Researchers Measure Diesel Emissions on the Freeway

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Kent Johnson inside the truck that houses the emobile emissions laboratory.

The 53-foot-long tractor trailer that houses UC Riverside's mobile emissions laboratory was back on the road Friday and Monday on Interstate 10 between Redlands and Beaumont testing ways to better measure particulates from diesel trucks and buses.

With funding from the California Air Resources Board, a team of UC Riverside researchers from the Bourns College of Engineering and the Center for Environmental Research and Technology (CE-CERT), are attempting to improve and better understand a method to measure diesel particulate emissions developed in recent years in Europe.

The research could provide the groundwork for the board to strengthen standards for diesel particulates, said Kent Johnson, principal

investigator in the emissions and fuels research group at CE-CERT.

The European researchers proposed counting solid diesel particles using particle instruments in addition to weighing them after collecting them in a filter, known as the gravimetric method.

New diesel trucks and buses in the United States and Europe come with a diesel particulate filter to meet current emission standards. However, the gravimetric method does not have enough sensitivity to measure the low emissions from new diesel trucks. UC Riverside researchers expect that diesel particle regulations can become stricter as more robust measurement methods are developed.

Johnson is working with: Heejung Jung, a professor at UC Riverside; Tom Durbin, a research engineer at CE-CERT; David Cocker, an associate professor at UC Riverside; and David Kittelson, a professor of mechanical engineering at the University of Minnesota. Lab technicians/engineers Don Pacocha, Joe Valdez, Eddie O'Neil and undergraduate students Eric Wittenmeier and Spencer Fish are also part of the team.

Early last week, at CE-CERT the research team conducted testing for the California Air Resources Board using a heavy-duty vehicle chassis dynamometer, a computer controlled set of motors and analyzers that mimics driving conditions, road grades and cargo loads and provides emission readings.

On Friday and Monday, they took the testing to the road, conducting six trials. Filled with mobile emissions testing equipment, the truck traveled 14 miles between the California Street and San Timoteo Canyon exits of Interstate 10.

The research is latest project for the mobile emissions testing laboratory,

which, in the past 10 years, has been responsible for more than $10 million in research at the center.

The equipment had collected more than 24,000 analytical samples during 7,500 tests and performed 5,000 calibrations. Those samples have helped establish benchmarks and the scientific basis for state and federal air quality standards and regulations.

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