to particulate and toxic air pollutants such as PM<sub>2.5</sub>, ultrafine particles, and Volatile Organic Compounds (VOCs) is associated with adverse health effects including asthma, respiratory disease, cardiovascular disease, lung cancer, and poorer neurodevelopmental outcomes in children. CalEnviroScreen shows that many low income and DACs in California experience higher air pollution and consequent health impacts compared with more affluent neighborhoods. In addition to higher pollutant exposures, DACs are also subjected to higher levels of ambient noise, which is also known to negatively impact health.

There will be 120 households in 4 communities (30 each). The study will include monitoring both inside and outside of the residences and one individual in each household will be selected for personal monitoring that will record exposures throughout the day. The study is 24 months long with monitoring taking place over nine-months between Summer 2021- Winter 2022. Approximately 15-20 households will be monitored per month

#### **SUMMARY AND IMPACTS:**

Results from the study will be used to assess potential health risks for DAC residents and support the goals of California Assembly Bill 617 (AB 617) by identifying the top localized sources that are most responsible for air pollutant emissions and noise in DACs as well as individual factors linked to the highest exposures. Individual factors may include activities such as cooking or cleaning, appliance energy sources, housing ventilation systems, transportation choices, and others. This research will provide new quantitative information on air pollution and noise exposures and health risks to residents in disadvantaged communities and suggest best practices for reducing total exposure to air pollution and noise in these areas. The results can be used to prioritize possible air pollution sources for mitigation based upon their impacts on resident's exposure. The results can also prioritize non-source related measures to reduce air pollution exposures in DAC communities such as improved ventilation and filtration. This information can be used by CARB for the development of guidance documents or in the crafting of regulations, and thus it will inform strategies on how to improve public health by supporting programs such as electrification strategies, high-efficiency air filtration, improved building standards, and safer consumer product choices.