Two California researchers whose groundbreaking work has documented the dangers of air pollution have been awarded the 2012 Tyler Prize for Environmental Achievement.

John H. Seinfeld, a professor of chemical engineering at Caltech, was recognized for research leading to a greater understanding of the origin, chemistry and evolution of particles in the atmosphere. Seinfeld's work has helped foster efforts to control the effects of air pollution on public health.

Seinfeld's recent work includes research into how soot billowing from diesel trucks and industrial smokestacks contributes to climate change and how biogenic emissions from plants and trees affects air quality. He also recently helped administer one of the largest air-quality experiments in the Los Angeles Basin.

Kirk R. Smith, a professor of global environmental health at UC Berkeley, was recognized for research demonstrating the debilitating risk of air pollution in developing nations. A disproportionate share of the risk falls on women and children. Many children fall behind in cognitive development because of their exposure, Smith's work has shown.

Smith demonstrated that acute exposure to air pollutants occurs in rural, indoor settings in countries where biomass and coal are the primary sources of fuel. Pollutants of that nature represent one of the world's greatest health threats. Smith has documented a heightened risk of pneumonia, cataracts, tuberculosis, heart disease and chronic lung disease.

"Professors Smith and Seinfeld are giants in the efforts to understand and reduce the devastating impacts of air pollution," Owen T. Lind, a biology professor at Baylor University and the chairman of the award's executive committee, said in a statement. Lind said the pair's research has "dramatically advanced our understanding of the ways in which air pollution threatens our health as individuals and the health of the planet."

Seinfeld said that he was "delighted and humbled" to receive the award, and that he was optimistic that scientists will continue to make progress in tackling air pollution and tracing pollutants to their source.

"A great deal of progress has been made in understanding what these particles are and where they're coming from," he said. "Certainly, the efforts that have been made in the last two decades in controlling air pollution in general, and especially in California and Los Angeles, are showing results."

Smith was traveling Monday and could not be reached for comment.

The Tyler Prize, administered by USC, is named for the prize's founders, John and Alice Tyler. It has been awarded since 1973 to researchers and authors who "confer great benefit upon humankind through environmental restoration and achievement."

Previous winners include Edward O. Wilson, a biologist and naturalist, and Jane Goodall, a conservationist and one of the world's leading experts on chimpanzees.

Smith and Seinfeld will each receive a $100,000 cash prize and a gold medal.