

## News - Spring 2002

### CE-CERT Working on a Global Scale

**W**HETHER MEASURING, CHARACTERIZING AND MODELING EMISSIONS IN NEW DELHI OR DETERMINING VEHICLE ACTIVITY IN Santiago, CE-CERT has turned its attention to a serious global problem: air pollution at an international scale. The Center has been studying local, regional and even national air quality for the past ten years, but recently CE-CERT's researchers have begun to focus these tools and techniques on other areas of the world. South America, Africa, Asia, and Europe are all now on the receiving end of technology and research that can improve air quality in some cities facing what can only be called air quality crises.

"This is a natural progression for CE-CERT," said Director Joe Norbeck. "What we have been working on for California--a leader in environmental quality and standards--can be applied to China or Mexico or Kenya. And we can learn from what worked and didn't work here to make the implementation of these programs even more efficient and effective."

In India, a team of researchers will be spending a month monitoring air quality in New Delhi as part of a pilot study funded principally by Ford Motor Company.

Using techniques and instrumentation that was implemented on a local scale in Mira Loma, California, this team will be analyzing the chemical composition of total suspended particulates.referring in general to mixtures of solid particles and liquid droplets found in the air--as well as identifying the sources of these compounds. It is hoped that this study will serve as a useful starting point for a more intensive study of the air quality in New Delhi.

In Chile and Kenya, a CE-CERT team supported by the U.S. Environmental Protection Agency is building databases about vehicle fleets and traffic patterns for an improved understanding of their air quality problems. Researchers have been videotaping traffic and checking hundreds of vehicles. The information will be used in computer models to estimate current emissions and trends for these regions. One objective of the program is to develop a model that can be transplanted inexpensively to many parts of the developing world, where no vehicle emissions models exist.

Visitors from around the globe also visit CE-CERT on a regular basis to view the facilities and get up-to-date information on its research endeavors.



*CE-CERT researchers collecting vehicle data in Nairobi.*

## Middle School Student Presents Project at CE-CERT

By Kris Lovekin

**R**ISHA BERA, A 13-YEAR-OLD EIGHTH-GRADER FROM CORONA FUNDAMENTAL INTERMEDIATE SCHOOL, EARNED A FIRST PLACE IN her school district's science fair for a project that asked, "Can the directed traffic patterns of a vehicle reduce atmospheric pollution in a parking lot?"

Risha borrowed equipment and scientific advice from Mitch Boretz, principal administrative analyst at CE-CERT. She returned the favor by presenting her conclusions to scientists and staff at a noontime seminar.

Her idea originated while observing cars at the Galleria at Tyler, a two-story shopping center that is a magnet for her friends. With her father at the wheel, she collected data on drivers looking for parking spaces, enduring some suspicious looks from lot security guards.

Her display board charts showed that levels of hydrocarbon, carbon monoxide and carbon dioxide emissions all fell when cars spent less time circling the lot.

"Before CE-CERT, I just wanted to be a lawyer," Risha said. "When I got here, I found out that there are people who have devoted their entire lives to reducing pollution. My definition of success has gone from being wealthy, to making a difference."

## Children's Health and School Buses



*School bus equipped for testing.*

**L**AST YEAR, CE-CERT WAS ASKED BY THE CALIFORNIA AIR Resources Board to do a study that would determine children's exposure to pollutants while riding on school buses, waiting at stops, and waiting near idling buses during loading. This study is looking at different school bus commute scenarios, sampling locations and bus fuel types, such as compressed natural gas and buses using soot traps, to characterize the range of children's exposures during their daily school bus commute.

Results, expected in 2003, will be used to estimate exposure to diesel exhaust particles and other bus-related pollutants and to determine what fraction of children's total exposure can be attributed to school-

bus related activities.

## Undergrad's Research Has Impact in Texas

**C**HRISTINE AGUIRRE, AN UNDERGRADUATE STUDENT WORKING THROUGH THE RESEARCH ADVANCEMENT PROGRAM (RAP) AT CE-CERT, spent the spring and summer of 2001 taking a long, hard look at gas cans. Portable gasoline containers are a significant source of air pollution emissions in the U.S., including toxic emissions such as benzene, a know

carcinogen, and MTBE, a water pollutant. Control of this emission source using sealants is feasible and can produce a significant, cost-effective benefit. In 1999, the California Air Resources Board (CARB) enacted a regulation requiring sealants on gasoline cans to prevent leakage. Funded by Fluoro-Seal, a Houston-based company that makes sealants, Aguirre took the model and methodology used by CARB to quantify the impact of gasoline container emissions in California, modified it as necessary, and applied it to the other 50 states. By doing this, it was possible to see how much control could be achieved if other states adopted similar rules about sealants. Early this year, based primarily on the results obtained by Aguirre and her mentor, J. Wayne Miller, the state of Texas decided to implement a similar rule.

"Christine's work has had a real, quantifiable impact on the national debate about the control of emissions," Miller said. "We took information that was readily available, extended an existing methodology to handle other states, and applied this data to a different problem. This is what science is all about."

Aguirre is a senior, majoring in Chemical & Environmental Engineering at UCR.

## CRC Meets at CE-CERT

**A** NUMBER OF COMMITTEES OF THE COORDINATING Research Council (CRC) came to CE-CERT during March 12-14 for a series of meetings. CRC is comprised of industry and agency representatives, and is the premier organization that directs, through committee action, engineering and environmental studies on the interaction between automotive equipment and petroleum products. CRC's objective is to direct cooperative research, to develop the best possible combinations of fuels, lubricants, and the equipment in which they are used, and to afford a means of cooperation with the Government on matters of national interest within this field.



*Reception in CE-CERT's new library for the members of the Coordinating Research Council.*

CRC recently awarded CE-CERT a contract of about \$1 million to measure exhaust emissions of ammonia from a number of late model year passenger cars, both those made in the United States and in Europe. Ammonia emissions from vehicles are a "hot research topic" and CE-CERT was selected because of its unique tools and expertise that can help elucidate the research issues.

## Barth Updates CUC Members on Shared Vehicle Systems

**E**LECTRICAL ENGINEERING FACULTY MEMBER MATT BARTH, DIRECTOR OF CE-CERT'S TRANSPORTATION SYSTEMS RESEARCH AND Advanced Vehicle Technology Laboratory, made a presentation to members of Citizens University Committee (CUC) at their monthly breakfast meeting on February 27 at UCR Extension. CUC is a support organization for UCR, established in 1948, that holds monthly breakfast meetings to hear presentations on the latest developments at the campus. Dr. Barth spoke of the latest research in shared vehicle systems, with emphasis on UCR's IntelliShare electric vehicle program that operates on and around the campus.

The IntelliShare program, a joint research project between UCR and Honda Motor Company, monitors the usage patterns and air quality impact of a fleet of 25 electric vehicles. Three stations are currently in operation, with plans to expand to five stations this summer. UCR faculty, staff and student employees have made more that

42,000 trips since the program began in March 1999.

Following the presentation, Dr. Barth answered questions from the audience and invited them to view one of the IntelliShare cars on display in the parking lot.

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