



On the Air

News on Air Pollution and Health Studies Build on Previous Findings, Break New Ground

Recently published studies of air pollution and health are expanding on previous findings, and identifying new connections. One study found that the link between the incidence of childhood asthma and proximity to traffic corridors and ports is even stronger than previously established. Another study concluded that decreased levels of air pollution positively influence life expectancy. Other recent studies have identified the possibility that higher levels of air pollution may trigger appendicitis and cause more respiratory allergies in children. Some research results showed health effects associated with levels of particulate matter pollution (see image on right).

Childhood Asthma and Air Pollution from Traffic and Goods Movement

Previous studies have identified that asthma risk is heightened in areas close to traffic corridors. However, results from a University of Southern California (USC) study published in the *American Journal of Public Health* in November suggest that the impacts of traffic and ship emissions on asthma have been underestimated.

The study concluded that approximately 1,600 (or 9 percent) of childhood asthma cases in Long Beach and 690

(6 percent) of cases in Riverside could be linked to living within 81 yards of a major road. The study also identified that ship emissions from the Los Angeles-Long Beach port complex helped worsen asthma symptoms, concluding that eliminating nitrogen dioxide emissions from ships would reduce the number of asthma-related bronchitis episodes by 1,400 (or 21 percent) a year.

In the journal article, titled "Global Goods Movement and the Local Burden of Childhood Asthma in Southern California," the authors noted that statewide risk assessments have identified significant health effects that could be attributed to higher levels of ozone and particulate matter, "However, only rarely has this methodology been applied to smaller geographical scales taking into account local air pollution conditions and sources."

The article's authors stressed the need for more local studies: "Transportation planning in local communities requires local information to develop effective policies, because state and national estimates of air pollution that average effects over a large

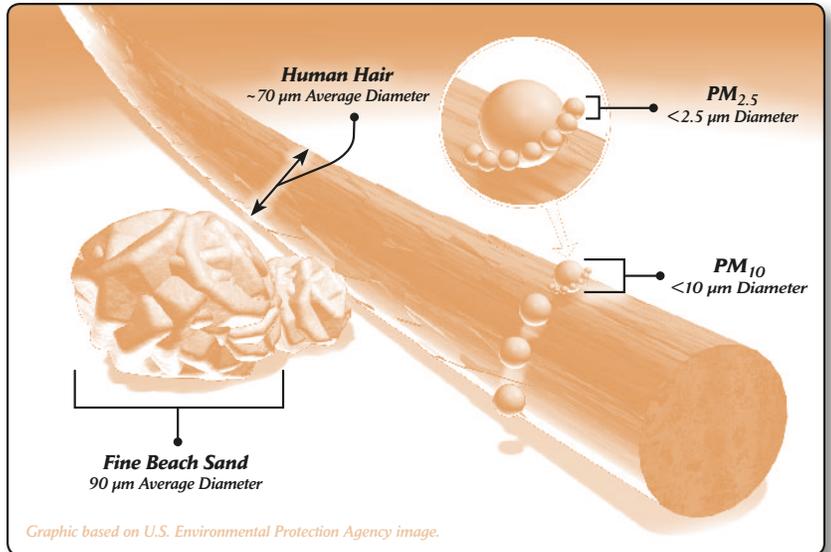
population are not adequate for evaluating local health impacts in areas with high pollution."

The authors concluded: "There is an urgent need for more detailed evaluation of the health consequences both of large-scale transportation infrastructure development and of port-related air pollution in areas that already have a high burden of disease associated with air pollution."

Air Pollution and Life Expectancy

Another study, "Fine-Particulate Air Pollution and Life Expectancy in the United States," published in January of 2009 in the *New England Journal of Medicine*,

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Sizes of particulate matter smaller than 2.5 microns in diameter (PM2.5) and smaller than 10 microns in diameter (PM10) are compared against the average diameter of a human hair, which is approximately 70 microns in diameter.

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Do Vehicle and Fuel Standards Make a Difference? See Inside.

Air Pollution and Health (cont'd)

concluded that reduced levels of fine particles were associated with increases in life expectancy. Past studies had shown that exposure to particulate matter less than 2.5 microns in diameter (PM_{2.5}) was associated with decreased life expectancy; for this study researchers took a different approach.

The scientists compiled data on life expectancy, socioeconomic status, and demographic characteristics for 211 counties in 51 U.S. metropolitan areas and compared this data with matching PM_{2.5} data. During the period from 1980 to 2000, life expectancy increased by 2.7 years, and levels of PM_{2.5} decreased by 6.5 micrograms per cubic meter.

The study's authors noted, "Multicausality and competing risk issues make it difficult to quantify changes in life expectancy attributable to single risk factors, but these results suggest that the individual effect of reductions in air pollution on life expectancy was as much as 15 percent of the overall increase."

They added, "In conclusion, the results of this analysis are generally good news. Although multiple factors affect life expectancy, our findings provide evidence that improvements in air quality have contributed to measurable improvements in human health and life expectancy in the United States."

Pollutants and Appendicitis Risk

A recent study by Canadian scientists of 5191 adults admitted to hospitals found correlations between high levels of ozone and nitrogen dioxide in outdoor air and the incidence of appendicitis. The study, titled "Effect of Ambient Air Pollution on the Incidence of Appendicitis," published in the *Canadian Medical Association Journal* in October, did not identify a mechanism for how air pollution increased the risk. The scientists theorized that exposure to air pollutants might cause inflammatory responses that could help trigger appendicitis, or that exposure to pollutants could affect gastrointestinal immunity and increase the risk of bacterial invasion that could result in

appendicitis. They called for further study in this area.

The study's authors noted that the finding could help to explain trends in appendicitis that appear to go along with industrialization and air pollution increases. Appendicitis cases increased dramatically in industrialized countries in the 19th and early 20th centuries, then decreased in the middle and late 20th century, coinciding with legislation to improve air quality. The incidence of appendicitis has been growing in developing countries as they become more industrialized.

Air Pollution Levels and Allergies

Results from a study titled "Air Pollution and Childhood Respiratory Allergies in the United States," published in January in *Environmental Health Perspectives* showed an association between allergies in children and increased levels of ozone and fine particles, or PM_{2.5}, in the air. The association was somewhat stronger with ozone levels, although still significant with PM_{2.5} levels. The association between allergies and pollutant levels was not found for the other pollutants studied—

coarse particles (PM₁₀), nitrogen dioxide, and sulfur dioxide. Researchers looked at 72,279 children in the U.S. aged 3-17 and compared the incidence of respiratory allergies/hay fever against levels of several pollutants. This research was the first large nationwide study of this issue. The results are consistent with results from smaller-scale U.S. studies, and from studies done in other countries. A 1989 U.S. study showed a trend of increased hay fever rates with higher ozone concentrations. A 2003 Dutch study found increased pollen sensitization near roadways with high volumes of truck traffic. A 2008 German study reported an association between long-term PM_{2.5} exposure and hay fever and pollen sensitization.

The authors noted that the strength of the study was its nationwide scope and its large number and diversity of children, designed to reflect all children in the U.S. A weakness of the study was the primary use of a 20-mile radius to define exposure of the children; researchers called for more study with smaller groups and more precise exposure measures for each child.

Learning about Air Pollution and Green Buildings

Santa Barbara City College Environmental Studies students recently visited the District offices in Santa Barbara. On right, Air Monitoring Specialist Janice Kettler shows students equipment used to measure ozone levels at monitoring stations. She also demonstrated equipment to measure levels of particulate matter less than 2.5 microns in diameter (PM_{2.5}) and PM less than 10 microns in diameter

(PM₁₀); this equipment is set to be installed in the Goleta monitoring station in 2010.

Professor Adam Green, City College Environmental Studies Program Coordinator, discussed the importance of designing buildings and landscaping with energy and the environment in mind, as students toured the Casa Nueva building and grounds, where the District offices are located.



For more information on the District's school programs, see www.OurAir.org.

Safer, Cleaner Fireplace Burning

APCD Board Roundup

Following are the highlights of the October Board meeting.

October

- Adopted the schedule of dates, locations, and time for the 2010 APCD Board meetings.
- Approved \$560,000 in additional funding allocation for the Lower Emission School Bus Program.
- Adopted a resolution delegating authority to the Air Pollution Control Officer to enter into and to renew contracts for multiple employee benefit insurance plans to become effective January 1, 2010.
- Adopted a resolution clarifying the additional authority delegated to the Control Officer to execute grant agreements.

Fireplace fires can cause emergencies and pose serious safety risks, and breathing wood smoke reduces lung function, aggravates heart and lung diseases, and can trigger asthma.

Here are some suggestions for safer, cleaner fireplace burning.

Use a gas log if you can. If you have a wood fireplace and can convert it to a gas log fireplace, the air you are breathing outside—and inside—your home will be cleaner.

Be a good neighbor and notice your smoke. If you are burning wood, burn dry, seasoned wood—look for wood that is darker, has cracks in the end grain, and sounds hollow when hit against another piece of wood. Never burn painted or treated wood. Build small hot fires rather than large smoldering ones. Do not overbuild a fire. Avoid “roaring” fires. They can start chimney fires and can lead to overheating of wall or roof materials.

Don't burn trash. Don't burn any of these: charcoal, coal, holiday greens, plastics (including

plastic wrap, cups, plates, etc.), chemicals, wrapping paper, magazines, or any colored or coated papers (including newspaper inserts, junk mail, colored comics, etc.).

Clean your chimney. How long has it been since your chimney was cleaned? A dirty chimney full of creosote is a chimney fire waiting to happen. Schedule regular maintenance by a professional chimney sweep. Do not use your fireplace if it has loose bricks or needs to be cleaned.

If you use artificial logs, do not treat them the same as wood logs. Follow package directions.

Never use gasoline, charcoal lighter or other fuel to light or relight a fire. Vapors from these chemicals are harmful to breathe and can travel the length of a room and explode.

Do not allow small children near the fireplace. Keep children away from the fire. Their clothing can easily ignite.

Never leave a fire unattended. Make sure that the fire is completely out before going to bed or leaving the house.

Make sure you have basic fire safety equipment. Install a type ABC fire extinguisher near the fireplace. Install a screen that completely covers the fireplace opening to catch rolling logs or flying sparks, and arrange andirons so logs can't roll out. Equip your house with fire-

warning devices including smoke and carbon monoxide detectors. Have a spark arrester on top of your chimney to keep sparks from landing on the roof and causing a roof or attic fire. Keep the fireplace in good condition by repairing cracks in the flue lining, bricks and mortar.

Be sure no flammable materials hang down from or decorate your mantel. A spark from your fireplace could ignite these materials and cause a fire.

Never close your damper with hot ashes in the fireplace. Open the damper before lighting the fire and keep it open until the ashes are cool.

Make sure you have good ventilation in the room. In tightly sealed homes, fireplace fires can suck poisonous carbon monoxide fumes from heaters. Smoke and harmful particles can also build up indoors; opening a window will help.

Save your fireplace or woodstove for special occasions. Fireplace fires are not a very efficient way to produce heat. The safest way to heat your home, and the cleanest for the air, is through a central heating system.

Be sure that all ashes have thoroughly cooled before you dispose of them.

Replace your wood stove with a cleaner-burning wood stove certified by the federal Environmental Protection Agency (EPA), or install an EPA-certified fireplace insert.

For more information, see www.OurAir.org.





District Board Calendar

Board of Directors

- Supervisor Salud Carbajal
*First District
Santa Barbara County*
- Supervisor Janet Wolf, Chair
*Second District
Santa Barbara County*
- Supervisor Doreen Farr
*Third District
Santa Barbara County*
- Supervisor Joni Gray
*Fourth District
Santa Barbara County*
- Supervisor Joe Centeno
*Fifth District
Santa Barbara County*
- Mayor Russ Hicks
City of Buellton
- Vice Mayor Al Clark
City of Carpinteria
- Mayor Lupe Alvarez
City of Guadalupe
- Councilmember Cecilia Martner
City of Lompoc
- Mayor Marty Blum
City of Santa Barbara
- Mayor Larry Lavagnino
City of Santa Maria
- Councilmember Ed Skytt
City of Solvang
- Mayor Eric Onnen, Vice Chair
City of Goleta

*All meetings start at 1:30 p.m.
For final meeting agendas, call the
District Board Clerk, 961-8853.
There will be no meeting in
December 2009. The first meetings
for 2010 are listed below.*

January 21, 2010
Board of Supervisors'
Hearing Room
511 East Lakeside Parkway
Santa Maria, California 93455

March 18, 2010
Board of Supervisors'
Hearing Room
511 East Lakeside Parkway
Santa Maria, California 93455

May 20, 2010
Board of Supervisors'
Hearing Room
511 East Lakeside Parkway
Santa Maria, California 93455

*Note: New board members may be
identified in the next month.*

Community Advisory Council

The APCD Community Advisory Council meets monthly at the Days Motor Inn in Buellton. The public is welcome. For more information, call Linda Beard, 961-8853.

Green Business Program Update

In November, the Green Business Program of Santa Barbara County certified five additional businesses, including the Santa Ynez Valley Marriott Hotel, the first lodging property in the county to achieve certification. Other businesses certified in November included Blackbird Architects (Santa Barbara), Santa Ynez Chumash Tribal Government Building (Santa Ynez), Shoreline Café (Santa Barbara), and Van Atta Landscape Design (Santa Barbara).



Representatives of businesses recently certified by the Green Business Program of Santa Barbara County (from left) Paul Barham of Santa Ynez Valley Marriott, Frances Gilliland of the Green Business Program, Daphne Kang, Mark Hamner and Mike Hendrick of the Santa Ynez Valley Marriott; and Jesse Patterson and Julie Randall of the Chumash Tribal Government Building.

The District is a partner in the Green Business Program, a county-wide effort of local governments, special districts, non-profits, utilities, chambers of commerce, and waste haulers. A total of twelve businesses in the county have now been certified

in office/retail, restaurant, automotive and lodging categories. Wineries, and dental offices certification categories will be added to the program in coming months.

Program Coordinator Frances Gilliland notes, "More and more, businesses see that green business certification gives them a competitive edge with their customers. It's encouraging to see so many county businesses wanting to work through this process to prevent and reduce pollution, and to save money at the same time."

For more information, see www.greenbizsbc.org.



- Office**
260 N. San Antonio Rd. Suite A
Santa Barbara, CA 93110-1315
- Business Assistance**
(805) 961-8868
- Daily Air Quality Report**
www.sbcapcd.org
- Complaints/Public Information**
(805) 961-8800
- Air Quality Advisory Information**
(805) 961-8802
- World Wide Web**
www.OurAir.org
- E-Mail**
apcd@sbcapcd.org

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Smog-Forming Emissions from Cars in County Drop 68 Percent 1990-2005

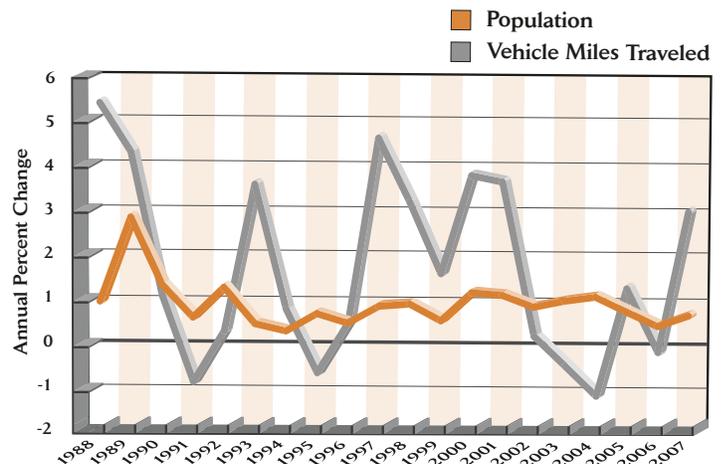
Have all the efforts to cut emissions of smog-forming pollutants from cars paid off? Yes, according to a recent analysis by Santa Barbara County Association of Governments (SBCAG), incorporating data from the California Department of Transportation and the California Air Resources Board. Emissions of smog-forming pollutants from passenger vehicles in Santa Barbara County dropped by 68 percent between 1990 and 2005.

Emissions from vehicles include reactive organic gases (ROG) and nitrogen oxides (NOx), known as ozone precursors because they react chemically in the presence of sunlight and heat to form ozone, a principal component of smog. Ozone causes a range of respiratory symptoms, affects lung development in children, and can help cause early childhood asthma.

"Newer vehicles with more emissions controls are coming in and replacing higher polluting older vehicles and the result is a big drop in pollutants," said SBCAG Transportation Planner Andrew Orfila, who prepared the report. The District's Old Car Buy Back Program accelerates this turnover in the county's vehicle mix by buying and crushing vehicles of 1992 model year or older.

Orfila noted, "Since 1975, there have been a number of regulatory initiatives that have significantly reduced ozone precursor emissions from passenger vehicles. This is particularly impressive, given the increases in vehicle ownership, trip starts, and vehicle miles traveled observed over the last 15 years" (see graph on right).

Increases in Population and Vehicle Miles Traveled Santa Barbara County 1988-2007



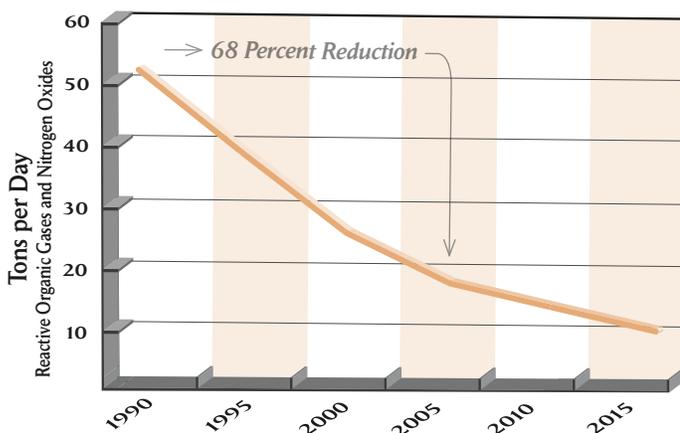
The chart shows that for some periods, vehicle miles traveled have increased at a rate higher than the rate of population increase.

He cited federal regulations that led to improvements in fuel economy, use of catalytic converters to cut NOx emissions, and unleaded gasoline, and

state rules mandating cleaner-burning gasoline, smog check, and on-board vehicle diagnostic systems.

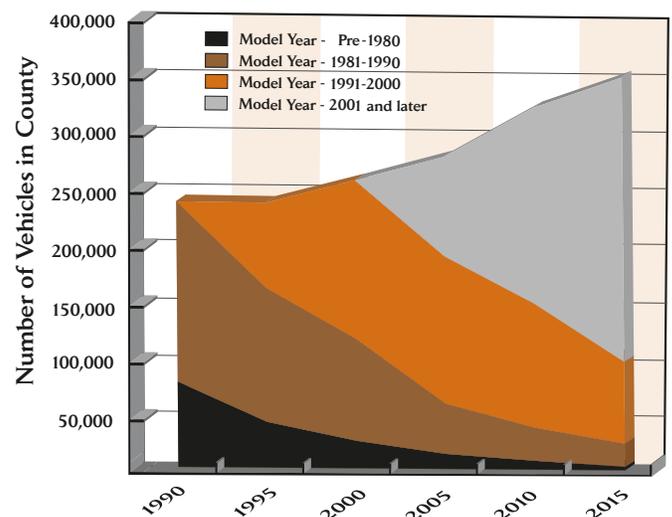
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Reductions in Smog-Forming Emissions from County Vehicles 1990 to Projected 2015



As the graphs show, as newer models came into the mix of vehicles in Santa Barbara County, emissions of smog-forming pollutants dropped dramatically. This drop is projected to continue through 2015, as consumers replace older, higher-polluting vehicles with newer cleaner ones.

Passenger Vehicle Fleet Transitions to Newer Model Years



Business Focus

Vehicle Smog Emissions Drop (cont'd)

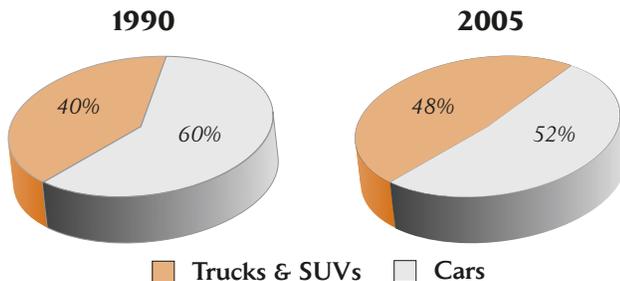
The emissions reductions would have been even more impressive if there had not been an increase in numbers of higher-polluting trucks and sport utility vehicles (SUVs) in the mix of vehicles in the county over this time period (see graph below).

Reductions may continue for some time as the mix of vehicles continues to get cleaner, although new issues may arise, for example the advent of new diesel-powered vehicle models. The percentage of diesel-fueled passenger vehicles in the county declined from 1.8 percent in

1990 to 1.2 percent in 2005. However, that percentage could increase as new diesel vehicles are introduced. While these new vehicles meet California standards, they are often not as clean as similar gasoline-powered or gasoline-electric hybrid models.

For more information, and to compare vehicles for fuel efficiency and pollution, see the state's Drive Clean California website at www.driveclean.ca.us, and the Environmental Protection Agency's Green Vehicle Guide at www.epa.gov/greenvehicles.

Increase in SUVs and Trucks Santa Barbara County



The Truck Stops Here

Diesel exhaust is considered the number one airborne carcinogen in California. State regulations are designed to reduce emissions from diesel vehicles and equipment including: on-road commercial trucks and buses; transportation refrigeration units; drayage trucks used at ports; and equipment used in construction, mining,

and other industries. Rules also control idling of diesel vehicles. In addition, greenhouse gas control strategies including requirements related to federal SmartWay standards are soon to be requirements for diesel vehicles in California.

For more information see "The Truck Stop" at www.arb.ca.gov.

Air Cleaner Update

Some equipment that is advertised as cleaning the air produces high levels of ozone, a principal component of smog, *inside* the home. Beginning October 18, 2010, indoor air cleaning devices cannot be marketed or sold in California unless they are certified by the California Air Resources Board (ARB) to produce an ozone emission concentration that does not exceed 0.050 parts per million.

In May of 2006 the ARB reported that air cleaners that include ozone generators can produce levels of ozone in the air inside a home that exceed outdoor air quality

standards. This finding was of special concern, since air cleaning equipment is often sold to people who already have asthma and other respiratory and health problems, and are more sensitive to the effects of ozone. Ozone masks the odor of other indoor pollutants by deadening the sense of smell, but it is not removing the pollutants from the air. Although ozone is used effectively in water to destroy microbes, ozone in air must reach extremely hazardous levels (50-100 times the outdoor air quality standards) to effectively kill microbes.

For more information, see www.arb.ca.gov/research/indoor/ozone.htm.



The California Air Pollution Control Officers Association (CAPCOA) Climate Change Forum, set for August 30-31 in San Francisco, will address harmonizing California and federal climate change programs, examining current and pending legislation, regulations, and voluntary actions at the federal, state, and local levels. The Forum will be presented by CAPCOA with the California Air Resources Board and the U.S. Environmental Protection Agency.

For more information, see <http://www.capcoaclimateforum.com>

CASH for Cleaner Engines



Funds to repower or retrofit engines in: off-road mobile equipment, farm equipment, fishing boats, school buses, and more.

Contact Al Ronyecz at 961-8877 or axr@sbcapcd.org.

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www.OurAir.org/funding