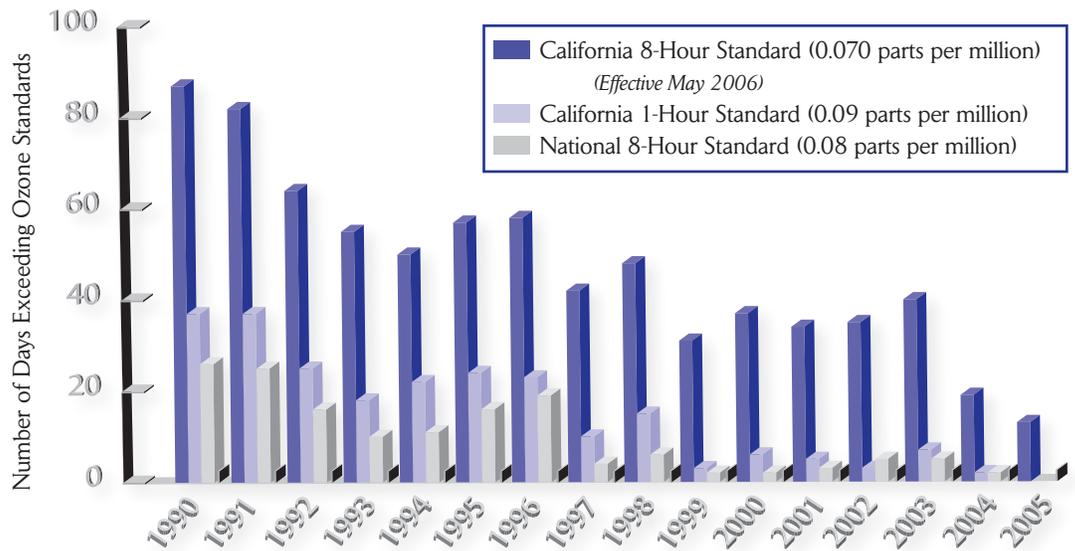


Summer is Smog Season New State Ozone Standard in Effect

A new, more health-protective state standard for ozone went into effect in May, and APCD has recorded several exceedances of that standard so far this summer at Santa Barbara County monitoring stations. Ground-level ozone, a principal component of smog, is formed when nitrogen oxides and hydrocarbons react chemically in the presence of sunlight. Cars and trucks are the major onshore source of ozone-forming pollution in our county.

Ozone forms more quickly on hot days, and our county's smog season typically runs from April through October. Ozone harms our lungs and respiratory systems, and can affect long-term lung development in children, and play a role in causing early childhood asthma. Children are especially vulnerable to the effects of ozone, as their lungs are still developing, and they breathe more often than adults, and spend more time outdoors.

Santa Barbara County Ozone Exceedences 1990 - 2005



As shown in the chart, the new state eight-hour ozone standard is more protective of public health than the federal ozone standard and the existing state one-hour ozone standard. However, exceedences of the new standard reflect the same overall declining trend.

The California Children's Environmental Health Protection Act, passed in 1999, required the California Air Resources Board (ARB) to review air quality standards to ensure that they adequately protect public health. The new state eight-hour

ozone standard, based on an eight-hour average of ozone levels, was developed to be more protective of public health as a result of that review process; the existing state one-hour ozone standard remains in effect.

As shown in the chart, county ozone levels overall are declining. Our air meets the federal ozone standard, but does not meet the state ozone standards. Another pollutant of concern is particulate matter, fine particles suspended in the air that can harm our

(continued on page two)

Wildfire Smoke

Clean-Air Ride

Tax credits for purchase of gas-electric hybrid vehicles are still available; some will be reduced starting September 30. For more information, check the automaker's website.

Recently, smoke from the Perkins fire in New Cuyama affected parts of Santa Barbara County, and APCD issued a joint precautionary statement with the County Public Health Department, asking people to avoid outdoor activities if they detected smoke in the area.

Wood smoke contains the following air pollutants:

- ❖ Particulate matter, fine particles that can get into our eyes and noses, and can stay trapped in sensitive areas of our lungs.
- ❖ Cancer-causing substances, including benzene, formaldehyde and polycyclic aromatic hydrocarbons (PAHs).
- ❖ Nitrogen oxides (NOx), and hydrocarbons, both involved in

Inside...

-  **Old Car Buy Back**
-  **Air Pollution Research**
-  **Bike Challenge**
-  **Earth Day**
-  **Transportation Technologies**
-  **Don't Top Off**

State Funds Research to include Shipping Emissions Study

In July, the California Air Resources Board approved more than \$5 million in funding for air pollution research, supporting 21 projects. One study will compare predicted emissions from marine shipping traffic to actual data from monitoring of emissions at a coastal location.

Results may be useful to APCD's analysis of the impacts of emissions from ships passing through the Santa Barbara Channel on onshore air quality.

Other funded research will study: the relationship between air pollution and premature death

due to particulate matter (PM) pollution; the contribution of engine lube oil to PM emissions; the amount of refrigerant emissions from vehicle air conditioning systems, and options for reducing these; and meteorological impacts related to climate change, plus economic

impacts and benefits of implementing control strategies.

For more information on the research, visit www.arb.ca.gov. For more information on impacts of marine shipping emissions on Santa Barbara County, visit www.OurAir.org.

Smog (cont'd)

respiratory and cardiovascular systems. Our air meets the federal standard but does not meet the state standard for particulate matter less than 10 microns in diameter. We do not yet have enough data to determine whether our air meets the federal or state standards for particulate matter that is less than 2.5 microns in diameter.

While on some days our air exceeds air quality standards, APCD has not had to issue health advisories for unhealthy air due to smog in many years. We do periodically issue advisories on days when smoke from wildfires poses a potential health problem (see separate article - page one).

For more information on our air quality, including exceedances to date, and ozone levels updated hourly, visit www.OurAir.org

the formation of ozone, a principal component of smog.

- ❖ Carbon monoxide, which reduces the blood's ability to supply oxygen to tissues.

Changing wind and weather patterns, and the changing path of any fire, make it difficult to know how specific areas of the county will be affected by wildfire smoke. APCD's precautionary statements typically ask people to use common sense and change behavior based on whether they smell smoke in the area.

What to Do if You Smell Smoke

- ❖ Pay attention to reports and stay alert to any news or health warnings related to smoke.

- ❖ Use common sense. If it smells smoky outside, it's probably not a good time to mow the lawn or go for a run. And it's probably not a good time for your children to play outdoors.

Smoke (cont'd)

- ❖ If you are advised to stay indoors, keep your windows and doors closed – unless it's extremely hot outside. And take steps to keep indoor air as clean as possible: don't burn anything; don't smoke; and don't vacuum (this can stir up dust indoors).

- ❖ If you have an air conditioner, run it with the fresh air intake closed and the filter clean to prevent bringing additional smoke inside.

- ❖ If you have asthma or another lung disease, call your doctor if your symptoms worsen.

- ❖ If you have heart or lung disease, are an older adult, or have children, talk with your doctor about whether and when you should leave the area. When smoke is heavy for a prolonged period of time, fine particles can build up indoors even though you may not be able to see them.

More information at www.OurAir.org.

Old Car Buy Back



The Old Car Buy Back program has received so much response from the community that in June the APCD Board authorized the Director to increase funding for the program by \$150,000, and if interest continues even more funding may be available. The goal is to reduce pollution by permanently retiring older vehicles, which pollute much more than newer ones. APCD pays \$800 for a vehicle model year 1988 or older that meets certain requirements, and has been advertising the program throughout the county. So far more than 230 cars have qualified for the program; retiring these would cut 27 tons of smog-forming pollutants.

To find out more, and to download fact sheets (in English or Spanish), see www.OurAir.org. Call 1-800-717-7624 with any questions.

APCD's Business Assistance Program



Our Business Assistance Representatives offer help to businesses over the phone and by email, and we also provide educational site visits to help owners understand and comply with our rules and requirements. The site visits are educational, not regulatory, and are conducted by a business assistance representative, not an APCD inspector. A site visit can help business owners: understand and comply with our permit conditions, rules and record keeping requirements; learn about new regulations that might be coming up; and find out about ways to prevent pollution.

Find out more:

Visit this page on our website: www.sbcapcd.org/biz/business.htm

Call the Business Assistance Line at 961-8868, Email business@sbcapcd.org.

June Bike Challengers Ride Five Times around the Globe

APCD Board Roundup

Following are the highlights of the June Board meeting.

June

- Increased the funding amount for the Old Car Buyback Program by \$150,000 with the option of an additional \$100,000 increase.
- Reappointed Dr. Francis Lagattuta to the APCD Hearing Board.
- Adopted the Fiscal Year 2006-07 Budget.
- Discussed whether to include a land use chapter in the 2007 Clean Air Plan.

Note: there was no APCD Board meeting in July.

Bike teams competing in the SBCAG/Traffic Solutions 2006 Team Bike Challenge rode a total of 129,709 miles in June, a distance of 5.2 trips around the earth. APCD was one of several sponsors of the Challenge to promote biking to replace car trips. Teams received points based on the number of bike rides by members. There were 230 teams and 1,100 participants this year, up from last year's 100 teams and 475 participants.

Team members replaced car trips with 41,318 bike trips and:

- Reduced 109,201 pounds of emissions of carbon dioxide, a greenhouse gas.
- Reduced 551 pounds of emissions of smog-forming pollutants.
- Reduced 4,559 grams of particulate matter.
- Saved 109,201 gallons of gasoline.

APCD participated in last year's first-ever Bike Challenge with the Smog Busters team; this year, APCD had two teams and ten participants. APCD team members rode 993 miles in 159 bike trips, reducing 808 pounds of carbon dioxide, 4 pounds of smog-forming pollutants, and 33 grams of particulate matter—and saving 40 gallons of gasoline. Said Frances Gilliland, who led the APCD effort, "My ride from

Goleta along the Coast Route is a beautiful way to start and end the work day, and in June, I saw many more bike commuters on the route. I also found there are some short car trips I take that I can easily replace with bike trips. The great thing about this program is that when you start thinking of how you can earn your team some points, you realize all the choices you have."



Members of APCD's two Bike Challenge teams. Back row, left to right: Mary Byrd, Mike Willis, Bobbie Bratz, Tom Murphy, Daniel Girard, Doug Grapple. Front row, left to right: Don Kendig, Ron Tan (captain of the Clean Air Bike Tamers), Frances Gilliland (captain of the Blue Sky Bikers) and Glenn Griffin.

Car Free Earth Day 2006

APCD's Santa Barbara Car Free project and the Community Environmental Council teamed up again in April to encourage people to come car free to the annual South Coast Earth Day event, and be eligible to win prizes, including: sets of pedometers & Walk Santa Barbara books (Olympus Press); Santa Barbara Metropolitan Transit District bus passes, pairs of roundtrip Amtrak® Pacific Surfliner tickets, and the Grand Prize, a bicycle offered by Commuter Bicycles.

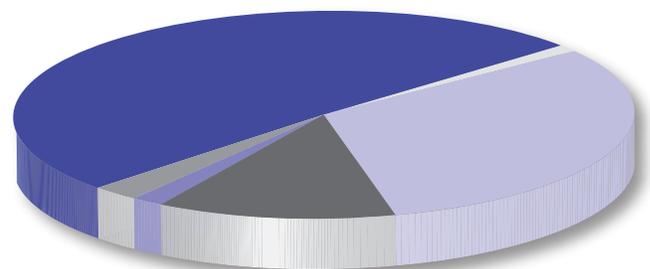
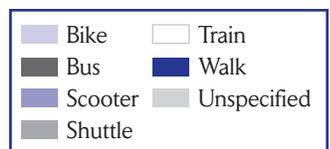
This year 456 people came car free and registered at the APCD/

Santa Barbara Car Free booth (up from 331 registrants last year), and 180 people made a car free pledge, up from 84 pledgers last year (pledgers were eligible to win in one of the hourly prize drawings). Slightly more than half of 2006 car free registrants (52 percent) walked to the event; riding a bike (32 percent) and taking the bus (13 percent) were the next most popular choices.

The Santa Barbara Car Free project, led by APCD, is a partnership of more than 90 area businesses, agencies and individuals dedicated to promoting car free

transportation to and around Santa Barbara for cleaner air.

For more information, visit www.SantaBarbaraCarFree.org.



Car Free Transportation to South Coast Earth Day 2006



APCD Board Calendar

Board of Directors

- Supervisor Salud Carbajal
First District
Santa Barbara County
- Supervisor Susan Rose
Second District
Santa Barbara County
- Supervisor Brooks Firestone
Third District
Santa Barbara County
- Supervisor Joni Gray
Fourth District
Santa Barbara County
- Supervisor Joe Centeno
Fifth District
Santa Barbara County
- Councilmember Russ Hicks
City of Buellton
- Councilmember Donna Jordan
City of Carpinteria
- Mayor Lupe Alvarez
City of Guadalupe
- Councilmember Will Schuyler,
Vice Chair
City of Lompoc
- Mayor Marty Blum
City of Santa Barbara
- Councilmember Marty Mariscal
City of Santa Maria
- Councilmember Edwin Skytt
City of Solvang
- Councilmember Margaret A. Connell, Chair
City of Goleta

All meetings start at 2 p.m.
For final meeting agendas, call the
APCD Board Clerk, 961-8853.

August 17
Board of Supervisors'
Hearing Room
105 East Anapamu Street
Santa Barbara, California 93101

October 19
Board of Supervisors'
Hearing Room
105 East Anapamu Street
Santa Barbara, California 93101

December 21
Board of Supervisors'
Hearing Room
105 East Anapamu Street
Santa Barbara, California 93101

Community Advisory Council

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

Are you increasing the price you're paying for gas?

Don't Top Off!

- ❖ **Concerned by how much you're paying at the pump?**
- ❖ **Think topping off your gas tank will get you the most for your money?**

Think Again! Here are the Facts:

Fact: Some of the gasoline you're paying for with those few extra 'clicks' to "top off" is not going in your tank. So you've just increased your price per gallon.

Where IS the gas going? It gets stuck in the vapor recovery hose and often spills on the next person that uses the pump.

Fact: Topping off your tank harms the system designed to prevent gasoline vapors from escaping into the air. Gasoline vapors contain several toxic air contaminants, including benzene, a carcinogen. In addition to being bad to breathe, these vapors help form smog. Gasoline stuck in the nozzle also spills onto the ground, and the residue can run off into our creeks and our ocean.

Fact: Spilling one ounce of gasoline releases the same amount of volatile organic compounds (VOCs, a smog-forming pollutant) into the air as driving a car 56 miles.

To find out more, visit www.OurAir.org.



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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

World Wide Web
www.sbcapcd.org

E-Mail
apcd@sbcapcd.org

On the Air is a quarterly newsletter published by the Community Programs Section of the Santa Barbara County Air Pollution Control District. For further information on items in this newsletter, or to be added to our subscription list, please call Bobbie Bratz, 961-8890 or Email bratzb@sbcapcd.org.



Printed on 100% recycled paper.

Transportation Fuels and Technologies: Terms and Tradeoffs

Transportation is responsible for about two-thirds of U.S. petroleum use, and growing concerns about gas prices and supplies are bringing a new sense of urgency to the discussion of alternatives. At a recent conference on peak oil and energy solutions co-sponsored by the Community Environmental Council and the Santa Barbara Region Chamber of Commerce, Bruce Luyendyk, Geophysics Professor at the University of California at Santa Barbara, noted, "There is no silver bullet. The solution is a laundry list of alternate fuels and technologies. This is a complicated issue, and it needs a multi-pronged approach." He cautioned: "We have to be very careful in our use of petroleum. Because it will take energy to build the infrastructure for alternatives. And we don't want to get caught without enough petroleum to build it."

Randy Udall, Director of the Community Office for Resource Efficiency in Aspen, Colorado and Member of the Board of the American chapter of the Association for the Study of Peak Oil, pointed out that intensive oil use is a relatively recent phenomenon; 90 percent of oil consumed by human beings to date has been used just since 1957, and 50 percent has been consumed just since 1983. Referring to projections of increasing demand for oil in China and India, and of price increases and supply shortfalls, he remarked, "Prosperity is at risk. This is not just about the environment."

Timelines vary—some fuels or technologies are already in the marketplace, while others may take a decade or longer—and new concepts are emerging in the discussion. Here's a look at some of the terms and tradeoffs.

is ordered specially by consumers or commercial operators.

Biofuels: Fuels such as biodiesel, ethanol, and methanol that are derived from organic/living matter in a sustainable manner.

Ethanol: An alcohol used as a fuel, or as an additive in gasoline. Typically derived from fermentation of sugars, ethanol can be produced from corn and other crops, including waste crops and grasses; it can also be synthesized in a variety of ways.

E-85: A fuel that is 85 percent ethanol and 15 percent gasoline. There are currently very few E-85 stations in California; the state is determining regulations that will apply. FlexFuel vehicles that can run on E-85 are currently commercially available.

FlexFuel vehicle: A vehicle whose engine can run on one of two fuels, typically either gasoline or E-85.

Gas-electric hybrid: A vehicle with a gasoline engine and fuel tank, and an electric motor and battery. Batteries are charged while the vehicle is moving; the user refuels with gasoline.

Hydrogen (H₂)-electric hybrid: A vehicle typically converted from a gas-electric hybrid to run on hydrogen instead of gasoline, with a hydrogen-fueled combustion engine and hydrogen tank, and an electric motor and battery. Demonstration vehicles are in use, but these vehicles are not yet commercially available.

H₂ combustion engine vehicle: A vehicle that has an internal combustion engine that runs on hydrogen instead of



Photo courtesy of South Coast Air Quality Management District.

A hydrogen-fueled Toyota Prius hybrid, one of thirty that will be in use at five Southern California cities, as part of a project supported by the South Coast Air Quality Management District. These are gas-electric hybrids in which the engines have been converted to burn gaseous hydrogen instead of gasoline; they refuel at hydrogen stations that can also be used to refuel fuel cell vehicles.

Terms

Ultra low sulfur diesel fuel (ULSD): Petroleum diesel with a lower sulfur content, required to be offered for sale at retail outlets in California as of this September.

Biodiesel: A non-petroleum fuel used in diesel engines that is derived from animal fat or vegetable oil, usually either soy oil, rapeseed oil, or recycled cooking oil. Biodiesel meets specifications set by ASTM 6751. B20 is a blend of 20 percent biodiesel, 80 percent petroleum diesel; B100 is 100 percent biodiesel, with no petroleum diesel. B20 is offered at some fueling stations in the county; B100

SVO: Straight Vegetable Oil is sometimes used in diesel engines; engine manufacturers do not support this use, and SVO is not considered biodiesel.

Compressed natural gas (CNG): Natural gas compressed for vehicle use that must meet specifications set by California. Due to the composition of natural gas in our county, consumers here cannot use equipment designed for home refueling. There is one public CNG refueling station in the county in downtown Santa Barbara that sells gas to California specifications; some fleet operators have CNG fueling stations that are not open to the public.

(continued on back)

Fuels and Technologies (cont'd)

gasoline (not yet commercially available).

Plug-in hybrid: A vehicle similar to a gas-electric hybrid, with a gasoline tank and combustion engine, and an electric motor and larger battery. The user has the option to use this either as an all-electric vehicle for shorter trips, plugging it in to charge the battery, or as a gas-electric hybrid for longer trips, refueling with gasoline. These vehicles are in development.

Fuel cell vehicle: A vehicle with an electric motor that runs on electricity from a fuel cell, which produces electrical energy through chemical reactions involving hydrogen. Prototype fuel cell vehicles from automakers are in demonstration pilot programs, but won't be widely available for several years.

Electric vehicle (EV): A vehicle that runs on an electric motor and battery system; the batteries have to be recharged. Some EVs are available today, more may be available soon.

Tradeoffs

Consumers are faced with tradeoffs related to cost differences, and with tradeoffs related to environmental and resource impacts — these can be particularly difficult to assess. The concept “energy returned on

energy invested” (EROEI) reflects the energy a fuel or technology produces over and above the energy used extracting or creating it. “Life cycle impacts” is a term that refers to the pollution created, energy used, resources permanently depleted, and disposal issues involved—from the extraction or production of a fuel or technology, through its use, and on to issues that arise at the end of its life. More study is needed in this area; a few general principles relating to environmental and resource tradeoffs are of interest.

The fewer emissions, the better.

Smog-forming emissions, toxic emissions, and emissions of gases that contribute to global climate change are produced in connection with vehicle and fuel production and use.

Recycling, use of waste materials, and use of materials that are recyclable or biodegradable have important benefits.

Biodiesel from used cooking oil represents recycling and re-use of a material that would otherwise be discarded as waste. Some biofuels can be extracted from landfill emissions, or produced from waste crops. Some vehicles include components that can be more easily recycled, or are biodegradable.

Energy and emissions impacts, and the use of non-renewable resources, can be minimized.

Advanced emission controls and fuel/engine adjustments can reduce in-use emissions. Certain driving practices can increase fuel efficiency. Charging of electric vehicle batteries at night avoids impacting peak power demand. Multiple benefits can be realized from the use of a renewable energy source, such as solar or wind power, to charge a vehicle battery, or to extract or produce a fuel, such as hydrogen.

Driving less is usually the lowest-impact choice.

Any vehicle produces pollution, uses up energy and resources, poses disposal issues, and contributes to traffic. Replacing a car trip by walking, cycling, carpooling, carsharing, or taking public transportation, is typically the lowest-impact option.

The more fuel-efficient or energy-conserving, the better.

Burning less fuel, or using less energy to go the same distance, means producing fewer emissions, and taking longer to use up the same amount of fuel.



Photos courtesy of Biodiesel Industries and Growing Solutions.

Students at Santa Barbara High School's Green Academy grow jatropha plants under a range of test conditions. At a recent energy forum in Santa Barbara, Russ Teall of Biodiesel Industries detailed the project, supported by Biodiesel Industries, and Growing Solutions, a local nonprofit. Teall noted that seeds produced by the jatropha plant have a 35-50 percent oil content, as compared to 18-22 percent for soybeans; the project will test the feasibility of growing jatropha plants in the county as a source of oil for biodiesel.

For more information, including driving tips to maximize fuel efficiency, see "Clean-Air Ride" at www.OurAir.org.