BREATHE CALIFORNIA
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## Yet another reason to plant (certain) trees...

The edge of a busy road is a harsh place. Beyond the din, the smell and the potential for accidents, traffic produces exhaust that's harmful to breathe. One component of vehicle exhaust causing growing concern is particle pollution -- bits of toxic matter. So small are these bits that more than 100,000 fit on a 1-inch line. Scientists have discovered that, when inhaled, these invisible specks can evade the lung's defenses to enter the bloodstream, raising the risk of cardiovascular disease and damage to the brain, as well as lung disease. Removing them from the air, therefore, is an important part of protecting the public's health.

Fortunately, the job needn't be complicated nor costly. A study conducted for Breathe California of Sacramento-Emigrant Trails Health Effects Task Force indicates that certain trees make good natural filters. As polluted air flows around their branches, their leaves and needles capture the oily, sticky particles. Redwood and deodar cedar, two types of evergreen, proved to be especially effective.

The study, conducted at the University of California, Davis, by the DELTA (Detection and Evaluation of Long-Range Transport of Aerosols) group, is one of the first to measure how well vegetation removes the smallest airborne particles, classified in science as "very fine" and "ultra fine." Researchers placed fresh tree cuttings into a 60-foot wind tunnel designed for studies of meteorology and air flow. They tested redwood, live oak, then deodar. Lit highway safety flares generated pollution similar to that in diesel exhaust. Instruments called DRUM samplers recorded particle levels before and after sullied air passed through the cuttings.

In a breeze below 2 mph, all three tree types removed 30 percent to 85 percent of very-fine particles. Redwood and deodar were superior; the evergreens acted like bottle brushes, their needled branches providing more surface area with which to catch particles than the flat, comparatively broad leaves of live oak. The scientists used gentle winds because strong winds naturally freshen highway air. It's when air barely moves that exposure to traffic particle pollution is greatest. The researchers also ran experiments in a chamber with stagnant air, this time adding oleander, a flowering shrub planted abundantly along California roadways. Unfortunately, oleander's flat leaves made a poor particle filter; redwood, again, performed best. This research is an important first step and points to more studies that need to be done including testing with trees already in our region and putting these trees to test in our environment.

Planting trees doesn't by itself solve the problem of particle pollution. Roadway design is important, too. For instance, separating freeways and thoroughfares from homes, businesses and schools with manmade sound walls as well as vegetative barriers creates a chimney effect, pushing polluted air up, away from where people breathe. Median strips planted with evergreens enhance the upward air movement. Existing buildings close to busy roads also should be outfitted with air filters to protect the occupants. Finally, the No. 1 action to minimize the health threat of traffic pollution is this: Drive the cleanest possible vehicles and drive as little as possible.

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